Town of Fort Myers Beach

Comprehensive Plan

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Town of Fort Myers Beach
2523 Estero Boulevard
Fort Myers Beach, FL 33931

239-765-0202

Preparation of this comprehensive plan was aided through financial assistance received from the state of Florida under the Local Government Comprehensive Planning and Land Development Regulation Assistance Program, administered by the Florida Department of Community Affairs.

FORT MYERS BEACH

COMPREHENSIVE PLAN

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Councilman Daniel L. Hughes

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Ron Kidder
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***AMENDMENTS TO THIS PLAN** – PART 1*

Application Number	*Adopting Ordinance*	*Pages Changed*	*Effective Date*
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2000-2-TEXT	00-15	15-4	11/21/2000
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2001-1-TEXT	01-07	11-22	11/21/2001
2001-2-TEXT	01-07	4-49–50	11/21/2001
2001-3-TEXT	*[withdrawn]*	—	—
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2002-2-TEXT	*[rejected]*	—	—
2002-3-TEXT	02-07	10-17, 18, 25–27	11/15/2002
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SSA-04-02	*[rejected]*	—	—
SSA-04-03	04-10	future land use map	7/22/2004
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2008-06-TEXT	09-03	4-23, 4-44	11/25/2009
2008-07-TEXT	09-03	7-27–33	11/25/2009
2008-08-TEXT	09-03	7-23, 7-32	11/25/2009
2008-09-TEXT	09-03	7-15, 7-33	11/25/2009
2008-10-TEXT	09-03	9-13	11/25/2009
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INTRODUCTION

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INTRODUCTION

WHY A COMPREHENSIVE PLAN?

In 1995, residents of Estero Island launched an era of municipal governance by voting to form the Town of Fort Myers Beach. A flurry of activity began immediately, involving residents, property owners and business people in the enterprise of crafting a small but highly focused town government.

While struggling with the normal day-to-day activities, a two-year effort was begun to bring into focus the long-range goals for the town. That effort has created this Fort Myers Beach Comprehensive Plan. To move toward those long-range goals, this plan establishes formal policies for the town government and lays the foundation for a new Land Development Code to guide further development and redevelopment.

SPECIAL PROBLEMS OF FORT MYERS BEACH

Fort Myers Beach faces a complex set of problems in addition to those usually faced by small towns. The town has already reached 85% of its maximum population. Nearly all of the remaining 15% is beyond the control of the new government, since development rights have previously vested to individual property owners.

Despite this lack of control, the town has responsibility for managing the peak-season congestion that results from overly generous land-use approvals of the past. This congestion is compounded by extreme tourism impacts from southwest Florida residents and visitors who flock to the welcoming atmosphere at Fort Myers Beach. These visitors feel none of the hostility caused at other beach communities by high bridge tolls, or by "residents-only" beach parking restrictions.

Fort Myers Beach residents suffer from peak-season congestion more than vacationers because the residents need to travel to school and jobs on a daily basis. Yet most residents tolerate this congestion because it is the obvious result of so many people trying to enjoy the same assets that attracted them. Fortunately, the peak period lasts less than three months of each year.

The shortness of this period could change. This plan contains many efforts to improve the beauty, vibrancy, and livability of Fort Myers Beach. These changes might attract so many more visitors that the period of extreme congestion lengthens to an intolerable portion of each year. That result would be the ultimate irony for a community that has welcomed generations of visitors to share its many charms.

HOW THIS DOCUMENT IS ORGANIZED

This document is organized into fifteen chapters. Following this introduction is "Envisioning Tomorrow's Fort Myers Beach," an optimistic look at the community that the town hopes will evolve. The next twelve chapters contain the twelve main "elements" of this plan, organized by subject area. The Community Design Element is placed first because its concepts have inspired many other parts of this plan. The final chapter contains procedures for interpreting and monitoring this plan.

Each element contains at least two parts:

- A narrative description of current conditions and possible courses of action for the town; and
- Formal goals, objectives, and policies selected by the town as its legally binding comprehensive plan.

The Town of Fort Myers Beach has decided to publish the full narrative portion of each element in this document. This provides its residents with a wealth of interesting information and an understanding of courses of action that were studied but perhaps not included in the formal plan.

The town legally "adopted" only certain portions of this document as its formal comprehensive plan. Formally adopted by Ordinance 98-14, effective January 1, 1999, are:

- All goals, objectives, and policies for each of the twelve elements;
- A "Future Land Use Map" (Figures 16 and 17 in the Future Land Use Element) and a "Future Transportation Map" (Figure 18 in the Transportation Element);
- A five-year schedule of capital improvements (Table 11-7); and
- All of Chapters 1, 2, and 15.

To help readers identify those portions of each element that are being formally adopted, the goals, objectives, and policies of each element are printed on gray paper. The "adopted" portions of this plan become a law of the Town of Fort Myers Beach. Once comprehensive plans are adopted, "…no public or private development shall be permitted except in conformity with comprehensive plans…" (Section 163.3161(5), *Florida Statutes*).

ENVISIONING TOMORROW'S FORT MYERS BEACH

NATURAL ENVIRONMENT . . . . . 2 - 1

MOBILITY . . . . . 2 - 1

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ENVISIONING TOMORROW'S FORT MYERS BEACH

This chapter takes a peek into the future. The italicized text below provides an optimistic look at the future of Fort Myers Beach, the future that the town hopes to create by adding its efforts to all others that have shaped this community:

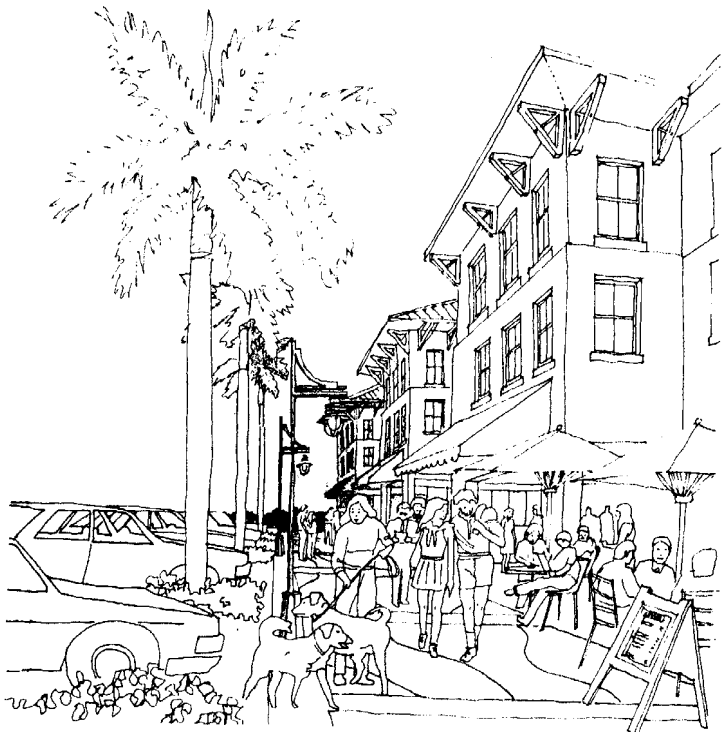
NATURAL ENVIRONMENT: *"The natural features at Fort Myers Beach remain its primary yet most sensitive assets. The beaches are clean and regularly replenished with sand, and sand dunes have been recreated. The remaining mangroves and wetlands are healthy, with disturbed areas now fully restored. Little Estero Island and the Matanzas Pass Preserve contribute to the ecological integrity of the area, and are enjoyed by many residents on daily walks.*

"Beach-going residents and visitors select their preference of quiet beaches at Bowditch Point or lively beaches near Lynn Hall Memorial Park. The degradation of water quality in Estero Bay has finally been reversed. Well-maintained channels allow the movement of a wide range of boats, operating safely in relation to one another and respecting the fragile nature of the surrounding environment and marine life."

MOBILITY: *"A carefully planned and interconnected system of pedestrian and bicycle paths, shuttles from off-site parking areas, trolley routes, and water taxis, enables visitors, residents, and school children to reach all the recreational destinations on Estero Island and move easily from one to another."*

TIMES SQUARE: *"The lively pedestrian scene at Times Square is fueled by those who have been swimming, strolling on the beach, or enjoying the pier, and is especially popular just before sunset. Just steps away, they enjoy the outdoor cafes, shops, and special entertainment events.*

"The short blocks to the north along Old San Carlos Boulevard now have wide sidewalks, street trees, and mid-day shade provided by overhangs from the new shops and restaurants. At the north end, folks reach Marina Plaza, another "people-gathering place" that is the hub of activity for a fleet of excursion boats, dinner cruises, charter fishing and party boats, and water shuttles."

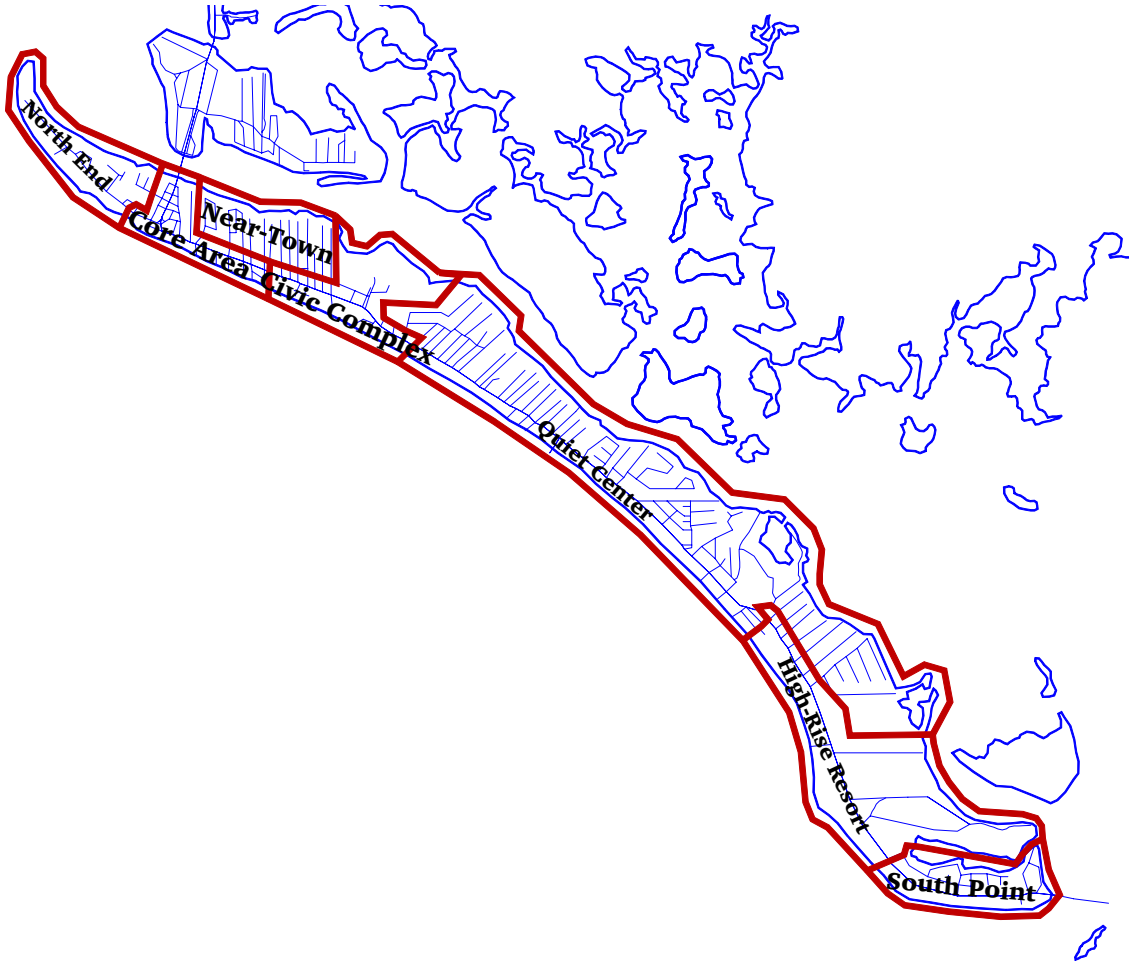


AVENUE OF PALMS: *"Estero Boulevard has become the premier public space on the Island, shaped as a memorable "Avenue of Palms" and lined with new and refurbished structures which frame the street and contribute to the pedestrian scale and ambience of the community.*

"The sidewalk and streetscape system has been continued beyond its 1997 terminus at the Lani Kai to the civic center and areas beyond. Motorists on Estero Boulevard during the peak tourist season move slowly but enjoy the beauty and interest of the public space, having learned to relax during the unavoidable season of the "beach crawl." Bicyclists and pedestrians share the public space but can also find quieter alternate routes off of the boulevard to get to their shopping or recreational destinations. Traffic calming measures have been introduced in areas that used to invite speeding whenever congestion lessened. Pedestrians now cross safely, and many people use the expanded fleet of trolleys to move around the island."

RESIDENTIAL NEIGHBORHOODS:
"School Street provides the primary entry into the heart of the island, the special place where the school, recreation center, ballfields, swimming pool, Playworks playground, Preserve, Historic Cottage, and Library are all centered. Existing and new infill development is in the spirit and scale of the Beach's classic cottages, which can be used as homes or live-work spaces such as studios and galleries, or for small-scale retail uses consistent with the historic theme of the street.

"Detached houses or cottages are located near existing areas of single-family housing, with rowhouses, townhouses, or apartments toward the center. Mixed uses are found along the Bay side of Estero Boulevard. Neighborhood design is not dominated by garages and features porches on the front, walkable narrow streets with shade trees that double as view corridors to the Preserve and beach, and quiet internal street connections to the north and south.



Planning communities for Fort Myers Beach

"The north end of the island retains its residential and resort identity. Its motel rooms, older cottages and high-rises all benefit from their proximity to Bowditch Point and the downtown "core area," yet are comfortably removed from seasonal traffic congestion and outdoor entertainment activities that many residents find intrusive.

"The older near-town neighborhoods across from San Carlos Island have shed the blight that had begun to appear in the 1980s. Their pleasantly varied housing types are just steps away from lively Estero Boulevard. Apartments for tourists and local employees mix congenially with new homes, many of which contain quiet home-offices. A new urban code has ensured that renovations and new homes mix gracefully with the old in these now highly desirable neighborhoods. Neighborhoods have truly achieved a higher ambition, becoming places where the streets are shady and public spaces are friendly, unified in design by trees, with well-used front porches and little traffic.

"Renovations and infill development have borrowed from the design tradition of cottages, using porches and decks, with fronts of houses facing the street. Pedestrian and bicycle paths have been created which link to an interconnected network.

"The town's historic past is memorialized through the designation of a large historic district. Visitors enliven the streets by strolling through revitalized neighborhoods with self-guided tour booklets pointing out buildings of historic and architectural merit.

"The quiet center of Estero Island remains peacefully between the bustling portions of Estero Boulevard and the high-rises further down the beach. Some condominiums and smaller resorts coexist with the predominately single-family neighborhoods. This portion of the island remains low rise and residential except for a few existing towers and the big mid-island marina. Estero Boulevard now has continuous sidewalks on both sides, and the side streets have become even more walkable with the maturing of shade trees and links to the town's "hidden path" system of neighborhood walkways.

"The high-rise/resort district is distinctly different in character. Panoramic views of Estero Bay and the Gulf of Mexico are widely available along with popular recreational amenities such as golf, tennis, and private swimming pools. The abundant wildlife on Little Estero Island are a continuing focal point for local residents and visitors alike. The town works with other agencies to provide public access and stewardship for this priceless resource."

A SECOND "MAIN STREET": *"The Villa Santini area has been fully redeveloped as a neighborhood-scale "Main Street" for this end of Estero Island. It also serves the needs of visitors to the vast beaches at Lovers Key. The town and the private sector have worked in partnership to bring about this revitalization. Tree-shaded sidewalks and bike paths link the surrounding neighborhoods to the new town center, making pedestrian trips comfortable and inviting.*

"Estero Island's south end faces the active boating along Big Carlos Pass and the popular state park at Lovers Key. Despite pressures of commercialization to serve park visitors, this area retains its strictly residential character and its mostly low-rise housing type. Sidewalks and landscaped entry features announce the arrival and departure into the town."

FORT MYERS BEACH, A LIVING PARK: *"The Town of Fort Myers Beach, through the dedicated efforts of the community, has become a living park, existing for the comfort, safety, and quality of life of its residents and the peaceful enjoyment of its visitors:*

- *"An ecologically sensitive park where visitors have learned to enjoy the unique natural amenities and to take responsibility for protecting the natural environment;*
- *"An archaeologically significant park where people come to learn about the native cultures of this area;*
- *"An historic and livable park where residents are proud of the community's heritage and place;*
- *"A family friendly park where parents and children are equally nurtured and where recreation is educational;*
- *"A semitropical island beach park where all ages enjoy the clean and safe waterfront;*
- *"A tranquil resort park where visitors relax in the warm island ambiance and atmosphere;*
- *"A vital community park where retired and working citizens share in a positive spirit of volunteerism to assure that future generations will have the opportunity to enjoy its magic and tranquillity; and*
- *"An economically sustainable park which protects and promotes its commercial interests and where a partnership with the past provides the focus for the future."*

COMMUNITY DESIGN ELEMENT

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COMMUNITY DESIGN ELEMENT

INTRODUCTION

The overall "vision" for the future of Fort Myers Beach was provided in Chapter 2 of this plan. The vision is refined for individual areas in this element.

This vision has evolved from many years of working together to plan for the future of Fort Myers Beach. Benchmark efforts include the 1989 convening of the Fort Myers Beach Land Use Plan Committee which resulted in the adoption of Goal 18 of the Lee County Comprehensive Plan; the formation and active implementation of the Estero Island CRA (a component area of the Lee County Community Redevelopment Agency); and ultimately the incorporation of the town as of December 31, 1995.

During this process, a significant body of work has been produced which has continuing value in the town's efforts to develop and implement its vision of the future. These include the Core Area Master Plan, December 1995, prepared by Wallace, Roberts & Todd (WRT), Working Papers prepared by WRT in May of 1993, and the University of Florida College of Architecture study prepared in July of 1991.

In 1997, community members worked together to convert this emerging vision into specifics through two community-wide workshops: "Designing Our Town" on January 31 and February 1, and "Enhancing our Resources" on March 22. That work forms the basis of this Community Design Element.

COMMUNITY DESIGN AND LIVABILITY

This element describes how each physical piece of the town (open spaces, buildings, streets, paths) will work together to achieve a coherent whole, creating a special character and enhanced "livability" for residents and guests.

This element reinforces the small-town character of Fort Myers Beach, a place where permanent residents coexist comfortably with tourism. The policies reflect an appropriate balance among neighborhood needs, economic vitality, and tourist development, and the balance between the need to move cars and all other types of movement (on foot or by bicycle or boat).

The following design principles will help achieve the town's vision of livability:

- Foster neighborliness and face-to-face interactions. Reinforce a positive family environment and sense of community safety and stability through design measures such as:
  - Shaping public spaces to feel like outdoor rooms, the "floor and walls" being the streets, trees, and building facades that encompass places to shop, park, meet a friend, eat, hold a parade.
  - Promoting walkable streets designed for pedestrian comfort, with shade and interesting vistas.
  - Promoting streets as the neighborhood realm, differentiated from fully private areas; bringing buildings closer to the street, with the private space on the other side of the structure's wall; using the elevation required by flood regulations (rather than a deep front yard) to create privacy; using front porches, decks, picket fences, and other "cottage" elements to define space and promote a natural surveillance of the street.

- Rejuvenate the existing fabric of the community, encouraging its special character without being stuffy, and treasuring the eclectic nature of the town's physical structures through such means as:
  - Using design to promote compatibility of mixed land uses, making good neighbors of commercial uses (somewhere to walk to get a quart of milk), and accommodating residential uses of varying types and affordability.

  - Changing the behavior of motorists through traffic calming techniques to avoid speeding during off-hours and off-season.
  - Planning for interconnected streets and pedestrian paths to allow mobility despite seasonal congestion on Estero Boulevard.

- Encourage private investment in the economic life, physical form, and natural amenities of the town, directing infill change and redevelopment toward the town's vision through such means as:
  - Focusing planning efforts on specific areas that are in transition, and reinforcing the quality of existing stable neighborhoods.
  - Improving linkages to and sharing the town's precious sensitive resource areas in ways that sustain their viability over time, and creating mechanisms for responsible stewardship of these areas.
  - Reserving the most important sites at the end of street vistas for civic and religious buildings or monuments, and designing other buildings to fit together as ensembles rather standing out as icons.
  - Strengthen views to the waterfront to promote a feel of shared use of these irreplaceable amenities.

- Establish clear and consistent rules governing both public and private sector development to integrate all of the pieces.

HISTORY OF DEVELOPMENT

Planning for the future begins with an appreciation of the special character and the physical form of Estero Island. The boundaries of the town encompass all of Estero Island, which has a rich early history including proximity to Mound Key, the apparent capital of the Calusa kingdom.

In the late 1800s the Koreshan Unity homesteaded Estero Island. The "Mound House" was built in 1906 on an Indian mound on the bay side. In 1912, the first beach hotel was constructed, beginning Estero Island's colorful entertainment and recreation era of beaches, dance halls, and gambling casinos.

Visitors and residents arrived on the island by way of a swing bridge built in 1926, passing through memorable stone arches and a palm-lined San Carlos Drive to the beach (then called Crescent Beach). The swing bridge made the island convenient for many new winter residents and tourists.

By the late 1930s many other cottages were being constructed. Stone was being brought in from the mainland for seawalls, and most houses were built on short pilings to protect against high seas and hurricanes. The first church, Chapel by the Sea, was built in 1936. In the 1940s, mail delivery was extended beyond the mid-island area. The island was growing rapidly, with land being dredged for canals, larger homes replacing smaller cottages, and businesses centering around Times Square. In 1965 the south end of the island was connected to Black Island by a bridge spanning Big Carlos Pass; a two-way flow of traffic began. In 1979, the new Sky Bridge replaced the decrepit swing bridge.

Despite these road improvements, or perhaps because of them, the old traffic problems reappeared as more and more tourists came. Many chose to stay permanently. High rise condominiums sprang up. Seawalls began to line the back bay. Condos, restaurants, and manicured lawns replaced the mangroves and sea oats. Times Square needed a face lift, and traffic congestion during the season became an established way of life.

WORKING TOWARD THE VISION

Achieving the vision for the future of Fort Myers Beach also requires an understanding of current conditions and opportunities. The island's development has evolved such that it can be divided into seven areas, each with a quite different character.

During 1997, community members worked together with urban designers and planners to identify the unique characteristics that represent the best of "what is." They discussed what should be enhanced in order to develop a common vision for these areas. They identified the sensitive and historic sites; areas which function as neighborhood centers; and naturally occurring focus points in terms of social contact and civic or commercial activity. They developed proposals about how lost space could be recaptured to private and public benefit; how pedestrian links could be strengthened; and what constraints or incentives could apply to future infill development and redevelopment in the town.

The community reviewed the design concepts that were developed by Dover, Kohl & Partners from the proposals made in the "Designing Our Town" workshop and then provided additional input. The result of that work, combined with the Core Area Master Plan, is described below in the vision for each planning area, and then translated into the goals, objectives, and policies of the Community Design Element at the end of this element.

The following sections provide an overview of the existing characteristics and the collective vision for each of the seven areas, and for Estero Boulevard which links all of them together.

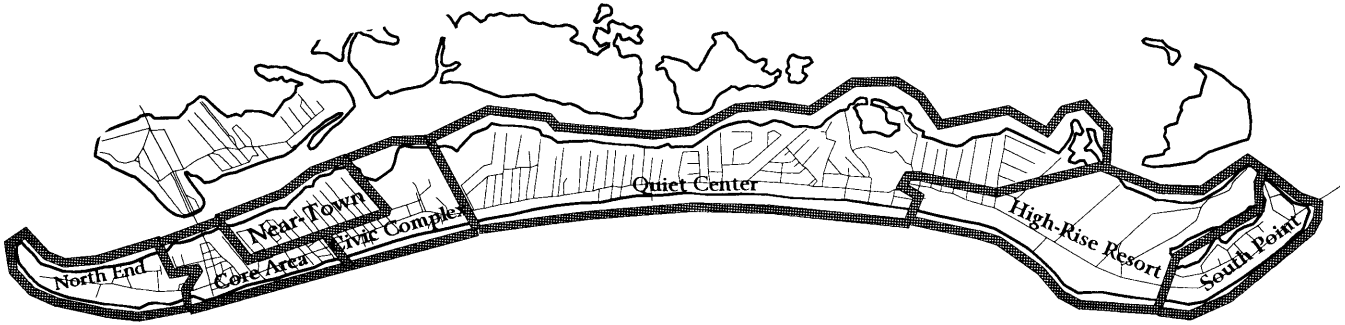
Downtown Core Area

Existing Characteristics and Opportunities

The Times Square area, also known as the downtown core area, begins at the base of the Sky Bridge, extends from the Bay to the Gulf, and is bounded on the north by Lynn Hall Park, the commercial area across the street from Lynn Hall Park, and the north side of Old San Carlos Boulevard. The canal south of Crescent Street defines the southerly boundary, with another portion of the planning area extending southward along Estero Boulevard to Pearl Street.

For planning purposes the Core Area is further divided into Districts, each with its own characteristics. District 1, Old San Carlos Boulevard, used to be the main entrance to the island but is currently characterized by several vacant lots, the bridge ramp, some seriously deteriorated structures, and little pedestrian activity. However, at the Bay end it is anchored by an active marina where gambling and cruise ships dock, and at the beach end it is anchored by Times Square and Lynn Hall Park.

District 2, Times Square, the lively commercial/tourist center of town, is on the upswing following the recently completed CRA improvements. The new pedestrian mall, with its palm trees and outdoor dining areas, sets the design theme for further public and private improvements. Sidewalk and streetscape improve-



ments have already been extended on the beach side of Estero Boulevard to the Lani Kai, and construction plans have been completed to do the same directly across on the Bay side. Existing conditions that are being addressed through these efforts include: the need for facade improvements; strengthened mix of businesses and services; reduction of traffic congestion and pedestrian vehicular conflicts; inadequate (or unorganized) parking to serve the needs of business and visitors; drainage problems; and the removal of unsightly and potentially hazardous overhead utilities.

District 3, Crescent Street, consists of a mix of commercial and residential uses, many of which are showing signs of deterioration.

District 4, Estero/Beachfront Residential District, consists of traditional beach cottages, tall condominiums, and resort structures on the beach side. Estero Boulevard here is characterized with tourist and retail uses on both sides with extremely constrained right-of-way and setback conditions.

The Core Area Master Plan consists of a Vision Statement, a Vision Plan, the Regulating Plan, and Design Guidelines. The recently adopted "Regulating Plan" provides optional changes to the development regulations to encourage redevelopment that furthers the vision for the area.

The vision will take shape incrementally as improvements are made to private property and as additional public improvements are made. Specific recommendations for further actions to be taken by the public sector to implement the vision for the Core Area are found in the goals, objectives, and policies at the end of this element.

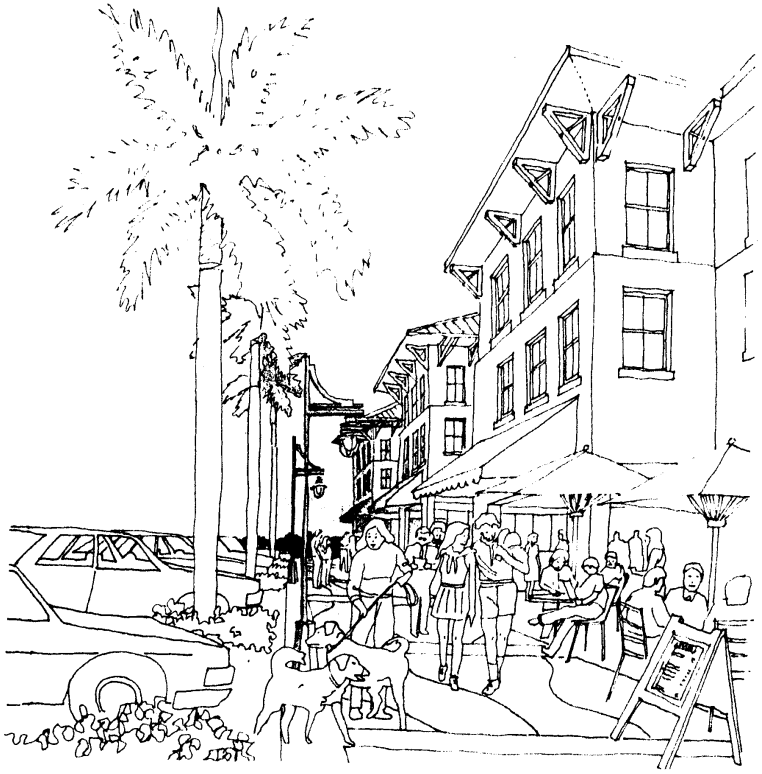
Core Area Vision:

"The Downtown Core Area boasts a revitalized entertainment area with tree-shaded outdoor cafes, pedestrian streets, and an "old Estero Island" character to the buildings. A Gulf-front boardwalk system connects beachfront uses. The expanded Lynn Hall Park hosts regular beach volleyball tournaments and remains the most lively and popular beach in Lee County. Shopping areas are served by convenient on-street parking and large reservoirs of shared off-street parking, screened from view. A broad array of shopping opportunities serves both residents and visitors. On the Bay side, tree-shaded plazas surround the expanded marina which hosts vessels from excursion boats to water taxis to commercial fishing boats bringing fresh seafood to sell from scattered kiosks. New buildings add to the theme originally developed for the Times Square area.

"Old San Carlos Boulevard is an active pedestrian-friendly "Main Street" linking Times Square and the marina on the Bay side. The street is framed with refurbished and new buildings designed to flood regulations with stores on the ground level. On-street parking is available. Continuous tree-lined sidewalks and safe intersections promote pedestrian safety and comfort. The corner at Third Street has become as a focal point midway between Times Square and the Bay side, with "corner stores" providing a variety of goods and services.

"Crescent Street, now linked to Old San Carlos by the pedestrian plaza, provides in-town housing for persons who wish to live or work here. The redevelopment overlay zone has been successful in encouraging compact development on Crescent Street. A sidewalk have been added on the south side, with regularly spaced shade trees growing along the street.

"Along the beach side of Estero Boulevard, infill development is designed to minimize traffic congestion and has opened new view corridors to the Gulf. Existing refurbished small cottages provide a human scale to the beachfront, and new development is taking the form of long narrow buildings or in clusters rather than massive structures of the past."



Looking east on Old San Carlos — what could be…

Estero Boulevard Vision:

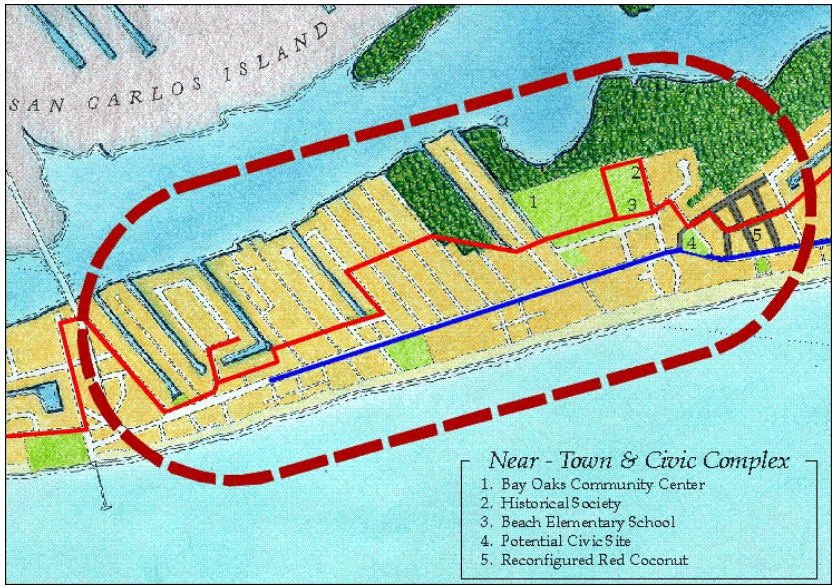
"Estero Boulevard has become the premier public space on the island, with a strong sense of place, shaped as a memorable "Avenue of Palms" linking the revitalized downtown to the civic center, the new "heart of the island." The Boulevard is lined with new and refurbished structures that frame the street and contribute to the pedestrian scale and casual ambience.

"The sidewalk and streetscape system has been continued beyond its 1997 terminus at the Lani Kai to the civic center and areas beyond. Motorists on Estero Boulevard during the peak tourist season move slowly but enjoy the beauty and interest of the public space, having learned to relax during the unavoidable season of the "beach crawl." Bicyclists and pedestrians share the public space but can also find quieter alternate routes off of the boulevard to get to their shopping or recreational destinations. Traffic calming measures have been introduced in areas of the boulevard that used to invite speeding whenever congestion lessened. Pedestrians now cross safely, and many people use the expanded fleet of trolleys to move around the island."

Civic Complex – "Heart of the Island"

Existing Characteristics and Opportunities

This area includes both sides of Estero Boulevard from about Pearl Street to Donora Boulevard, and extends to the Bay behind the Bay Oaks Recreation Center and the Matanzas Pass Preserve. Currently along Estero Boulevard there is a mix of commercial and residential uses with little coherent integration among them. The current floodplain and coastal setback regulations severely restrict what can be done here.



Many community facilities are in this area, including the temporary quarters of Town Hall in the NationsBank building, Topps Grocery (formerly Winn-Dixie), the public library, the Beach United Methodist Church, Bay Oaks Recreation Center, and the historic elementary school. Also located here is the Matanzas Pass Preserve, with developed trails, boardwalks, and a restoration site, and the recently renovated Historic Cottage which will serve as a museum and interpretive center for the Preserve. A community swimming pool is being built just south of the market and west of the ballfield. To the south of the Preserve is the Gulf View Trailer Park and the Red Coconut RV Resort. While there are no current plans to change the use of either property, consideration has been to appropriate future uses in the event of a change of ownership or plans or a natural disaster.

Civic Complex Vision:

"The civic complex, centered around the public library and Bay Oaks Recreation Center, has expanded and serves as the "other end" of the revitalized portion of Estero Boulevard, with its rows of coconut palms, wide colorful sidewalks, and lively street scene. It has truly become the "Heart of the Island" and embodies the traditional neighborhood concepts that minimize unnecessary trips onto the boulevard. It is the keystone of the system of interconnected pedestrian and bicycle paths extending throughout the island.

"School Street provides the primary entry into the "Heart of the Island," the special place where the school, recreation center, ballfields, swimming pool, Playworks playground, Preserve, Historic Cottage, and Library are all centered. Internal connections have been made to the grocery complex to the north and, through a new internal street network, to areas to the south. Many residents now have access here without traveling on Estero Boulevard. School Street itself has also become a key connection from the bay to the beach, a palm-lined showcase of restored and new cottages. Motorists catch a glimpse of a replica of Estero Island's stone arches, which had been absent since the late 1970s. The town's cooperative spirit is captured in this project, a civic effort that memorializes its pride in civic life and a historic past. Existing and new infill development on School Street is in the spirit and scale of the Beach's classic cottages, which can be used as homes or live-work spaces such as studios and galleries, or for small-scale retail uses consistent with the historic theme of the street.

"Proceeding south along Estero Boulevard just past the library, the boulevard curves, offering an exemplary civic site on the Bay side at the end of the long straight view from Times Square. This site would be ideal for a prominent civic or religious building.

"The Red Coconut – Gulfview Colony area is the southern end of the "Heart of the Island," whether continuing its current use as a pleasant home for visitors and long-term residents or in some other traditional neighborhood form. A vision for this area, if redeveloped at some point in the future, is as a complete neighborhood with an internal circulation system making it possible to walk or ride bikes to school, recreation areas, and shopping without using Estero Boulevard. An ideal plan would retain the psychological connection and views both directions to the preserve and the beach, and offer a variety of housing types and opportunity for mixed uses including some continued commercial uses on the Bay side of Estero Boulevard.

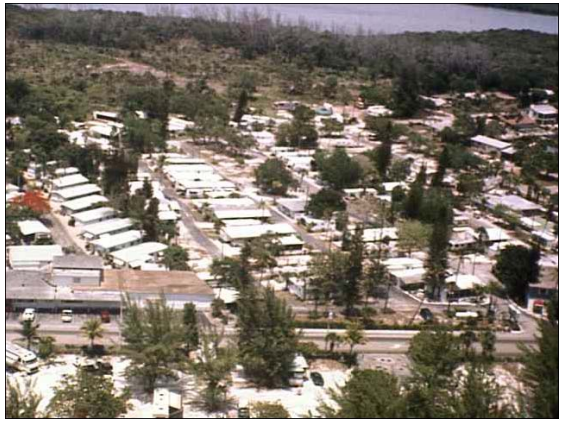


photo courtesy Mohsen Salehi

"In this vision, detached houses or cottages are located near existing areas of single-family housing, with rowhouses, townhouses, or apartments toward the center. Mixed uses would be found along Bay side of Estero Boulevard. Neighborhood design is not dominated by garages and features porches on the front, walkable narrow streets with shade trees that double as view corridors to the preserve and beach, and quiet internal street connections to the north and south."

Red Coconut Village

at the

Town of Fort Myers Beach

The Town's "small town" concept for this property and Seaside, Florida are the inspirations for the proposed Red Coconut Village. A pedestrian-oriented mix of land uses centered on the Red Coconut Crescent is proposed.

RED COCONUT CRESCENT

The Crescent is the center of the Red Coconut Village. This open space may be a green or a plaza with trees. A trolley stop will be accommodated.

STREET TYPES

Streets within the Red Coconut Village are relatively narrow, tree-lined and are laid out in a grid pattern. A street connection to the south and a future connection to the north is provided. Three street types are illustrated on the concept plan. Sidewalks, alleys and on-street parking are included in the design concept.

BUILDING TYPES

Variety in building type and architecture is important to the village concept. There are five building types proposed for the Red Coconut Village. Within these general types, a myriad of variations is possible. The proposed concept illustrates the intensity and density of the residential building types. Development regulations and architectural controls will be developed for the Red Coconut Village property.

Cottages

These are detached single family cottages with optional detached accessory units in the rear. They are located near the existing single family residences. Cottages may be located on alleys but access directly from the streets is acceptable.

Townhouses

Included in this building type are rowhouses, townhouses and residential units in a other configurations. Eight to ten units are anticipated in each building. Required parking may be under the Townhouse and/or in a lot to the rear. An island version of Seaside's "Ruskin Place" is the prototype for these buildings.

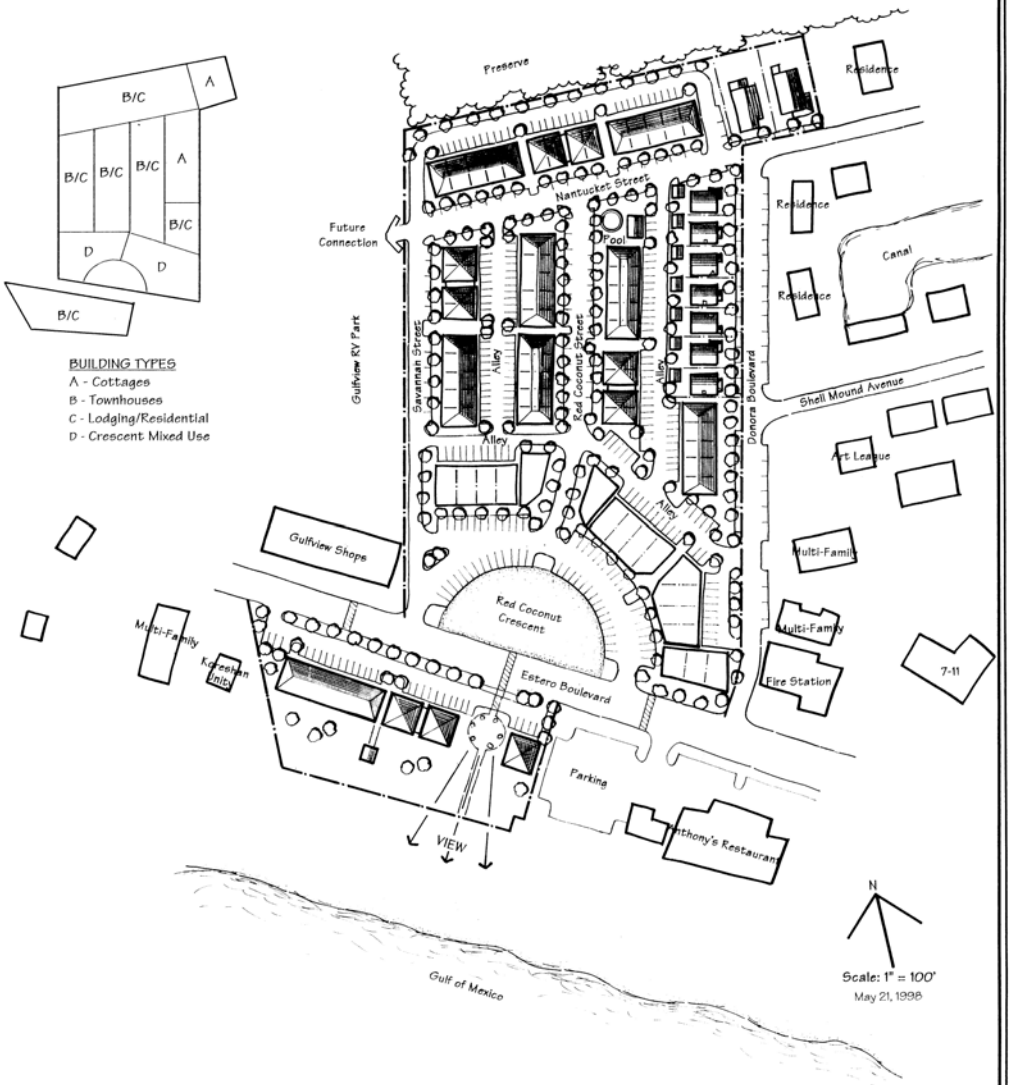
Lodging/Residential

To ensure a variety of housing types, small freestanding lodging and small residential apartment buildings are included as an alternative to some "Townhouse" buildings. Setbacks are required on all sides of the buildings. Josephine's French Country Inn in Seaside, an eleven-room bed and breakfast inn, is a prototype for a "Lodging/Residential" building. Required parking may be under a building and/or in a lot screened from the street. Alleys are optional.

Crescent Mixed Use

These buildings, detached or attached, are located around the Red Coconut Crescent. Shopfronts would occupy the ground floor with up to two floors of lodging or residential units above. Parking is located in lots and on the street. Island versions of Seaside's "Dreamland Heights" and "Seahaven" are prototypes for the Crescent Mixed Use buildings.

BUILDING TYPES
A - Cottages
B - Townhouses
C - Lodging/Residential
D - Crescent Mixed Use



Florida Land Planning, Inc.
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Bowditch/North End

Existing Character and Opportunities

North of Times Square, Estero Boulevard is lined with generally low-rise homes on the Bay and taller condominium and resort structures on the Gulf. The residential areas on the Bay consist of mostly single-family homes on larger lots than some of the older subdivisions, although multiple units are allowed in some areas. This area is anchored at the far end by Bowditch Point Regional Park. The park, now with its first phase of improvements, consists of quiet beaches and trails, picnic and changing area facilities, and a trolley turn-around. Lee County's new public parking lot will increase the number of visitors to the park.

Bowditch/North End Vision:

"The Bowditch/North End retains its residential and resort identity. Its motel rooms, older cottages and high-rises all benefit from their proximity to Bowditch Point and the Times Square area, yet are comfortably removed from seasonal traffic congestion and outdoor entertainment activities that many residents find intrusive."

Near-Town Neighborhoods

Existing Characteristics and Opportunities

This plan refers to the Bay-side residential areas between the downtown core area and the Bay Oaks as the "near-town neighborhoods." These neighborhoods are pleasant, walkable, and close to lively commercial areas. Most of this area has been resubdivided into fairly small building lots along streets and canals that run perpendicular from Estero Boulevard to the Bay. Most homes weren't built until the 1950s, although a large portion of the island's remaining historic homes are in these neighborhoods. These older neighborhoods often have higher densities than are allowed by Lee County's comprehensive plan, which can restrict redevelopment efforts. There are many rental units, some of which have been poorly maintained.

Near-Town Vision:

"The older near-town neighborhoods across from San Carlos Island have shed the blight that had begun to appear in the 1980s. Their pleasantly varied housing types are just steps away from lively Estero Boulevard. Apartments for tourists and local employees mix congenially with new homes, many of which contain quiet home-offices. A new urban code has ensured that renovations and new homes mix gracefully with the old in these now highly desirable neighborhoods. Neighborhoods have truly achieved a higher ambition, becoming places where the streets are shady and public spaces are friendly, unified in design by trees, with well-used front porches and little traffic.

"Renovations and infill development have borrowed from the design tradition of cottages, using porches and decks, with fronts of houses facing the street. Pedestrian and bicycle paths have been created which link to an interconnected network."

Quiet Center

Existing Characteristics and Opportunities

These quiet residential areas consist of predominately single-family neighborhoods with a few existing condominiums towers. They extend southward from Donora Boulevard to Flamingo Street with mostly single-family homes on the Bay side. Residential uses also dominate along the Gulf, with high-intensity condominiums in the center from Bayview Avenue to Pescadora Avenue, interspersed with several hotels and with single-family neighborhoods to the north and south. From this point south to the Mid Island Marina, and from Avenida Pescadora south to the bend in the Boulevard at Flamingo Street, is the longest corridor of Estero Boulevard that is characterized by single-family residential on both sides. The boulevard has very generous right-of-way and setback dimensions and more widely spaced beach access points than exist to the north. This area is not in need of substantial redevelopment and should be treated as an area to be protected rather than modified.

Quiet Center Vision:

"The Quiet Center of Estero Island remains peacefully between the bustling portions of Estero Boulevard and the high-rises further down the beach. Some condominiums and smaller resorts coexist with the predominately single-family neighborhoods. This portion of the island is designated to remain low rise and residential except for a few existing towers and the big mid-island marina. Estero Boulevard now has continuous sidewalks on both sides, and the side streets have become even more walkable with the maturing of shade trees and links to the town's "hidden path" system of neighborhood walkways."

High-Rise / Resort Area and Santini Plaza

Existing Characteristics and Opportunities

The High-Rise /Resort area, which extends south of the "quiet center," is characterized by large scale Gulf-front condominiums, large lot single-family homes, and extensive vacant land that will become part of the Bay Beach community. From Albatross south to Lagoon Street is one of the most densely developed sections of Estero Boulevard, with mid- and high-rise development on both sides but with generous dimensions of the right-of-way and landscaped setbacks. A dominant trend will be the completion of the remaining approved phases of Bay Beach.

This area is home to the Little Estero Island Critical Wildlife Area, one of the region's most sensitive and precious pristine dune and lagoon areas extending into the Gulf from the Holiday Inn south to the Sun Caper resort.

The Villa Santini Plaza shopping center serves the south end of the island. Although it is an active center, it has greater market potential than is currently exhibited and is ready for updating of its buildings and site layout. It is located in the center of a large concentration of population but in an area of Estero Boulevard where the current design of the road and public space is very hostile to pedestrians. The Villa Santini Plaza has the potential to become a centralizing focus to the south end of the island, providing a second "town center" for Fort Myers Beach.

High-Rise / Resort Vision:

"The High-Rise/Resort district is distinctly different in character. Panoramic views of Estero Bay and the Gulf of Mexico are widely available along with popular recreational amenities such as golf, tennis, and private swimming pools. The abundant wildlife on Little Estero Island is a continuing focal point for local residents and visitors alike. The town works with other agencies to provide public access and stewardship for this priceless resource.

"The Villa Santini area has been fully redeveloped as a neighborhood-scale "Main Street" for this end of Estero Island, replacing its former life as a conventional shopping center. It also serves the needs of visitors to the vast beaches at Lovers Key.

"The town and the private sector have worked in partnership to bring about this revitalization. For a section of about 1,000 feet along Estero Boulevard, buildings have been brought closer to the street, providing greater visibility for retail frontage. Drainage has been rerouted or piped, and the sidewalks, street, landscaping, and building frontages have been integrated to "frame" the street and invite pedestrian activity. On-street parking and other design features have been added to slow high-speed traffic through the area. The shopping center has been reconfigured with a design that includes a central green plaza with a trolley transfer point and land for new structures such as a small cinema which shares parking spaces with other tenants at the center and provide overflow parking for special events.

"Tree-shaded sidewalks and bike paths link the surrounding neighborhoods to the new town center, making pedestrian trips comfortable and inviting."

South Point

Existing Characteristics and Opportunities

This area is characterized by low-rise residences. The generous dimensions of Estero Boulevard continue here, and new standard sidewalks will fill in missing gaps along Estero Boulevard in late 1998. There is potential for an island "gateway" or entry feature just north of the Big Carlos Pass Bridge where excess right-of-way is available for landscape treatment.

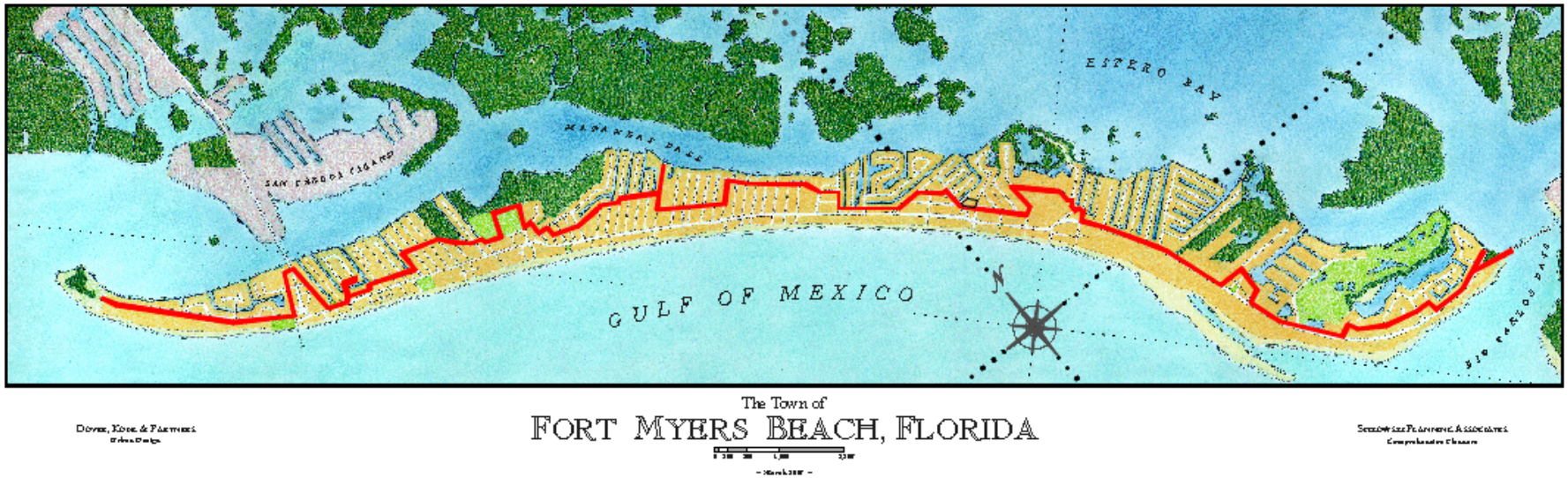
South Point Vision:

"Estero Island's South Point faces the active boating along Big Carlos Pass and the popular state park on Black Island and Lovers Key. Despite pressures of commercialization to serve park visitors, this area retains its strictly residential character and its mostly low-rise housing. Sidewalks and landscaped entry features announce the arrival and departure into the Town of Fort Myers Beach."

PEDESTRIAN AND BICYCLE CONNECTIONS

Although the preceding discussion divided Estero Island into seven distinct planning areas, the town is of course more than just the sum of its parts. Estero Boulevard and the water bodies that surround Fort Myers Beach integrate this seven-mile-long island. Both provide opportunities for people to move from place to place by car or boat. The missing element is a way for pedestrians and bicyclists to circulate safely and comfortably throughout the entire island. During the "Designing Our Town" workshop, participants identified some pedestrian and bicyclist pathways that do exist parallel to Estero Boulevard, at least for short distances. Participants illustrated how pedestrian paths could be created to bridge the gaps and ultimately create an interconnected network.

This plan's vision for the future includes this system of "hidden paths" off Estero Boulevard, meandering through the island, interconnected where possible. A local foundation or a community land trust working patiently over time could, as opportunities arise, acquire existing vacant lots, rights-of-way, or easements to gradually compile the network. The town could assist this process by removing regulatory barriers that would inhibit the assembling of the path system, for example by changing the land development code to avoid penalizing lot owners who donate or sell a strip of land for one of these paths. The town could also provide some funding for this effort. An initial idea for this network is depicted on the map below.



GOALS - OBJECTIVES - POLICIES

Based on the design options evaluated during this planning process, the following goals, objectives, and policies are adopted into the Fort Myers Beach Comprehensive Plan:

GOAL 1 To continually improve the appearance and functioning of transportation corridors, commercial areas, and links to natural and recreational areas.

OBJECTIVE 1-A ESTERO BOULEVARD — Improve the functioning and appearance of Estero Boulevard as the premier public space and primary circulation route of Fort Myers Beach.

POLICY 1-A-1 Changes along Estero Boulevard should improve on the characteristics that make it a boulevard in character and not just in name: safe and interesting to walk along, impressive landscaping, and scaled to people rather than high-speed traffic.

POLICY 1-A-2 The town should develop a sidewalk and streetscape plan for all of Estero Boulevard that builds on the design theme of the 1997 improvements from Times Square and to the Lani Kai. This plan should recreate the historic "Avenue of Palms" concept by adding appropriate palm trees such as coconuts on both sides between the sidewalk and new curbs. This plan should also address related needs such as parking and trolley pull-offs, and should be sufficiently detailed to estimate costs and suggest potential phases of construction. Priorities should include positive impacts on:

i. stimulating revitalization consistent with the town's overall vision in this comprehensive plan
ii. completing pedestrian and bike path linkages from one end of the island to the other;
iii. managing traffic flow;
iv. improving pedestrian crossings; including push button (demand) lights; textured materials to emphasize crossings to drivers; and covered seating areas and other "oasis" amenities at trolley stops and beach accesses;
v. lowering construction and maintenance costs from the original design;
vi. correcting drainage problems;
vii. coordinating with utility undergrounding; and
viii. working within new and available sources of funds.

After completing that plan, the town shall establish a phased schedule of capital improvements to complete this network.

POLICY 1-A-3 In commercial and mixed-use areas, the town shall identify specific portions of Estero Boulevard where changes in land development regulations could work towards a more coherent "framing" of the Boulevard. New regulations should accomplish the following design goals over time through infill and redevelopment:

i. bringing buildings closer to the sidewalk;

ii. encouraging or requiring compatible means of meeting the mandatory flood elevation requirements (for example; using dry-floodproofing techniques, or designs such as the old hardware store which is built close to the street with outside steps up, but with added steps up inside to reach the flood elevation);

iii. locating most parking to the rear of buildings, limiting curb cuts, and promoting shared parking areas;

iv. facilitating pedestrian and bicycle access and contributing to the interconnectedness of the circulation system;

v. adopting design guidelines that encourage architecture and urbanism along Estero Boulevard that contributes to the human scale and "beach cottage character" (such as the Huston Studio or Hussey tourist information center).

OBJECTIVE 1-B OTHER PUBLIC SPACES — Beautify public spaces throughout the island.

POLICY 1-B-1 Create Estero Boulevard gateways or entry features at the south end near Big Carlos Pass and near the touchdown of the Matanzas Pass bridge.

POLICY 1-B-2 Improve the appearance of the town throughout by landscaping public property and rights-of-way with native vegetation.

POLICY 1-B-3 Identify potential mechanisms to implement and maintain special amenities such as entry features, monuments, or other special landscape projects.

POLICY 1-B-4 Monitor the effectiveness of the county's program for removing trash and debris from the beachfront and Bay accesses.

POLICY 1-B-5 Develop a program for placing utilities underground that addresses both public and private sector development.

POLICY 1-B-6 Conduct regular and adequate street cleaning (sweeping or vacuuming) throughout the town. Evaluate effective methods to keep streets and drainage systems clean despite the abundance of blown sand and the absence of curbs.

GOAL 2 To upgrade residential neighborhoods throughout Estero Island.

OBJECTIVE 2-A HIDDEN PATHS — Create an additional interconnected system of pedestrian and bicycle pathways throughout the island to improve mobility and promote community interaction.

POLICY 2-A-1 The town should encourage a community-sponsored program to identify and build a system of existing and potential "hidden paths" parallel to but behind Estero Boulevard. A local foundation or community land trust could identify and acquire existing vacant lots or easements to gradually complete the network. These parcels could be transferred back to the town for long-term maintenance.

POLICY 2-A-2 The town shall adopt changes to the land development regulations to allow small portions of existing lots to become a part of the

hidden-path network without diminishing future uses of those lots.

POLICY 2-A-3 The town shall ensure coordination between efforts to develop this hidden-path network and its new streetscape plan for Estero Boulevard.

OBJECTIVE 2-B SIDE STREETS — Encourage residents to achieve a higher ambition for their residential streets, improving their walkability, comfort, beauty, interconnectedness, and safety.

POLICY 2-B-1 The town strongly supports the planting of regularly spaced street trees in public rights-of-way on residential streets. The selection of specific trees shall be guided by public input and the following criteria:

i. amount of shade provided, especially during the summer months;
ii. the amount of water and other regular maintenance that will be required (such as types of leaves, fronds, and fruit);
iii. potential damage from extensive root systems or other characteristics of specific trees;
iv. variety and beauty, including flowering characteristics;
v. the potential for wildlife utilization;
vi. a strong preference for native trees such as live oak, gumbo limbo, sea grape, cabbage palm, mastic, Jamaica dogwood, mahogany, black olive, strangler fig, pigeon plum, and buttonwood; and
vii. a prohibition on the use of invasive trees such as Australian pine, Brazilian pepper, melaleuca, and Java plum.

POLICY 2-B-2 The town should develop a residential streets program that provides guidelines and technical assistance to neighborhoods that wish to improve their public spaces as civic projects. The program could include the following elements:

i. assistance in developing a workable approach on a street-by-street basis, consistent with the island-wide concept;
ii. volunteer local arborists to provide specific advice and technical assistance;
iii. assistance in preparing a planting plan for street trees;
iv. financial assistance for planting street trees;
v. a booklet describing the characteristics of desirable street trees for Fort Myers Beach;
vi. a guidebook for tree planting, irrigation, and pruning methods;
vii. a plan for short- and long-term maintenance of planted areas and street trees;
viii. a current list of contact persons and a description of the process for requesting street repairs and maintenance and for reporting code violations; and
ix. information on how to form a street lighting district.

GOAL 3 To revitalize and improve specific transitional neighborhoods.

OBJECTIVE 3-A HEART OF THE ISLAND — Redevelop the School/Library/Bay Oaks area as the new "heart of the island."

POLICY 3-A-1 The complex of civic activities in the Bay Oaks area is a key community asset. Its access and significance would be enhanced by creating a main entryway; School Street could become a walkable palm-lined street of restored and infill cottages that announce the entry to this center of civic activity.

POLICY 3-A-2 A prominent civic structure benefits the community most when its location serves the public conveniently and when its design helps shape the surrounding public spaces and provides a new and symbolic vista from other public places.

POLICY 3-A-3 If the town ever decides to build a Town Hall rather than renting office space, a new building, even if modest in size, should help complete a center of public activity and should be visually prominent as a showcase of urban design.

POLICY 3-A-4 A "heart of the island" plan should be prepared to coordinate the public and private actions needed to fully implement this concept, including identifying the sequence of actions, responsibilities for implementation, and potential funding sources. Initial actions should include:

i. develop a design concept consistent with the new streetscape plan for Estero Boulevard, identifying approximate costs, potential funding sources, and suggested phasing;
ii. refine regulations that would allow a compatible mix of uses such as residential, live-work spaces such as studios or galleries, and small-scale specialty retail uses consistent with the historic theme, including eased setback and parking regulations to accommodate the unique needs of renovations of existing and move-on cottages; and
iii. prepare architectural guidelines for cottage renovations and for infill development.

POLICY 3-A-5 Provide in the new Land Development Code a pre-approved option for the future redevelopment of the Red Coconut/Gulfview Colony properties consistent with the town's vision of traditional neighborhoods — neighborhoods that recreate a small-town feel; which are pedestrian and bicycle friendly with an internal circulation system that makes it possible to walk or bicycle to schools and services without always using Estero Boulevard; which retain the psychological connection and views to both the Bay and the beach; and which offer a variety of housing types and opportunity for mixed uses.

POLICY 3-A-6 In accordance with Policies 4-E-1 and 4-F-2 of the Future Land Use Element, evaluate any alternative redevelopment concepts for any portion of the Gulfview Colony/ Red Coconut properties as to the following design principles:

i. retains and/or creates water views through street layout, site design, and architectural design;
ii. provides a variety of housing types rather than uniformity;
iii. locates the more durable housing types and mix of uses along the Bay side of Estero Boulevard;
iv. new streets create a highly connected network which includes mid-block paths or alleys;

v. streets have sidewalks and street trees;
vi. local streets are interconnected from Donora and Shell Mound through to the north.

OBJECTIVE 3-B NEAR-TOWN NEIGHBORHOODS — Revitalize older residential areas using traditional neighborhood techniques for renovations and infill.

POLICY 3-B-1 The town shall prepare and adopt land development regulations to apply to the older "near-town neighborhoods" that will encourage renovations and compatible infill development, using the following types of techniques:

i. modifying lot size, setback, and parking requirements where the current regulations hinder redevelopment;
ii. adding design guidelines to encourage front porches, decks, and other elements from the cottage design tradition to help frame public spaces and define private areas;
iii. modifying permitted uses to accommodate quiet home offices and possibly other mixed uses;
iv. modifying current limitations on the number of guests and/or length of stays to protect residential areas from excessive intrusion by poorly regulated short-term rentals.

OBJECTIVE 3-C SANTINI "MAIN STREET" — Redevelop the Villa Santini Plaza and its environs as a "Main Street" town center for the south end of the island.

POLICY 3-C-1 The town wishes to convert, over time, the existing Villa Santini Plaza and surrounding land from its current configuration of auto-oriented commercial uses. The desired plan would create a new "Main Street" shopping and civic center to serve residents of the south end of Estero Island and visitors to the state park on Black Island and Lovers Key (see Policy 4-F-2(ii) of the Future Land Use Element). To accomplish this goal, the town wishes to structure a public/private partnership agreement that provides for the following:

i. outlines the public improvements necessary to implement the concept, and identifies the agencies and entities involved and their respective roles;
ii. provides the town's design criteria to guide the preparation of the development plan by the property owners; and
iii. sets forth the process for the partnership, identifies responsibilities, areas of commitment, timing and process, order of magnitude costs, fiscal impacts/benefits, and any reimbursements.

POLICY 3-C-2 The town shall adopt new development regulations for this area to bring about the desired redevelopment pattern in the Villa Santini area. Along the nearby section of Estero Boulevard, buildings being constructed or renovated shall extend closer to the street and provide front access to pedestrians and on-street parking. Internal site layouts shall be reconfigured to accommodate a central green/plaza area for overflow parking and a trolley transfer point generally

consistent with the 1997 design concept prepared by Dover, Kohl & Partners.

OBJECTIVE 3-D TIMES SQUARE — Stimulate the revitalization of the downtown core area (near Times Square) as the nucleus of commercial and tourist activities.

POLICY 3-D-1 The town shall create a Downtown Redevelopment Agency to assist the Main Street program in revitalizing downtown as a lively, inviting, comfortable, and safe public environment.

POLICY 3-D-2 Downtown revitalization shall be based on the concepts in the Core Area Master Plan prepared for the Estero Island CRA Committee in 1993-94, as refined during the continuing implementation of that plan. Those concepts are summarized in the following policies.

POLICY 3-D-3 Continue with sidewalk improvements:

i. Standard sidewalk widths should be provided by the public sector and/or private developers in each development project as it is implemented. Consider a program for private sidewalk reservation through dedication or easement, particularly along Old San Carlos.
ii. Use selected materials in public rights-of-way and private property improvements adjacent to sidewalks, such as in plazas or building setbacks.
iii. Provide special design treatment (e.g. continuation of sidewalk paving patterns) at major intersections of the primary pedestrian streets to create a visual link and distinguish the pedestrian surface from the vehicular right-of-way.

POLICY 3-D-4 Implement the pedestrian circulation plan:

i. Complete the Bay-side sidewalk and streetscape improvements for Estero Boulevard within the Core area with underground utilities and improved sidewalks.
ii. Construct sidewalks (5' wide minimum sidewalk) along all streets in the Core Area.
iii. Provide a bike path along Estero Boulevard utilizing Crescent Street to Third Street across to Old San Carlos and then connecting back to Estero Boulevard and north to Bowditch Point.
iv. Promote the function of Old San Carlos as a pedestrian spine linking Times Square and the marina by implementing public sidewalks and major crosswalks designed to work in conjunction with arcades or plazas located on private property.
v. Work with the private sector to establish a site for a new public pedestrian plaza at the east of Old San Carlos.
vi. Provide new on-street parking and sidewalk on the south side of Crescent Street.
vii. Reconfigure Third and Fourth Streets with on-street parking and sidewalks on both sides of the street.
viii. Coordinate all proposed improvements with the pedestrian, parking, mass transit, and traffic circulation concepts in the Transportation Element of this plan.

POLICY 3-D-5 Improve the current parking situation near Times Square through the means outlined in the Transportation Element of this plan. Suggestions from the Core Area Master Plan include:

i. Implement parking management practices that create a positive experience for visitors and business operations.
ii. Encourage the private sector to build and operate expanded parking areas, using public sector assistance if needed for land assembly and regulatory relief.
iii. Expand the supply of shared on-street parking with 165 new parallel and angled spaces.
iv. If the new supply of parking will be inadequate and a parking garage must be built, appropriate locations would be to the rear of new storefronts facing Old San Carlos.

POLICY 3-D-6 Design and construct streetscape improvements for Old San Carlos, Crescent Street, Center Street, and First through Fifth Street. These include on-street parking, new sidewalks, buried utilities, and landscaping.

POLICY 3-D-7 Continue to implement the stormwater management plan (an exfiltration system that integrates the existing storm sewer pipe system and inlets with exfiltration trenches under Estero Boulevard). Similar systems can be installed for private development under parking lots or open space.

POLICY 3-D-8 Provide technical assistance regarding dry flood proofing methods and design to individuals seeking to develop or improve their properties.

POLICY 3-D-9 Enhance Lynn Hall Park with continuing beach renourishment, beach volleyball areas, and possibly a performance pavilion (in the southeast corner of the park next to Times Square). Include a pedestrian path linking the beach and the northern portion of Estero Boulevard.

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FUTURE LAND USE ELEMENT

INTRODUCTION

The Town of Fort Myers Beach was born of dissatisfaction with land-use policies of Lee County. This element of the town's first comprehensive plan provides major revisions to those policies, setting the stage for a new land development code to implement them. This element also meets the basic requirements of state law that apply to all future land use elements.

Although blessed with many natural advantages and a thriving economy, the Town of Fort Myers Beach is beset by serious problems such as heavy seasonal tourist impacts; a risky location on a coastal barrier island; and haphazard enforcement of zoning and building codes since their initial adoption in 1962.

Since the town has already reached 85% of its "build-out" population using 92% of its land mass, it may seem that land-use policies would have little effect on growth patterns. But the inevitable cycles of decay and redevelopment will continue, and if guided properly can result in continual improvement rather than further degradation.

In addition to the general problems facing Fort Myers Beach, several critical land-use issues were examined in depth during this planning process. Some have been discussed in other elements of this plan; others are addressed here, including:

- ✘ **ILLEGAL APARTMENTS:** The prevalence of illegal apartments is evidence of a pervasive lack of code enforcement by Lee County through the years. A full range of options has been considered, from removal to enforcement to amnesty to outright legalization. Also, under what conditions might existing or even future multiple units be acceptable, or even desirable?

- ✘ **NEGATIVE EFFECTS OF FLOOD REGULATIONS:** The town is required to impose rigid floodplain management regulations before federal flood insurance is available to property owners, even though these regulations can block the rejuvenation of older neighborhoods. Without some resolution, existing buildings may continue to deteriorate, or will be rebuilt incrementally outside the current regulations, endangering the town's participation in the federal flood insurance program.

Figure 1, Potential redevelopment form of dense neighborhoods

✘ **POST-DISASTER REDEVELOPMENT POLICIES:** The Lee Plan's current "buildback policy" protects owners of existing buildings, but doesn't take advantage of an opportunity to *improve* the built environment after a natural disaster. What alternatives might be developed that would still protect existing landowners, while laying the groundwork for redevelopment that would result in a *better* community?

✘ **HIGH HOTEL/MOTEL DENSITIES AND BUILDING HEIGHTS:** Although the town's land development code (inherited from Lee County) would no longer allow another hotel of the magnitude of the Diamondhead convention center, until late 1997 it still allowed as many as three motel rooms in place of a single dwelling unit. This multiplier was never consciously established in Lee County's plan, yet it exerts a major influence over land use in a popular resort community like Fort Myers Beach, encouraging property owners seeking maximum gain to build motels rather than more permanent dwellings.

✘ **COMMERCIAL EXPANSION:** This is a common problem in mature resort communities, sometimes threatening existing residential areas. How much more commercial is too much? Or is it the *type* of commercial, or its physical form, that is the problem? In areas that are suitable for commercial development, regulations can be changed so that building walls will "frame" an attractive pedestrian environment, instead of creating isolated buildings in barren parking lots. The most difficult conflicts in potential commercial development lie along Estero Boulevard from the Key Estero Shops to Donora Boulevard. Commercial uses catering to tourists that might extend into this area from Times Square have the potential to conflict with residential areas, and with the civic uses that are making this the center of the island for residents.

The organization of this element is as follows:

- The next section discusses these critical land issues in the order just presented.
- Then a precise map of all existing land uses is presented, along with forecasts of the remaining potential for development on vacant land.
- This plan's general view for various neighborhoods on the island is summarized, followed by a new "future land use map" which reflects the town's approach to land-use issues.
- This element concludes with specific goals, objectives, and policies being adopted by the Town of Fort Myers Beach as its new comprehensive plan.

Figure 2, South end development *(photo courtesy Mohsen Salehi)*

ILLEGAL APARTMENTS

Many communities debate the proper role of "accessory apartments." At Fort Myers Beach these apartments are known somewhat euphemistically as "mother-in-law apartments" despite their common use for out-of-town guests and frequent use as rentals for an additional source of income.

This debate has become particularly complex at Fort Myers Beach because of several factors: the attraction of the beaches to out-of-town guests; Lee County's historically lax and loosely enforced codes, and a strong resort economy. Scattered rental apartments in many different kinds of buildings are just one more variation on an already broad variety of housing types, including hotels; interval-ownership resorts operated like hotels; and condominium buildings operated like interval-ownership resorts. In older subdivisions, two- and three-unit buildings had been legal for many years even on fairly small lots. At Fort Myers Beach, the term "mother-in-law apartments" is sometimes applied to small apartments that cannot be seen from the street; apartments on the ground floor of elevated homes; conventional duplexes; and many other variations.

Accessory apartments cause little concern when they are in commercial zones, and only modest concern when they are managed well and a long-established presence in a neighborhood. If they are small enough and not routinely rented out, neighbors may not even be aware of their existence. In older urban areas, housing types were mixed more widely than the homogeneous single-family neighborhoods that have become dominant in recent decades. There is a counter-trend today toward reintroducing a wider variety of housing types to accommodate the variety of types and sizes of households in our communities, including elderly people living alone, starter apartments for the young, and small apartments for single working people. The task here is to differentiate between a "desirable mix of housing types" and "undesirable intrusions into settled neighborhoods," and to avoid further crowding in an already-congested community.

Lee County's rules on apartments changed drastically with the advent of zoning in 1962, and then again in 1984 when the floodplain regulations and the Lee County Comprehensive Plan both took effect. These various rules have been only loosely enforced at Fort Myers Beach, almost always on a complaint-driven basis (which often occurs as retaliation for unrelated neighborhood disputes). The result has been the worst type of regulation: too complex to understand and unevenly enforced.

The conflicting political challenges that affect policy on this issue include:

- Many town residents hope that most mother-in-law apartments will be banned because they've had bad experiences with them in their neighborhood.
- Many other town residents hope that their own apartments will be made legal, if in fact they're not legal now.
- The state government generally opposes more housing units being built on overcrowded barrier islands.
- The federal government is becoming increasingly vigilant about illegal space being enclosed below elevated houses in a floodplain. They generally don't care how many units are in each building, but they care greatly if they're not properly elevated.

In recent years, some of the rules on accessory apartments have probably been too strict, but often those same rules have been leniently applied and enforced. Any new policy must recognize several realities:

- Many older apartments are completely legal and shouldn't be the targets of repeated investigations based on neighbors' misunderstanding of their legal status;

- It would be best not to "reward" those who have broken the law but not allow the same privilege to others similarly situated, which could happen by legalizing all *existing* apartments on a block while forbidding all new ones;
- The town must avoid potential side-effects such as legalizing unsafe building techniques that could endanger future unknowing residents, or threatening the availability of flood insurance to the entire community, or damaging what adjoining lot owners have reasonably expected to be strictly single-family neighborhoods, or overcrowding existing neighborhoods and aggravating the already high evacuation times along Lee County's coastline.

A broad array of regulatory responses to accessory apartments were considered during this planning process, ranging from very lenient to very strict:

- rezoning of neighborhoods to legalize extra units (including future units);
- amnesty for everything that exists today;
- amnesty for all units that are registered with the town within a fixed period;
- inspections of extra units to determine whether they comply with existing codes (or those in force at the time of construction);
- removal of all units that do not or cannot be made to comply with current codes;
- removal of all units that were built without all proper permits.

Under previous regulations, if a kitchen was included with a suite of rooms, it was always considered to be a separate apartment that was equivalent to a full dwelling unit, equal in intensity to a free-standing house or a fully equipped condominium. For a second apartment in a building to be legal, it would have to meet the following criteria:

- Be located in a zoning district that allows duplexes (or apartments or condos), or have been legally built before zoning regulations were adopted in 1962 and used continuously since that time; and
- Have been built with whatever building permits were required; and
- If built after 1984, it must have complied with the rules that limit any new dwelling units to 6 units per acre (either for that lot or for the entire subdivision). Under typical subdivision characteristics at Fort Myers Beach, this means that second units on lots smaller than 60 by 100 feet are not permitted even when the lot has duplex zoning.

An accessory apartment may be subject to additional taxation or fees. If rented for a period of less than 6 months, the owner must collect and pay the 6% sales tax and 3% tourist tax on all rentals; the Property Appraiser may value the property differently, resulting in a different ad-valorem tax bill; and some public service fees are based on the number of dwelling units, such as garbage pickup and utility connection fees.

Three major alternatives were evaluated regarding the most difficult part of this question, how to deal with existing apartments whose lawfulness may be difficult to determine but which are located in neighborhoods where they may be suitable regardless of existing regulations. Each alternative is summarized below.

Concept 1: Adjust densities to lessen restrictions.

This approach would retain most of the current regulatory framework but would raise density levels slightly from the current island-wide cap of 6 dwelling units per acre. This change would affect areas as small as individual subdivisions, but preferably would group similar subdivisions (such as older subdivisions, or subdivisions near the more commercial areas). Neighborhoods to be included would typically be older subdivisions where duplexes or accessory apartments are fairly common, or which have long-standing duplex zoning.

The result would be to legalize existing accessory apartments or duplexes that violate the post-1984 density standards, provided they meet other requirements. Other lot owners in these neighborhoods would receive the same privilege. This approach would be most useful for adjusting the rules for apartments built *after* 1984 and into the future, as it would have little or no effect on older apartments.

To counter the effects of such a change, it would be appropriate to lower density levels in other locations in the town, for instance in some of the newer subdivisions where lots are larger and only single-family dwellings are desired.

Various safeguard could be used with this approach. For instance, the zoning map could be used to maintain the single-family-only characteristics of neighborhoods so zoned, with only duplex-zoned subdivisions being allowed a second apartment. Or maximum building sizes could be imposed to avoid large additions being added to small homes that would change the scale of the neighborhood. Or a maximum number of second apartments could be specified per block, or per subdivision (or a maximum size could be placed on new apartments). Design guidelines could also be imposed on all second apartments to maintain neighborhood character. Or the increased density level could be written to apply only to existing lots (perhaps those up to about ½ acre); larger lots, or any remaining unplatted tracts, would still be limited to 6 units per acre to avoid creating an unanticipated boom in larger or taller buildings.

Positive effects of this proposal would include:

- Removing an impediment to allowing post-1984 apartments in areas selected by the town as appropriate.
- Maintaining the current style of regulations, rather than implementing a new approach.
- Allowing some smaller new apartments, which could help provide affordable housing to service workers on the island.
- Allowing somewhat higher densities in accordance with the Estero Island CRA's Core Area Master Plan (e.g., along Crescent Street).
- Resolving the conflict between current duplex zoning and a comprehensive plan that allows almost no new duplexes (although this conflict could also be resolved by rezoning those neighborhoods to single-family with a notation that *existing* duplexes remain completely legal).

Some negative effects of this proposal would include:

- Some residents of areas selected for the increase may object to allowing more apartments in their neighborhood.
- No relief would be provided for occasional small apartments in the majority of neighborhoods across the island.

Concept 2: Redefine apartments in owner-occupied homes.

This approach could be used in addition to the first alternative, or in place of it. A new definition could be created that would define a type of accessory apartment that might be permitted in all zoning districts, but it would only apply if the landowner lives on the premises. (An additional requirement could be that this would apply to existing apartments only, and could not be used to allow any new apartments.)

Much of the resistance to accessory apartments comes from people's bad experiences with duplexes that are rented out by absentee landowners, without the kind of close oversight that occurs with on-site management by the property owner. A single apartment in an owner-occupied buildings would be strictly "accessory" to the main unit, and under those conditions would not be defined as a separate dwelling unit that might require changes to existing density caps.

These apartments could be kept available for family or friends, or they could be rented out. In either case, the landowner must be residing on the premises whenever the second unit is occupied. "On the premises" could be defined as on the same lot or on an adjoining lot; and "landowner" could be defined to include an member of the immediate family.

One potential problem with this arrangement would be if unsuspecting purchasers of a home believed they could rent both units, and then made a purchase and financing decision on that basis. To avoid this problem, a requirement could be added for a document to be recorded in the public records acknowledging the status of the second apartment. This document would turn up in every title search, warning prospective purchasers if they haven't been otherwise advised of the owner-occupancy rule.

A somewhat similar arrangement has been tried in many communities, though often with specific restrictions on who may occupy the second unit (e.g., elderly people; family members only; low- and moderate-income families only; etc.). Each restriction involves the government in an ongoing monitoring of the personal status of its residents, something to be avoided wherever possible.

Some positive effects of this proposal would include:

- Some buildings with illegal apartments would likely be converted to owner-occupancy of one unit, since that would be the only way to allow the second unit to legally produce income. The maintenance of the units and the behavior of tenants can be expected to improve under these conditions.
- Many homes with small apartments would become legal without comprehensive plan changes, rezoning hearings, or enforcement proceedings (although building inspections may be required, and the town might insist that these units be included in some form of registry to ensure payment of taxes and recording of the document in the public records).
- A clear distinction would be established between true accessory apartments and duplexes. (The conflict between existing duplex zoning and the comprehensive plan would need to be resolved in another manner.)

Some negative effects of this proposal would include:

- Some homes with illegal apartments would now operate openly as seasonal rentals, potentially increasing wintertime congestion.
- This would be a new concept and might be misinterpreted as being more permissive than it actually is.

Concept 3: Adopt a different measure of intensity

Another approach that is used in some areas is to simply stop measuring residential density or intensity by the number of kitchens. In its place is a system that might be called "zoning by bulk," where the *total floor area* of a building is capped. Owners might provide two small apartments or one large one, at their sole discretion. This method greatly simplifies the regulatory process and avoid the potential for ongoing disputes over the legal use of property.

This approach would use a standard zoning techniques know as floor-area ratio (FAR). The entire square footage of floor space (including upper levels as well as ground floor space) is divided by the square footage of the lot. This ratio could not exceed a fixed figure, for instance 0.50, set for each zoning district. Setbacks and height caps can still be applied as under the existing zoning regulations.

Some positive effects of this proposal would include:

- As with the second approach, many homes with small apartments would become legal without comprehensive plan changes, rezoning hearings, or enforcement proceedings.
- This approach could also provide a maximum size on single-family homes. Although at present there is no house-size problem to be solved at Fort Myers Beach, many coastal communities find that new owners demolish two or more older homes and replace them with one very large new home. These so-called "mega-homes" sometimes change the entire character of a neighborhood; this has become an important issue in Naples and Sanibel in recent years.
- This approach is easily compatible with the new graphic development codes being considered by the town.

Some negative effects of this proposal would include:

- This approach resembles the current regulations for hotels and motels, where two or three rooms are allowed in place of each allowable dwelling unit. Although a familiar concept, this might encourage motel-like conditions in existing residential areas.
- Some number of existing rental units would surely be subdivided into smaller units that could generate a larger amount of rent. This is a selling point in many communities where there is a shortage of affordable housing; at Fort Myers Beach, it would result in more congested conditions during the peak season.
- Some older or poorly maintained homes would be demolished and replaced with more flexible buildings to take advantage of renting as two separate apartments. A likely victim of this trend would be the older cottages that provide so much of the community's character.
- An incentive would be provided for pre-1984 stilt homes to have apartments added on the ground level, since the FAR would not be increased. This would be completely legal but contrary to other attempts to limit flood-vulnerable new construction.

Selected Approach to Accessory Apartments

The third approach described above (zoning by bulk), although initially promising, had enough flaws that it was eliminated from further consideration. The second approach (owner-occupancy) was selected as the best basis for the town's new position on accessory apartments. The first approach (minor adjustments of density levels) was selected as the basis for resolving a few existing problem areas where duplexes were predominant and acceptable, but not currently legal (such as along Santos Road and Anchorage Street). Each of these two approaches would provide *one new path* to a legal apartment.

In summary, for a second apartment to be legal under the new policies, it would either have to comply with all existing density and zoning regulations, or comply with any one of five exceptions. The first three exceptions are already in existence and would be retained:

(A) *If the apartment was built prior to zoning in 1962 and has been in continuous use, it is usually "legally non-conforming" under Section 34-3201 of the land development code and could continue in use until taken out of service.*

(B) *If the apartment was built between 1962 and 1984, it needs to comply with all today's laws except the Lee Plan density cap of 6 units per acre and the floodplain (elevation) requirements.*

(C) *If the apartment was granted a "special exception" under the terms of Section 34-177 of the land development code, then that approval would remain in effect. (This rule can only be used where a lot is large enough to meet the 6-unit-per-acre density cap.)*

The *two new paths* to a legal apartment created under the new policies would be:

(D) *If the building is on a lot that is zoned for two dwelling units, and the two units comply with revised density caps as shown in this plan's new Future Land Use Map.*

(E) *If the building's owner lives on the premises, and the second apartment is already in existence, and it complies (or can be made to comply) with building and floodplain regulations.*

These new policies are implemented through minor changes to the Future Land Use Map (as shown later in Figure 16) and through Policy 4-C-7. If an apartment could not meet the current regulations or any one of these five exceptions (A through E above), then it could not continue in use as a separate apartment.

NEGATIVE EFFECTS OF FLOOD REGULATIONS

Because of its barrier island location, Fort Myers Beach will continue to have it land uses shaped by state and federal regulations. Three programs in particular, Florida's Coastal Construction Control Line (CCCL), the National Flood Insurance Program (NFIP), and the state-mandated "coastal building zone," all will affect the evolution of Fort Myers Beach.

During the early formulation of this plan, three separate issues arose where these programs may have significant impacts:

- The CRA's Core Area Master Plan envisions significant mixed-use redevelopment along Estero Boulevard from Times Square to Pearl Street. A major portion of this plan calls for retailing at ground level, despite state and federal policies to elevate most new construction above expected levels of flooding.
- Some uncertainty remained as to how the major 1991 revisions to the CCCL are affecting the re-use of beachfront land on the entire island.
- Contrary to expected public policy, current regulations discourage landowners from making structural improvements to strengthen buildings against the constant threat from hurricanes.

Because of the importance of these issues, a careful examination was made of the intended and incidental effects of these state and federal programs. Although these programs don't allow much local variation, there may be some opportunities where alterations might further this comprehensive plan. At a minimum, the Town of Fort Myers Beach can avoid developing any policies that simply cannot be implemented because of state or federal regulations.

The impacts of these programs vary depending on the precise location of a parcel of land. Each program has a set of very specific maps or boundaries that delineate their regulatory zones. In order to help interpret these programs, a detailed parcel-level map of Fort Myers Beach was created to reflect the most important zonal data from each program. Because of its scale, that map cannot be reproduced in this plan, but it is posted at Town Hall where it is available for use during meetings and also for review by the public.

The following discussions summarize the effects of each program on Fort Myers Beach.

Coastal Construction Control Line

The state of Florida began regulating shoreline development in 1971. Along the beachfront, the state imposes stricter construction standards and measures to protect beaches in order to minimize damage to the natural environment, private property, and human life. The best-known state regulation is the designation of Coastal Construction Control Lines (CCCL), which are precise lines running just inland of barrier island beaches.

In 1978, the state established its first CCCL at Fort Myers Beach. With a few exceptions, new buildings could only be built on the landward side of this line. (Some existing buildings that lie at least partially *seaward* of that line are Pink Shell's Vacation Villas, Pier One, Ramada Inn, Lani Kai, Bahama Beach Club, Privateer Condo, and Leonardo Arms Beach Club.) Lee County's 1989 comprehensive plan incorporated the 1978 CCCL and forbade practically all development seaward of that line. (However, that policy has since been repealed.)

In 1991, the state established a new and very different CCCL. The new line averages about 200 to 300 feet landward of the 1978 line, often running right along Estero Boulevard. This new line came with quite different rules; it is definitely not a "line of prohibition." Instead the rules are more of a structural building code, administered by the engineering staff of the Department of Environmental Protection (DEP) in Tallahassee. In order to

receive a permit, a proposed building must be designed to withstand the physical force of wind and waves of a 100-year storm; the water pressure of being partially submerged during flooding; and the effects of surrounding soil being lost to erosion (in addition to all normal structural requirements for buildings).

These requirements are very strict and quite complex to understand. Coastal engineers are needed to assist the building's architect and structural engineer in designing such a structure. There is considerable judgment exercised by the DEP permitting staff, because the standards preclude any alterations to the coastal system "*measurably affecting the existing shoreline change rate; significantly interfering with its ability to recover from a coastal storm; [or] disturbing topography or vegetation such that the system becomes unstable, or suffers catastrophic failure. . . .*" [*Florida Administrative Code* 62B-33].

The state statutes also forbid construction anywhere that state projections suggest will be seaward of the high-water line after 30 years' of beach erosion (unless such a line would be further inland than the new CCCL). However, the state has never created comprehensive mapping of a 30-year high-water line; its rule defines this line as "the projection of long-term shoreline recession occurring over a period of thirty years based on shoreline change rate information obtained from historical measurements." The state determines where this line falls on a case-by-case basis when a landowner applies for building permits [*Florida Administrative Code* 62B-33.024].

In typical circumstances, there are several specific requirements that affect the use of the ground level below buildings that are seaward of the 1991 CCCL. No substantial walls or partitions can be placed below the first elevated floor. The only obstructions allowed below the first floor are stairways, elevator shafts, pilings, and "shearwalls" up to 20% of the building's width (and only when they are essential for structural integrity).

As strict as these rules are, they do not preclude many reasonable uses of land, as was feared by many property owners when the 1991 CCCL was adopted. However, buildings must be elevated, typically even higher than buildings elsewhere on the island, and be extremely well-built (hence expensive). High-rise condominiums and hotels, as well as expensive single-family homes, can be built under these rules.

Because of these requirements, however, the only possible way to have ground-floor retail space might be to locate it on the landward side of the shearwalls. The result would be, at best, a discontinuous street frontage because of the 20% rule, hardly conducive to "window shopping" and general pedestrian amenity. The net result appears to be that, under current regulations, new or improved pedestrian-oriented ground-level retailing and restaurants are impractical seaward of the 1991 CCCL except where buildings already exist. The areas so restricted include most of the Gulf side of Estero Boulevard across the entire island (but very little of the Bay side).

One possible alternative to this conclusion might be for the Town of Fort Myers Beach to seek an interpretation or rule change from the state that would allow the 20% to be calculated differently, for instance *across the entire island*. Under this scenario, the town would commit through its comprehensive plan to maintain the current restrictions against high-intensity development along a significant portion of the beachfront, in exchange for some leniency that would allow some new buildings at ground level in designated pedestrian zones.

A similar situation was faced in the community of Long Branch, New Jersey. Long Branch was for many years a very popular beach resort outside New York City, but has fallen into a state of considerable blight. A redevelopment plan for its core area faced severe constraints from state coastal regulations. Long Branch

city officials have been able to reach an agreement with state regulators to substitute their redevelopment plan for the state review process for that specific area. It is possible that a similar approach might be considered for Fort Myers Beach. (Florida's coastal program emphasize beach protection and strength of buildings, however, rather than New Jersey's emphasis on open space and public access to the beach.)

National Flood Insurance Program

The National Flood Insurance Program (NFIP) is a federal program that establishes minimum construction standards to reduce future damage from flooding. It was begun in 1968 as a nationwide system of flood insurance for designated flood-prone areas (where there is a 1% chance of serious flooding each year). Each area is studied to produce a map that indicates how high flood waters might rise, which is known as the "base flood elevation." Local governments then adopt regulations to reduce the impacts of future flooding. In exchange for these regulations, property owners can obtain flood insurance that is guaranteed by the federal government. The most important regulation is that the lowest floor level of most new and improved buildings must be raised above the base flood elevation. The base flood elevations are shown on a series of official Flood Insurance Rate Maps.

There are basically two types of flood zones at Fort Myers Beach. The first are called "A-zones," defined as areas subject to rising water from coastal flooding. Base flood elevations in the A-zones vary across the island, ranging from 11 to 14 feet above mean sea level. The finished level of the first floor must be at or above this height (see Figure 3).

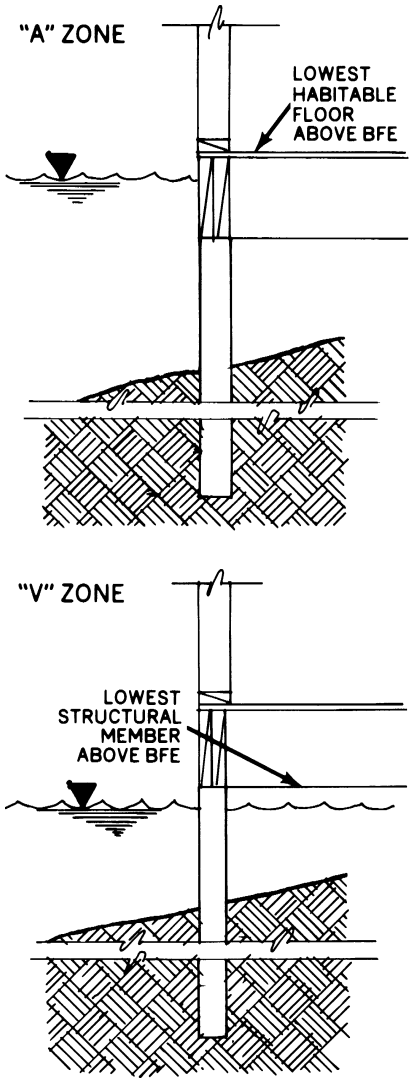

Figure 3, "Base flood elevation" requirements in "A" and "V" zones

For residential structures, fill or exterior walls are allowed below the first floor level, but any walls must be designed to preclude finished living space and to allow floodwaters to flow freely. Parking is permitted; interior partitions are not. (Non-residential structures will be discussed later.)

The second flood zone is a "V-zone" or velocity zone, defined as areas subject to wave action *on top of* the rising water from coastal flooding. V-zones are found immediately along the Gulf of Mexico and inland as far as Estero Boulevard at some locations. Base flood elevations for new buildings in V-zones range from 15 to 19 feet and are measured to the *bottom* of the floor structure, causing new buildings to be somewhat taller there (see the lower drawing in Figure 3). Fill or solid construction is not allowed below minimum floor elevations in any buildings except for pilings, stairwells, or "breakaway" walls that will wash away during flooding. About 16% of the land at Fort Myers Beach is in a V-zone (257 acres); all of the remainder is in an A-zone.

Since the 1970s, flood-prone communities have been required to adopt these regulations in order for their residents to qualify for federal flood insurance. Federally insured lenders cannot provide mortgages in these communities on property that does not have flood insurance. As a result, almost no flood-prone community can exist without participating in the NFIP, since few private companies offer comparable flood insurance.

NFIP inspectors visit local governments every year to assess their enforcement of these codes. Any variances to these codes are strictly scrutinized to

determine if they might jeopardize the community's continued participation in the NFIP.

Lee County began participating in the NFIP in 1984 immediately after all of its coastal areas were mapped. Fort Myers Beach was covered under the county's program until the end of 1996, at which time it began the process of joining the program on its own. The previous Lee County regulations are currently in effect in Section 6-401 through 475 of the Fort Myers Beach Land Development Code; the town now has the responsibility for modifying and updating them.

As to residential buildings, these rules have become a fact of life in all coastal communities. They cause a hardship to many elderly people who have difficulty climbing the required entrance stairs in homes; they often create a strange pattern in neighborhoods with old and new houses; and they reduce the desirable connection between indoor living space and Florida's pleasant outdoors. However, these factors are generally outweighed by the desirability of keeping new homes out of harm's way during recurring floods. There is little prospect or reason for changing this development pattern as it applies to *new homes*.

Properties Repeatedly Damaged By Flooding

A number of structures within the town have experienced damage as a result of past floods. Lee County considered a program to identify individual buildings that have been repeatedly damaged by flooding, as evidenced by claims under the National Flood Insurance Program (NFIP) of $1,000 or more since 1978. If damaged again by more than 20% of their value, these buildings would have to be brought into compliance with current standards for new construction before other major improvements were made to the building. However, those regulations weren't adopted because the extreme costs to a few homeowners did not justify the potential benefits.

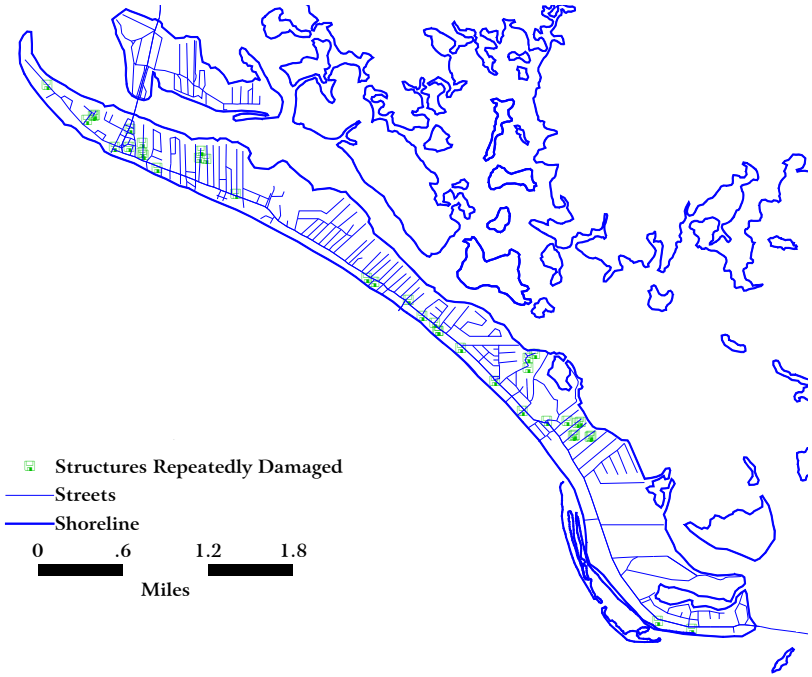

Figure 4, Repeated Flood Damage

That program identified the properties in Figure 4 (as described in more detail in the Coastal Management Element of this plan). No meaningful pattern appears on the map that would suggest neighborhood-wide flooding remedies. Of particular interest, however, is that none of the floods that caused considerable damage at Fort Myers Beach in the past 15 years were even minimal hurricanes; in fact two weren't even strong enough to be considered tropical storms.

Lee County is conducting a detailed assessment of the costs of improving the buildings in the unincorporated area that have been repeatedly damaged by flooding. The county hopes to obtain 75% federal funding for many of the actual improvements. If the county is successful, the town may be able to qualify for a similar grant.

Hazard Mitigation Through Development Regulations

There are two areas where current floodplain regulations may conflict with good planning practice and other public goals.

The concept of hazard mitigation has become a high priority in the field of emergency management in recent years. Essentially, this kind of mitigation means *actions to prevent, avoid, or reduce the impacts of a hurricane*, especially actions that can be taken in advance to reduce the vulnerability of people and property to injury from a hurricane or tropical storm.

Yet some current floodplain regulations actually work *against* pre-storm hazard mitigation. This was acknowledged recently by James Witt, director of the Federal Emergency Management Agency (FEMA), who said that his agency's current approach:

> *"does not provide incentives to take proactive mitigation actions. With the exception of the flood program where it is required in return for insurance, our current approach only provides for mitigation after there has been a disaster. We need to consider a more comprehensive strategy for mitigation, especially in the pre-disaster environment."*

A recent publication from the Florida Department of Community Affairs (DCA) quoted Mr. Witt approvingly on this matter, and went on to observe that:

> *"Retrofitting and flood mitigation are integral to floodplain management. However, they are also excellent forms of pre-disaster activities that involve undertaking and performing corrective and preventive measures to existing houses and businesses, electrical and mechanical equipment and water and sewer lines, as well as land areas"* [*Retrofitting and Flood Mitigation in Florida*, DCA, 1995].

DCA is taking this concept to great lengths, recognizing that post-disaster property damages can be dramatically lowered by modifying existing structures. DCA proposed a "residential construction mitigation program" to the legislature in 1997. This program would help lower-income residents to retrofit their homes to increase their safety and protect their investments *before* a disaster occurs, using low-interest loans or grants as an incentive to structurally harden their homes against damage [*Breaking the Cycle: How Starting on Long-Term Redevelopment Can Help Florida Avoid Economic Disaster*, DCA, 1996]. The legislature appropriated $3.1 million from their Catastrophic Hurricane Fund for a pilot program in 1997-98 and an additional $2.5 million in 1998-99.

Unfortunately, these insights have not percolated to the level of some program administrators in these very agencies, resulting in the ironic situation of DCA using public funds to *subsidize* an activity that is actually restricted by existing laws and interpretations.

For instance, the current floodplain regulations that are required by federal law contain disincentives against improving older homes. Homes built in Lee County before 1984 were not required to be elevated above the base flood elevation. Since then, elevation requirements have been enforced for new homes (and for "substantial improvements" that cost more than 50% of an existing home's market value) through the building permit process. This is one example of the "50% rule" that causes so much difficulty for owners of older buildings when they are trying to maintain and upgrade their property.

The 50% threshold was chosen as a compromise between the extremes of (1) prohibiting all investment to older structures built below the base flood elevation, or (2) allowing buildings to be improved in any fashion without regard to the hazard that would be perpetuated by allowing these buildings to be renewed indefinitely without being elevated above the level of expected floods. The first alternative would have caused an extreme hardship on owners of nearly all existing buildings, since even normal deterioration could not be countered. The second alter-

native would have allowed uncontrolled continuation of a perilous situation, with buildings and people left in harm's way indefinitely. The 50% threshold is thus a compromise between competing policy goals [Answers to Questions About Substantially Damaged Buildings, FEMA, 1991].

The 50% rule is analogous to the standard zoning principles governing non-conforming buildings. Put most simply, older buildings that don't meet today's codes are legally tolerated but are expected to "wither away" over time. This withering is encouraged by rules that prevent owners from constantly renewing their buildings to counter the effects of time.

Owners of older buildings frequently rebel against the concept of forcing the deterioration of their property. Many local governments also have begun to question the wisdom of this theory, especially in light of its negative effects on affordable housing and on historically interesting buildings and neighborhoods. This questioning sometimes results in what seems to be innocuous changes to the minutiae of zoning law, changes though that mean survival or destruction to many older buildings.

These changes have moved forward in Lee County government in recent years. "Non-conforming buildings" now can be expanded (provided the addition does not increase its nonconformity). Buildings in historic districts are now provided with relief from some zoning and building codes. Redevelopment overlay districts provide new rules that are conducive to the survival and rebirth of older commercial areas. And the 50% rule in the floodplain ordinance was changed in 1992 so that the 50% applied to cumulative expenses over a five-year period, rather than over the life of the building.

Two more simple changes could be made to the floodplain ordinance to encourage healthy investment in older buildings at Fort Myers Beach. One is to provide more flexibility in determining "50% of what?" A property owner can be given the option of using the official appraised value of the building, or of submitting an independent appraisal of its value.

Another valuable change would be to exempt structural improvements that will strengthen a building before a hurricane hits (rather than waiting to provide disaster aid or expedited permitting to repair damage that could have been avoided). Such a policy would allow property owners to strengthen their buildings by installing storm shutters or shatterproof glass; strengthening roof attachments, floors, and walls; and minor floodproofing. One way the town can encourage strengthening by excluding these costs from the 50% rule.

The following language could be inserted into Section 6-405 of the Land Development Code to accomplish both changes:

> *Substantial improvement* means any reconstruction, rehabilitation, addition or other improvements to a structure, the cost of which equals or exceeds, over a five-year period, a cumulative total of 50 percent of the market value of the structure before the start of construction of the improvement. Costs of alterations or improvements whose express purpose is the mitigation of future storm damage are excluded from this cumulative total provided they do not exceed 50 percent of the market value of the structure over a one-year period. Examples of such mitigation include the installation of storm shutters or shatterproof glass; strengthening of roof attachments, floors, and walls; and minor floodproofing. The market value of the structure should be (1) the value of the building prior to the start of the improvement, or (2) in the case of damage, the value of the building prior to the damage occurring. Value will be as determined (for the structure only) by the Lee County Property Appraiser or by a private appraisal acceptable to the coordinator. The~~is~~ term "substantial improvement" includes structures which have incurred substantial damage, regardless of the actual repair work performed. The term does not, however, include either any project for improvement of a structure to correct existing violations of state or local health, sanitary or safety code specifications which have been identified by the local code enforcement official and which are the minimum necessary to ensure safe living conditions, or any alteration of a historic structure, provided that the alteration does not cause the structure to lose its historic designation.

Commercial Buildings

The floodplain regulations for commercial buildings are not identical to those for residential uses. In A-zones, commercial buildings are technically allowed to include space below the base flood elevation. However, their outer walls must then be "dry floodproofed" so as to be impervious to water and able to withstand complete inundation without collapsing. This is done by sealing the building walls with waterproofing compounds and some type of impermeable shielding over doors and windows to prevent floodwaters from entering at any point.

Dry floodproofing is difficult to achieve because of the obvious expense of making a building also act as an unfloatable boat. It is difficult enough to keep all water out; it is even more difficult to make a building strong enough to withstand the water pressure that will be caused by inundation, which will tend to collapse the building inward. Dry floodproofing has been considered relatively easy for concrete block construction up to a flood depth of about three feet, but difficult beyond that height because the pressure that standing water will exert on the floor and walls (see Figure 5). The first dry-floodproofed building at Fort Myers Beach is the new Waffle House restaurant between Crescent Street and Primo Drive.

Alternatively, the lower area can be "wet floodproofed" with flood waters being allowed to enter and exit the building without damaging the structure. "Wet floodproofing" is suitable for garages but obviously not feasible for stores and offices.

HYDROSTATIC PRESSURES BY WATER DEPTH	
HEIGHT (H)	P_H (LBS/SQ. FT.)
1	62.4
2	124.8
3	187.2
4	249.6
5	312.0
6	374.4
7	436.8
8	499.2
9	561.6
10	624.0

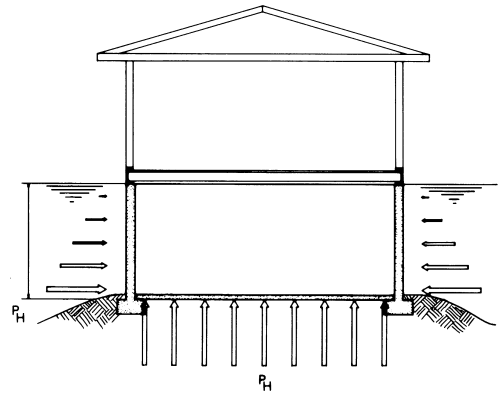

Figure 5, Hydrostatic pressures on a dry-floodproofed building

Coastal Building Zone

The State of Florida now requires its local governments to designate a "coastal building zone" which includes all of Estero Island. Several stricter standards are mandated for this zone, including: maintenance of public accesses to beaches; increased resistance of new buildings to high wind speeds; and disclosure statements to purchasers of property seaward of the CCCL. For present purposes, there is one troublesome provision, the apparent inclusion of the 50% rule in the state statutes through a definition of "substantial improvement" similar to the one required by FEMA [*F.S.* 161.54(12)]. Because of its inclusion directly in the statute, it is less amenable to refinements to carry out desired coastal policies at Fort Myers Beach. Interestingly, while being defined, this term is never explicitly used in the statute.

Lee County's Land Development Code was amended in 1991 to implement this statute (through Section 6-331 through 368). Lee's code explicitly makes the stricter standards apply to all new construction and to "substantial improvements" to existing buildings, using the definition just discussed from the state statute. Still, the purpose of this term in this context is not clear.

State officials who monitor local compliance with state and federal coastal regulations have suggested that this definition is mandatory for flood insurance purposes everywhere in the coastal building zone. However, this is only one possible interpretation of the statute, and not the obvious one; it also conflicts with the hazard mitigation initiative of the very agency that employs these officials. The Town of Fort Myers Beach can choose a different interpretation to allow flood-vulnerable buildings to be mitigated.

Consequences for Redevelopment Planning

Returning now to the most important planning issue that led to this examination of the effect of coastal regulations on future rebuilding: What is the impact of mandatory flood regulations on the CRA Times Square redevelopment plan, especially the portion of this plan that calls for mixed-use development with retailing at ground level along Estero Boulevard from Times Square to Pearl Street? (That redevelopment plan is described in the Community Design Element.)

There are two separate impediments to implementing the CRA plan: uncertainties caused by the "dry floodproofing" requirements in the NFIP's A-Zones, and the regulations for new buildings seaward of the CCCL.

The question is whether either of these requirements will prohibit the successful rejuvenation of Times Square, Old San Carlos Boulevard, and the Estero Boulevard frontage down to Pearl Street. It is important to determine whether it is technically and financially feasible to rebuild a high-quality pedestrian environment there. The University of Florida's study for the CRA had suggested elevating retail spaces *above* the flood elevations, rather than dry floodproofing; but that approach poses many practical problems of its own (unless the existing small lots were consolidated and redesigned to accommodate an elevated system of boardwalks). If neither of these approaches are feasible, then existing buildings will continue to deteriorate, or will be rebuilt incrementally outside the current regulations (endangering the town's participation in the National Flood Insurance Program), or will be redeveloped in some presently unforeseen manner.

The following conclusions have been drawn from this analysis and an examination of the maps depicting the various regulatory zone:

- The flood-insurance prohibition against any new ground level enclosures in the V-zone will have only minor effects on carrying out the CRA master plan because only a few buildings, such as the Pier Peddler/Dairy Queen, are in the V-zone. (However, the V-zone covers almost all of the Gulf side of Estero Boulevard from the Red Coconut to the Catholic Church; it would not be practical to include any of those areas in an expanded master plan for pedestrian-oriented commercial space.)
- The flood-insurance requirement to dry floodproof all new ground-level commercial space in A-zones applies across the remainder of the CRA master plan. The only significant difference is the specific elevation that floodproofing must extend up to: 14 feet above mean sea level in Times Square and the Gulf side of Estero Boulevard; and 12 feet along Old San Carlos. With existing ground levels averaging about 6 feet above sea level, this would mean dry floodproofing up to 8 and 6 feet above ground level respectively. This distinction would improve the technical feasibility of dry floodproofing (making it less expensive to accomplish along Old San Carlos).
- The CCCL is a bigger impediment than the flood insurance requirements to commercial redevelopment along the Gulf side of Estero Boulevard. Unless the state of Florida is willing to look at this new plan for Estero Island as a whole, the 20%-per-parcel rule will preclude much of the lively streetscape envi

sioned in the CRA master plan, and ultimately could phase out most ground-level activity on the Gulf side of Estero Boulevard.

- If such changes to the CCCL regulations cannot be obtained, Old San Carlos and the Bay side of Estero Boulevard would become the most practical locations for commercial redevelopment.
- Full-height dry floodproofing is the most desirable alternative for providing commercial uses at ground level in pedestrian areas; the only remotely practical alternative is the University of Florida's elevated walkway concept, which is less desirable because is requires an expensive walkway system which detracts from, rather than adds, to the sidewalk environment.

Formal hazard mitigation policies are found in Policies 4-E-2, 4-E-3, 4-E-4, and 4-E-5 of this comprehensive plan.

POST-DISASTER REDEVELOPMENT POLICIES

When a passing hurricane destroys part of a community, difficult rebuilding questions arise immediately. Landowners have spent thousands and sometimes millions of dollars in developing their property. Not allowing landowners to rebuild would place a great economic burden upon them. But allowing redevelopment in the same manner might expose it to destruction in the next big storm.

Current Build-Back Policy

The current comprehensive plan contains a "build-back" provision initiated by Lee County in 1989 that allows post-disaster reconstruction at existing density levels, but requires improved resistance to future storms. This provision has been popular among landowners at Fort Myers Beach because of the greatly reduced density levels that would otherwise apply after a major storm. However, it falls far short of a redevelopment plan that would ensure that the community would be improved in other ways during the inevitable rebuilding process.

If a disaster strikes, structures that comply with all current regulations could of course be rebuilt in exactly the same form. However, many buildings at Fort Myers Beach do not comply with current regulations, particularly the maximum density level of six dwelling units per acre. When one of these structures is damaged greater than 50% of its current value, the build-back policy allows it to be rebuilt, but instead of meeting *all* current regulations, the new building can include the original number of dwellings and square footage. But it must meet all current flood, structural, and coastal setback requirements. The lowest floor level must be elevated; land uses are severely limited on the ground level; and break-away walls may be required. (Height and setback requirements might even be waived if needed for the building to comply with the new flood and structural requirements.)

One problem with the build-back policy is its limitation to post-disaster situations (such as floods, wind damage, or fire). Federal and state policy has been shifting in recent years to pre-storm mitigation of known hazards, instead of waiting for disasters to occur (as discussed in the previous section). The current policy is as inflexible in this regard as the National Flood Insurance Program.

Other possibilities for improving the build-back program in the future include:

- Mandating improved building form during the rebuilding process (some examples might be maintaining view corridors to the Gulf of Mexico, or allowing some mixed uses in residential-only towers, or placing buildings nearer the street).
- Allowing density transfers during the rebuilding process if they meet some stated public purpose.
- Creating a registry of pertinent building details (such as exact heights and exact building footprint on the ground) so that permitting would be eased in a post-disaster situation;

Modified Build-Back Policy

This plan makes one immediate change in the build-back policy. Owners of existing buildings that exceed the current density or height limits would no longer be categorically forbidden from rebuilding; they will be offered an opportunity to replace the building for the same use at up to the existing density and intensity (up to the original square footage, as already provided for post-disaster build-back) without waiting for a natural disaster (see Policy 4-E-1). Owners would request this option through the planned development rezoning process, which requires a public hearing and notification of adjacent property owners. The Town of Fort Myers Beach would approve, modify, or deny this request based on the conformance of the specific proposal with

this comprehensive plan, including its land-use and design policies, pedestrian orientation, and natural resource criteria.

The town could also provide additional incentives for "pre-disaster" build-back. For instance in areas designated "Pedestrian Commercial" on the future land use map, dry-flood-proofed commercial space below elevated buildings could be considered a bonus that would be permitted in addition to replacing the previous building's interior square footage. Policy 4-E-1 was modified in early 2009 to allow this additional incentive.

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HISTORICALLY HIGH DENSITIES

Constant concerns at Fort Myers Beach include the excessive crowding during the winter and fears over the ability to evacuate the island when a hurricane approaches. Existing development was approved without regard to the adequacy of the road system (although the impacts of tourism and day visitors are an equally important factor in winter crowding).

Multifamily Densities

The density of multifamily development at Fort Myers Beach averages 17.2 units per acre (in 1996, 5,269 units, including duplexes, on 305.5 acres). Table 4-1 provides the densities of several multifamily developments across the island.

Table 4-1 — Multi-Family Densities

Name	***Address***	*# of dwelling units*	*# of total acres*	*units per acre*	*stories tall*
Marina Towers	8401 Estero	63	2.77	**23**	9
Sun Caper	7930 Estero	69	2.75	**25**	10
Leonardo Arms	7400 Estero	180	6.28	**29**	7
Ocean Harbor	4741 Estero	150	9.70	**15**	16
Caper Beach Club	2810 Estero	103	1.27	**81**	12
Batiki West	1511 Estero	60	1.86	**32**	7
Pink Shell Beach Club I	327 Estero	15	0.83	**18**	7

At the older (northwest) end of the island, existing development has achieved a desirable level of "compactness" which allows people to move comfortably about without driving everywhere. Yet the south end of the island has not done so despite higher densities there.

Compactness is not the same as density. Compact development can occur with densities as low as four units per acre if homes aren't stacked vertically and if driveways and garages do not dominate the street side of houses and businesses.

High-rise buildings surrounded by ground-level parking lots can almost never achieve compactness, because higher densities are translated into taller buildings requiring ever larger parking lots. "Compact" high-rise development would require extensive public transportation and parking garages to avoid separating buildings so widely that compactness is lost.

Without compactness, high densities require an advanced system of highways and parking facilities to accommodate most movement by car. Parking each car requires 275 square feet (counting aisles and driveways). That same car takes up as much road space as 40 bus passengers or 12 bicyclists. The wide highways and large parking lots needed for "automobility" create barriers to movement by all other modes of travel.

The following section examines specific density issues for hotels and motels.

Hotel and Motel Densities

Until a 1997 interim change, town regulations allowed up to three hotel/motel units in place of each regular dwelling unit. This ratio is substantially lower than the county's rules in effect until 1994, which allowed convention hotels at 50 rooms per acre, but it is still a high ratio given the overcrowded conditions at Fort Myers Beach.

This section provides some history as to how this issue has been treated in the past, and outlines an alternate plan for future hotels and motels.

At Fort Myers Beach there is only a slight distinction between motels and some other types of accommodations for tourists. The Land Development Code must make a clear distinction, however, if it provides a density multiplier or bonus for motels. Current regulations define a motel (or hotel) as:

> *a building, or group of buildings on the same premises and under single control, consisting of ten or more sleeping rooms*

which are kept, used, maintained or advertised as, or held out to the public to be, a place where sleeping accommodations are supplied for pay to transient guests or tenants.

In order to qualify for density multipliers, motels also must be registered with the state and must pay Lee County's tourist development tax. Hotels and motels are further divided into "efficiency motels" (primarily for tourists) and "business motels" (all others).

Limited kitchen facilities are allowed in efficiency motels, but they may not be as extensive as a separate room. A building that looks like a motel but does not meet all of these tests is treated by current regulations as multifamily housing, and is therefore subject to much stricter density regulations.

A new motel (or hotel) that qualifies under the current zoning regulations can have substantially more rental units than would be allowed for multifamily housing. Under the current rules, a minimum of three "business" hotel/motel units are guaranteed for each *one* regular dwelling that would otherwise be allowed (in zoning districts where motels are permitted); this ratio is two for one for "efficiency" motels. With a maximum number of new dwelling allowed under the comprehensive plan of 6 units per acre, 18 hotel or motel units can be built. In addition, a landowner can request higher densities yet during a planned development rezoning (with no maximum cap), provided that the Town Council finds that the higher density would be "compatible with the surrounding area." (Due to concerns over these density multipliers, they were suspended by ordinance in late 1997 pending the completion of this comprehensive plan.)

These density multipliers were established by Lee County in 1994, when it repealed the previous rule that categorized hotels and motels into three types: transient (25 units per acre); efficiency (2.5 units for each multifamily dwelling unit); and convention (50 units per acre).

Lee County has since added new restrictions on motel densities in the unincorporated area, eliminating the dubious distinction between efficiency and business motels in favor of density ratios based on the actual floor area of each rental unit, regardless of unit type. For *each* allowable dwelling unit, the following number of new hotels and motels will be allowed:

- Three rental units under 425 square feet; or
- Two rental units under 725 square feet; or
- One rental unit over 725 square feet.

However, if approved through a planned development rezoning, even higher ratios may be approved, "provided all other aspects of the development (height, traffic, intensity of use, etc.) are found to be compatible with the surrounding area."

To illustrate the numerical densities with actual examples, Table 4-2 provides official data on the density of a selection of existing motels at Fort Myers Beach.

Table 4-2 — Hotel/Motel Densities

Name	***Address***	*# of rental units*	*# of total acres*	*rental units per acre*
Lani Kai Island Resort	1400 Estero	100	0.98	**102**
Ramada Inn	1160 Estero	70	0.87	**80**
Lighthouse Island Resort	1051 5th St.	40	0.72	**56**
Outrigger Beach Resort	6200 Estero	144	3.92	**37**
Days Inn	1130 Estero	33	0.98	**34**
Best Western	684 Estero	75	2.87	**26**
Buccaneer Resort Inn	4864 Estero	25	0.98	**26**
Holiday Inn	6890 Estero	103	3.91	**26**
Neptune Inn	2310 Estero	65	2.86	**23**
Sandbar Resort	5480 Estero	12	0.61	**20**
Carousel Motel	6230 Estero	26	1.52	**17**

In 1996 there were about 1227 motel rooms in the town of Fort Myers Beach using a total of 32.3 acres of land, yielding an average density of 38 rooms per acre. This is more than double the average multifamily density of 17.2 dwelling units per acre.

Since adoption of the 1984 Lee Plan, the density of new multi-family buildings has been limited to 6 dwelling units per acre, quite low compared to the average *existing* multifamily density. Much of the multifamily development that has taken place since 1984 has taken advantage of pre-1984 approvals or court orders (for example, at Bay Beach and Gullwing). Because of the substantial density multipliers that Lee County has allowed for motels and the continued demand for short-term rental units, landowners without vested approvals or court orders are being provided an incentive to build motels instead of condominiums.

An unanswered question is the economics of renting motel rooms versus renting full dwelling units (with kitchens and bedrooms). Conflicting testimony has been presented on this question during the preparation of this comprehensive plan. Some have asserted that the rental market for condominiums (or suite-type motel units) is poor relative to the supply; and others have stated that full-sized condominiums remain the best and most profitable rental market at Fort Myers Beach.

Two charts illustrate pertinent tourism data collected by the Lee County Visitor and Convention Bureau. Figure 6 shows occupancy rates by month for the past five years (for motels, hotels, and other short-term rentals). A slight "flattening" of the February-March peak season is evident, along with the strengthening of tourism during November, January, April, and May. Figure 7 compares the 1995 average daily rates with other parts of Lee County, with Fort Myers Beach remaining well below Sanibel and Captiva but above Fort Myers, Cape Coral, and Bonita Springs.

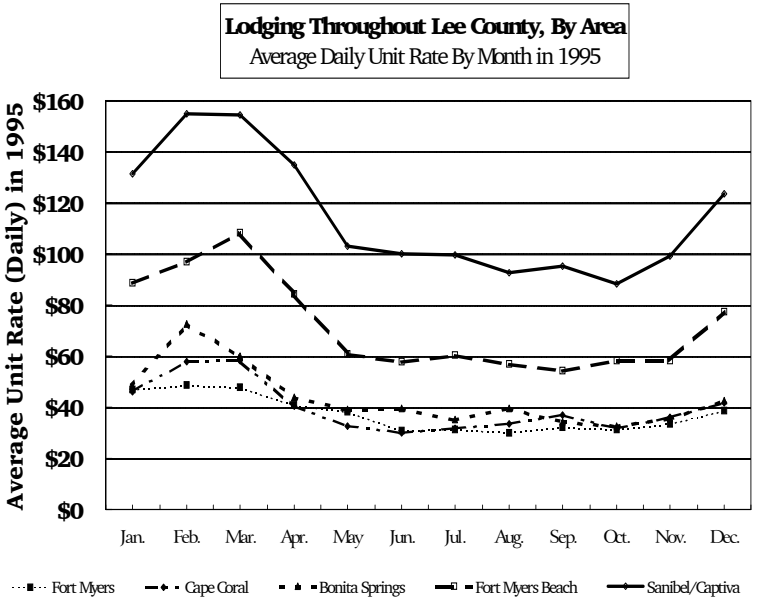

Figure 6, Comparative lodging rates

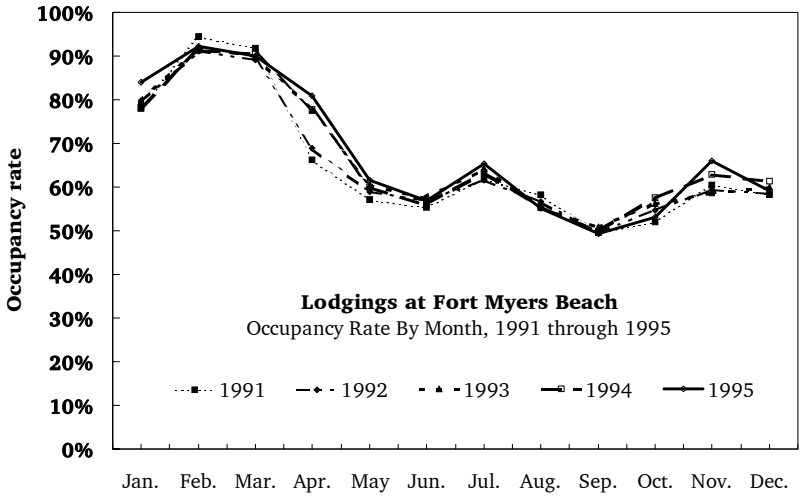

Figure 7, Occupancy rates at Fort Myers Beach

Several Florida coastal communities were surveyed to determine how they regulate motel densities.

The city of Sarasota allows unlimited hotel and motel units anywhere in their downtown; multifamily units are also allowed there at 50 dwelling units per acre. Sarasota also allows motels by special exception in several of their higher-intensity multifamily districts (those allowing up to 18 through 35 dwelling units per acre). Two hotel or motel units are allowed for each dwelling unit.

The city of Deerfield Beach allows hotels and motels by special exception in its highest-intensity multifamily district, which allows up to 25 dwelling units per acre. If approved, motels may have up to 38 units per acre.

The city of Sanibel has what might be called a *reverse multiplier* for all resort housing (which includes motels and any other units that can be rented for less than 4 consecutive weeks). In its highest density category, 5 regular dwelling units are allowed per acre, with an assumed capacity of 2.2 persons per unit. Where resort housing is allowed, its density is calculated to maintain the same *presumed number of persons*. This is an attempt to gauge the relative impact of varying housing types by projecting the number of residents, rather than by measuring the physical size or other measure of impact. Table 4-3 shows Sanibel's presumed average rates, and the resulting density multiplier.

As a consequence of Sanibel's low multifamily density cap and its "reverse" multiplier, only one new motel has been built in the 20+ years since incorporation, and it was not a financial success. A similar approach might cause the same result at Fort Myers Beach.

Table 4-3 — Sanibel Density Multipliers

Type of Resort Housing Unit	*Presumed Average Occupancy Rate*	*Calculated Multiplier*
Motel rooms and 1-bedroom units up to 600 sq. ft.	2.5 persons per unit	0.88
2-bedroom units	3.5 persons per unit	0.63
3-bedroom units	4.25 persons per unit	0.52
4-bedroom units	5.0 persons per unit	0.44

In summary, density multipliers for motels are not universally used. Where high densities are allowed for multifamily units, multipliers aren't necessary. Where density caps are relatively low (such as Sanibel and Fort Myers Beach), some positive density multiplier will be needed if new and refurbished motels are to play an important role in the community. However, it is clear from recent history that density multipliers that are too high will result in buildings that will overwhelm the small-town character of most of Fort Myers Beach.

The current single density cap across the entire island could lead to a situation where attempts to protect quiet residential neighborhoods could stifle the tourism economy in the main business district. Since most communities do not put density multipliers for motel rooms in their comprehensive plans, they could be contained in the Land Development Code, for instance by having lower density multipliers for motels in multifamily zones than for those in commercial zones. (Note that *new* motels are not allowed in multifamily zoning districts, but *existing* motels there may be completely rebuilt at up to whatever density is currently allowed.)

The selected solution for the Town of Fort Myers Beach is to adopt different density multipliers based on land-use categories on the new Future Land Use Map. These multipliers will only apply where guest units (which include motels) are permitted in a specific zoning category. The exact multipliers will be contained in the Land Development Code; an example might be:

- In the "Mixed Residential" category, the multiplier might be 1.5
- In the "Boulevard" category, the multiplier might be 2.0
- In the "Pedestrian Commercial" category, the multiplier might be 2.5, provided that some or all parking is provided in off-site shared lots.

Policy 4-C-6 describes this concept, which will be implemented through forthcoming revisions to the Land Development Code.

Throughout the 1990s, one of the biggest concerns of town residents was the continuing expansion of commercial uses. Only five years after this plan was adopted in late 1998, property values were escalating at previously unforeseen rates, and suddenly the opposite trend was being seen: the frequent conversion of longstanding commercial uses, primarily hotels and motels, into upscale condominiums.

The health of the lodging industry has always been cyclical, but the new wave of escalating property values threatened to change the town's entire economy. These increases were driven by real estate investors and condominium buyers whose optimism for continuing increases in underlying property values drove the real estate market continually upward. In the absence of vacant land to construct new condominiums, the land under viable hotels and motels was suddenly worth far more than the businesses themselves.

While the town has long hesitated to encourage new hotels and motels given the past overbuilding at Fort Myers Beach, the loss of the town's active and healthy lodging industry would mean a permanent change to the character of Fort Myers Beach. Although tourism is sometimes overwhelming to permanent residents, tourism also provides benefits to residents, including investment and recreational opportunities, employment, and choices for dining and entertainment that are far beyond what would be available if they were serving the resident population alone. Many residents have chosen to make Fort Myers Beach their home for these very reasons.

The pressure for these hotel/motel conversions had abated somewhat by 2008, but the situation is likely to reoccur whenever the real estate market recovers. The town's options to respond to such situations are fairly limited. The most effective options are simply to ensure that town policies and regulations do not inadvertently contribute to the displacement of existing hotels and motels. To this end, the pre-disaster buildback policy was clarified in early 2009 to ensure that large condominium buildings cannot be substituted for existing hotels and motels in the guise of buildback (see Policy 4-E-1). New condominiums or other residential buildings can still replace older hotels or motels, but the new structures would have to meet the current more restrictive density cap.

The comprehensive plan was also amended in early 2009 to establish as general town policy the desirability of retaining a wide variety of short-term lodging establishments that support the town's economy and walkability (see Policy 4-A-9),

Policy 4-A-10 was also added to specifically allow condominium ownership of lodging establishments (provided they will be operated as hotels or motels). Detailed requirements will be contained in the Land Development Code, for instance requiring licensing by the state as a hotel or motel and regular payment of tourist and sales taxes on all rentals, limiting stays to a fixed period, disallowing all permanent residency, and requiring a staffed front desk to arrange transient rentals.

BUILDING HEIGHTS

One of the legacies of the changing regulatory climate is the wide variety of building heights at Fort Myers Beach. Tall high-density housing became popular in the 1970s after a second bridge was built at the south end of the island. After 1984, high-density buildings were no longer allowable (although several are still being built due to vested development orders, court orders, and Lee County's pre-incorporation approval of a large convention hotel).

Tall buildings never became illegal, but the lower density limits imposed in 1984 made them impractical in most circumstances. In 1997 the Town Council imposed an interim height cap of two stories about the lowest habitable floor:

> *"No building or structure shall be erected or altered so that the height exceeds two stories above the lowest habitable floor; however, in no case shall a building or structure be erected or altered so that the highest point of an exterior wall, exclusive of the roof system, exceeds 25 feet above the base flood elevation."*

This action was taken because the Local Planning Agency was studying several types of height restrictions while preparing this comprehensive plan. The Town Council wanted to ensure that new highrises would not be issued building permits while this plan was being completed.

The LPA inventoried the height of existing buildings along all of Estero Boulevard as part of their research; a sample of this inventory is shown in Figure 8. From that inventory, a 3-D map was created that depicted all buildings along Estero Boulevard that were four stories or more *above ground*, with their actual shapes and relative heights (see a portion of that map in Figure 9). This map allowed an easy visualization of the location and concentration of existing tall buildings.

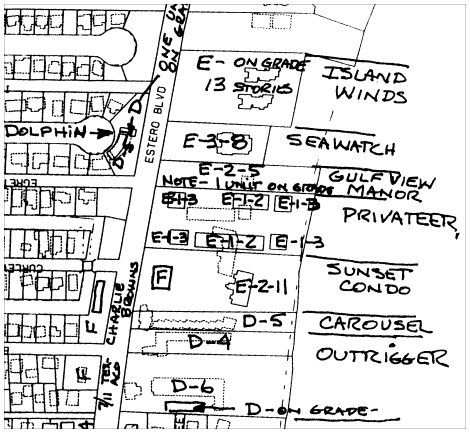

***Figure 8**, Sample of inventory data*

***Figure 9**, Resulting three-dimensional map*

In evaluating the effects of new height regulations, at least five different situations were considered:

1. Totally new development on one of the few vacant sites.
2. Replacement of existing buildings to *increase* intensity on a site.
3. Redevelopment of a deteriorating or obsolete building (often retaining the exact intensity of the existing building).
4. Redevelopment that actually *reduces* intensity in some way.
5. Development approvals that have vested rights and cannot be altered.

Several different concepts were considered for new permanent height restrictions:

- **Height districts:** two or more districts (encompassing all of the island) with different height limits. The purpose would be to ensure that new buildings on most of the island will not be high-rises, but to allow some taller buildings in delineated areas where a high-rise patterns had been firmly established. Two reasons for doing this would be to allow

older tall buildings to be replaced once they become obsolete, and to provide a measure of fairness for a few remaining parcels that are virtually surrounded by high-rises. The public policy behind these height districts would be clearly articulated so that they wouldn't be characterized as illegal "spot-zoning."

- **Single height limit:** a single height cap, but varied according to some new type of vesting based on existing building types. This would resemble the current buildback rules, but would apply to voluntary rebuilding as well. Under this approach, existing tall buildings could be replaced at the same height (or somewhat higher or lower), but *no* new tall buildings could be built.
- **Designated infill parcels:** allow some taller buildings between existing tall buildings by defining eligible infill parcels in words rather than on a map (for instance, "parcels with existing tall buildings within 200 feet on two or more sides"). These new buildings could be capped at a percentage of nearby buildings (for instance, no more than 75% as tall as the shorter of the two nearby buildings).

In each case, the analysis assumed that the sandy beach would no longer be calculated as if it were developable acreage, and motel densities were to be adjusted to appropriate levels (see previous discussion).

New regulations for Fort Myers Beach could also allow extra height in exchange for public amenities, for instance for providing a view corridor to the water, or a beach access point, or a trolley stop (if one is appropriate there).

The 3-D map of existing tall buildings was analyzed to determine the feasibility of the height district concept. The analysis showed only a very few parcels that were surrounded by tall buildings that would be severely restricted if the 1997 interim height regulation were applied there.

As a result of that analysis, the height district concept was put aside in favor of a case-by-case analysis. This plan will result in a new provision being added to the Fort Myers Beach Land Development Code to address these special situations (see Policy 4-C-4). A height limit similar to the 1997 interim change will be maintained, but an opportunity will be provided to owners of existing parcels that are so surrounded by tall buildings that it would be grossly unfair to apply the new height limit. Owners in this situation will be offered an opportunity to modify the height cap through the planned development rezoning process, which requires a public hearing and notification of adjacent property owners. The Town of Fort Myers Beach would approve, modify, or deny this request based on the conformance of the specific proposal with all aspects of this comprehensive plan, including its land-use and design policies, pedestrian orientation, and natural resource criteria. Particular attention would be paid to any permanent view corridors to Gulf or Bay waters that could be provided in exchange for allowing the building to be taller. (This case-by-case approach is very similar to the new provision being added to the build-back policy, as discussed earlier.)

COMMERCIAL EXPANSION

Successful resort communities attract increasing numbers of merchants who cater to tourists and day visitors. Residents often fear that commercial development will continue to expand into previously residential areas and result in more commercial space than is needed to serve the peak capacity of residents and visitors.

New commercial establishments can interfere with the "private realm" of a community (the personal spaces in and around homes and condominiums). At the same time, these establishments often contribute little or nothing to a community's "public realm," which includes streets, sidewalks, and plazas where residents and visitors interact. The town can insist on the protection of its private realms and the enhancement of its public realm when evaluating proposals for new commercial development.

Current Commercial Regulations

Under Lee County rules that are still in use at Fort Myers Beach, new commercial development can take place only when it is on land that is properly zoned *and* when the proposed development is consistent with the comprehensive plan. This "plan consistency" requirement was added in 1984 in an (as yet uncompleted) effort to resolve decades of overly generous zoning decisions throughout Lee County. This effort has led to the unfortunate interim situation where a parcel may be zoned for wide variety of commercial uses but whose use in fact is significantly restricted by the comprehensive plan. This uncertainty confuses landowners, prospective purchasers, and adjoining owners almost equally.

The current comprehensive plan designates privately owned land at Fort Myers Beach into one of two categories: "Suburban" or "Urban Community." Very little land is now zoned commercially in the "Suburban" category; and no land there may be rezoned for further commercial uses.

Land in the "Urban Community" category includes most of the existing commercial and mixed-use (C-1) zoning. Two special restrictions apply in that category: even for existing commercial zoning, "commercial development shall not expand or intrude into residential neighborhoods"; and any commercial rezonings must use the negotiated "Commercial Planned Development" zoning district. Policy 16.2.1 reads as follows:

> **POLICY 16.2.1:** Within the Urban Community land use category the following restrictions shall apply:
> - Commercial development shall not expand or intrude into residential neighborhoods.
> - All commercial rezonings shall be required to rezone to the Commercial Planned Development zoning category.
> - Residential density shall be limited to 6 units per acre except as allowed by footnote 10 of Table 1, Summary of Residential Densities.
> - The county shall develop a zoning plan for the district:
> a. To address non-conforming and incompatible land uses.
> b. To eliminate or correct outdated zoning classifications.
> c. To address traffic circulation and parking problems.
> d. To achieve economic revitalization through elimination of blight.
> e. To protect adjacent residential neighborhoods.
> f. To provide for affordable housing.
> Until that zoning plan is adopted, property which has existing commercial zoning can be developed or redeveloped consistent with that zoning and the Lee Plan.

Most of the commercial land at Fort Myers Beach is in the mixed-use C-1 zoning district. This district allows all residential uses and many commercial uses as well. The mixed-use nature of this zoning district is a remnant of older zoning codes that are returning to favor in many communities. However, in an environment where most other zoning categories allow only a single type of land uses (residential, or commercial, or industrial) and where there is only limited control of the *intensity* of permitted uses, the C-1 district has caused a great deal of difficulty.

Consensus on Commercial Uses

Despite the intensity of disputes over proposed commercial development at Fort Myers Beach, there is considerable consensus on several major points:

- ***Widespread commercial expansions will not be needed because the local population will soon be reaching its maximum level.*** Peak-season congestion from the existing level of guests and residents, plus day visitors to Fort Myers Beach, is already extreme. This congestion severely limits the potential for commercial attractions that would bring an additional increment of visitors during the peak season.

- ***The current plan has not been completely successful in controlling commercial expansions or intrusions in residential neighborhoods.*** Lee County's approval of a high-rise convention hotel, and a circuit court decision upholding the permits, is widely known.

- ***The present concentration of commercial uses in the Times Square area is good for Fort Myers Beach.*** Despite the severe congestion during the peak season and a general seediness that had been developing, Times Square has always provided an urban beach environment that does not exist anywhere else in Lee County, and which cannot be easily duplicated because of today's floodplain regulations. The recent CRA improvements have sparked a renewed interest in Times Square among most islanders and has spurred a healthy movement to upgrade existing buildings.

- ***The Villa Santini area serves as a very different kind of commercial center for the south end of the island, one that is equally important for seasonal guests and for permanent residents.*** The Villa Santini Plaza itself functions as an important gathering place despite its unfriendly shopping-center design. Given the central location and unfragmented ownership, it is important that this area retain its commercial functions. The next generation of buildings there can integrate other uses and be designed to establish a unique physical identity for the south end of the island.

- ***Commercial uses at other locations that provide everyday conveniences can reduce traffic congestion, but may have unacceptable impacts on surrounding neighborhoods or be placed in standardized buildings that do not fit with the redevelopment concepts in this plan.*** This is partly a result of local regulations that don't adequately address the physical context in which commercial uses occur, and the economies of standardization sought by chain stores.

- ***Given the aging buildings that currently house many commercial uses, substantial redevelopment should be anticipated, and efforts should be made to focus it in positive ways.*** This is a critical task of this plan and subsequent revisions to the Land Development Code.

New Policies for Commercial Development

The following items summarize the new commercial policies for Fort Myers Beach:

- The concept of avoiding commercial intrusions into residential areas will be maintained. The plan's prohibition against new commercial uses in residential areas will be made much more specific through the Future Land Use Map in those geographic areas where that policy is clearly appropriate. For instance, in the new "Low Density" category, commercial rezonings will not be allowed. In the "Mixed Residential" category, they will be severely limited (but not forbidding lower-impact uses such as offices and motels).

- The CRA plan for the Times Square area (including Old San Carlos) has withstood intense public scrutiny and is a sound basis for the town's continuing policy there, especially the incremental redevelopment of existing buildings at ground level with little or no setback to side property lines and with shared parking. The new Future Land Use Map incorporates the CRA plan in its new "Pedestrian Commercial" category. The successful evolution of this plan will require additional work beyond this comprehensive plan, including:
  - Further development of the shared-parking concept for the rear portion of lots on both sides of Old San Carlos (or, if not feasible, its rejection in favor of a parking garage);
  - Use of "dry-floodproofing" for the ground floor of commercial buildings; and
  - Refinement of the Land Development Code's redevelopment overlay district to simplify its use.

- The intense commercial activities at Times Square need not and should not extend into continuous linear development down Estero Boulevard. The current mixed-use character of land along Estero Boulevard down to the Gulfview Shops is desirable and should not be thought of as a transitional phase that will become continuous commercial development. In areas such as this where mixes of commercial and residential are desirable, the Future Land Use Map provides a new category called "Boulevard" with clearer policy language to guide future zoning decisions (which would require planned development zoning). Through the range of categories being provided on the Future Land Use Map, landowners will know whether commercial uses are clearly encouraged, completely forbidden, or allowed under certain circumstances.

- Some very early commercial buildings remain in use along Estero Boulevard, and many existing cottages have been converted for commercial purposes. The resulting environment is pleasant and will attract many more pedestrians once adequate sidewalks and street trees are provided. This plan will result in a combination of strengthening and loosening of existing regulations to support the re-use of older buildings. Revisions to the Land Development Code might include relaxed setbacks for cottages; allowing additional cottages to be moved in as they become available; and historic districts that ensure that new buildings and expansions maintain the historic character. Good examples of adapative re-uses include the Huston Studio at 2101 Estero Boulevard (see Figure 10) and the Hussey Realty tourist information center at 2450 Estero Boulevard.

Figure 10, Renovated cottage used for commercial purposes

- Graphic design guidelines will be provided in the Land Development Code for the replacement of existing commercial buildings, letting property owners know in advance what kind of the character the town is expecting. Those accepting these guidelines would follow a streamlined review process; alternatives to the guidelines can still be proposed through the Commercial Planned Development rezoning process.

- A new form for the redevelopment of the Villa Santini area is proposed in the Community Design Element (see aerial view in Figure 11) and reflected on the Future Land Use Map.

  The successful implementation of this plan will require considerable additional work beyond this comprehensive plan, using a public-private partnership to accomplish the following:

  — Further development of the site plan, which is envisioned to include a "town square," buildings closer to Estero Boulevard, and additional shared parking behind buildings.
  — Preparation of a plan to modify Estero Boulevard in this area to include street trees, urban sidewalks, and some on-street parking.
  — Adoption of new development guidelines applicable to this redevelopment area.

The town's new commercial policies are provided at the end of this element.

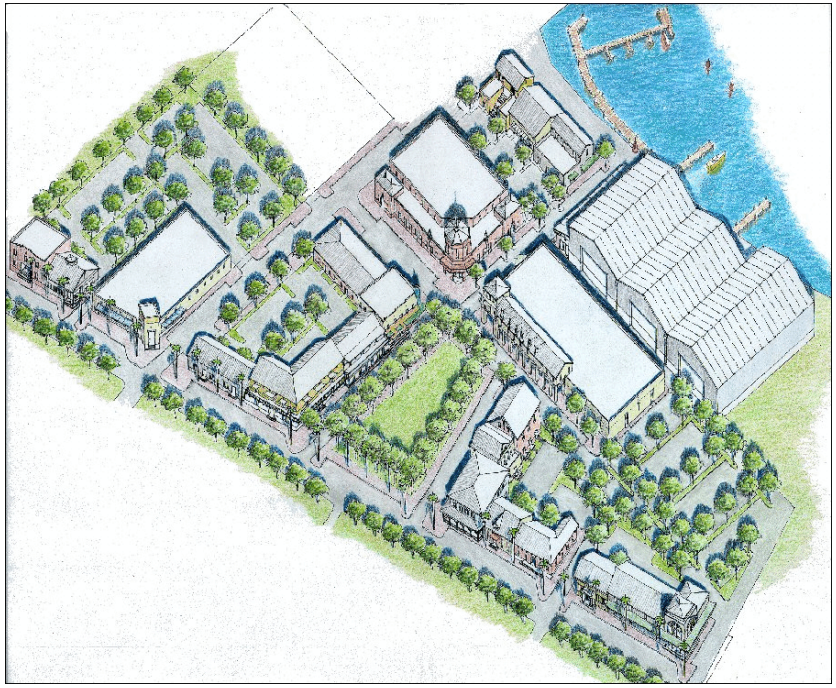

Figure 11, Aerial view of concept for Villa Santini Plaza area

EXISTING AND FORECASTED LAND USES

Existing Land Uses

A parcel-level map of existing land uses was created for this comprehensive plan (a reduced copy is provided in Figure 15). Table 4-4 tabulates the acreage of various existing land use categories from that map, plus measures of intensity from the Lee County Planning Division's database.

Table 4-4 — Existing Land Uses

Type	*Acres*	*Intensity*
Vacant	79.1	*(not applicable)*
Residential (single-family)	448.8	2,187 units
Residential (RV/mobile home)	16.2	342 units
Residential (multifamily)	338.0	5,269 units[1]
Commercial (except motels)	91.6	171,740 sq. ft.
Commercial (motels)	35.4	1,351 rooms[2]
Industrial	0.0	*(none)*
Recreational (parks, golf course)	62.2	*(not applicable)*
Agricultural	0.0	*(not applicable)*
Public (schools and government)	16.4	*(not applicable)*
Churches and civic buildings	23.2	*(not applicable)*
Conservation (wetlands)	148.1	*(not applicable)*
Street rights-of-way	202.9	*(not applicable)*
TOTAL:	**1,461.9**	**acres**

[1] *See Table 4-1 for range of intensities*
[2] *See Table 4-2 for range of intensities*

Lakes, beaches, canals, bays, and estuaries are also shown on Figure 15. There are no existing or planned public wells at Fort Myers Beach. Potentially historic buildings are shown on Figure 14. Natural soil types have been obscured by land development activities; the best inventory of remaining soil types is the *Soil Survey of Lee County, Florida*, U.S. Soil Conservation Service, 1984. No part of Fort Myers Beach is in a designated area of critical state concern. The only dredge spoil site in the past decade has been the Gulf beaches at the north end of the island.

Current Population

The Housing Element of this plan contains data on the permanent population of Fort Myers Beach, which totaled 5,812 people during the 1990 Census. Also provided there is a comparison of that population to residents of Lee County as a whole. At Fort Myers Beach, permanent residents are older, live in smaller households, are more likely to live in multifamily buildings, and own much more expensive homes and condos.

An approximate update to the 1990 Census counts of permanent residents is made each year by the University of Florida's Bureau of Business and Economic Research, whose latest population estimate is 6,039 for 1996. (These estimates are created for revenue-sharing purposes.)

Census data is based on a complete count of every housing unit within what has become the town's boundaries, including mobile homes. Hotels and motel rooms, time-share condominiums, and transient RVs are not counted.

Peak-Season Population

Of more interest in resort communities is the *peak-season population*. The Census counts people at their *place of usual residence*. At Fort Myers Beach, this results in 62% of all housing units being classified as vacant, either because their owners or tenants are counted as residing someplace else, or because the units are rented out to a succession of non-residents, or because the units were literally empty (for instance, available for rent) on the day the census was taken.

Despite the Census system of counting only *permanent residents,* the Census can still be helpful in estimating the *peak* population, because all "vacant" housing units are counted. Unfortunately, there is an anomaly in the method the Census Bureau used to collect vacancy data in 1990 that greatly affects its reliability in coastal resort areas like Fort Myers Beach and Sanibel. The 1990 census reports that of the 7,420 total housing units at Fort Myers Beach, there are 4,587 "vacant" housing units but only 2,918 "seasonal" units. If these numbers were accurate for Fort Myers Beach, it would indicate that 22½% of all housing units were completely vacant, far above the 1990 vacancy rate for the entire country of about 10%. To create a more accurate picture of the peak-season residency at Fort Myers Beach, a 10% vacancy rate will be assumed here, with all the remaining vacant units assumed to be "seasonal" housing units. The number of seasonal residents would be computed by multiplying the seasonal housing units by an assumed average number of occupants and the peak-season occupancy rate. The average unit occupancy could be 1.60, based on similar factors used by the Lee County Metropolitan Planning Organization for seasonal housing units (1.64 persons for each seasonal single-family home and 1.50 persons for each seasonal multifamily unit). The MPO factors are based on a 1992 survey conducted for the Florida Department of Transportation entitled *Lee County Urban Travel Characteristics*. Tourists visiting Lee County for short stays average 2.5 persons in each party, based on recent data from the Lee County Visitors and Convention Bureau.

A formula for calculating peak population for 1990 (not including day visitors) would therefore include the following components:

Permanent Residents (1990 Census)
+
Seasonal Housing Units multiplied by Average Unit Occupancy multiplied by Occupancy Rate in the Peak Period
+
Hotel and Motel Rooms multiplied by Average Room Occupancy multiplied by Occupancy Rate in the Peak Period
+
Transient RVs (not counted by census) multiplied by Average Occupancy multiplied by Occupancy Rate in the Peak Period
+
Timeshare Units multiplied by Average Occupancy multiplied by Occupancy Rate in the Peak Period
+
Guests in Homes of Permanent Residents in the Peak Period

The most difficult number to estimate would be "guests in homes of permanent residents," and no attempt has been made here. Using this formula, the peak-season population for 1990 is calculated in Table 4-5.

Table 4-5 — Peak-Season Population, 1990

Type of Residents	*Number*	*Total*
Permanent residents:	**5,812 residents** (census)	➜ 5,812
Seasonal residents:	4,587 "vacant" units (census)	
	3,845 seasonal units (10% vacant)	
	x 1.60 persons/unit (MPO)	
	x 92% occupancy rate (Figure 7)	
	5,660 seasonal residents	➜ 5,660
Motel guests:	1,023 motel rooms	
	x 92% occupancy rate (Figure 7)	
	x 2.50 persons/room (VCB)	
	2,353 motel guests	➜ 2,353
RV guests	118 RVs (not counted in census)	
	x 92% occupancy rate (Figure 7)	
	x 1.60 persons/RV (MPO)	
	174 RV guests	➜ 174
Timeshare guests	475 timeshare condominiums	
	x 92% occupancy rate (Figure 7)	
	x 2.50 persons/unit (MPO)	
	1,093 timeshare guests	➜ 1,093
		TOTALS: 15,091

The number of day visitors is even more difficult to determine; day visitors are not included in the totals above. Some data has been developed by the Estero Island CRA's 1992 origin-and-destination survey of motorists entering Estero Island. That study estimated that 65% of all vehicles were driven by persons not living on Estero Island either full or part time, and only a small percentage of those did not stop on the island. These figures counts could be used to produce a rough estimate of day visitors, although it would not show the highest number of those visitors at any one time. A much better assessment of day visitors should be available in mid-1999 as a result of a proposed "Barrier Island Traffic Survey" being commissioned by the Metropolitan Planning Organization. This detailed roadside survey of drivers will be conducted in the winter of 1999 on a typical weekday and a Saturday.

Population Forecasts

This planning process has created important data affecting future development at Fort Myers Beach, much of which cannot be included in this document due to its bulk or scale. These include:

- A series of 1" = 400' parcel-level wall maps of Fort Myers Beach, including remaining vacant parcels; previous development orders issued by Lee County; existing land uses; generalized existing zoning; the current future land use map; flood and coastal construction zones; and buildings four stories and taller.
- A detailed analysis of recent Lee County development orders and building permits that are authorizing new commercial or multifamily developments, including individual building permits issued pursuant to these development orders and certificates of occupancy for buildings that were completed as of July 1, 1996.

Comprehensive plans normally contain forecasts of future-year populations so that local governments can plan appropriate levels of infrastructure to serve that population. County-level forecasts are provided by the University of Florida's Bureau of Business and Economic Research. Municipalities create their own forecasts, which begin with population trends from past years as adjusted to reflect expected changes to those trends.

Fort Myers Beach is nearing the end of its population growth, so past trends cannot be relied on to forecast growth. Four factors lead to this plan's approach to population forecasts:

- Very little land is available for development.
- Growth pressure remains very high, and is expected to continue until all developable land is consumed.
- Density levels for most vacant land have already been established, either by vested development rights or by strict comprehensive plan density caps.
- Once "build-out" has been reached, the redevelopment process will continue, but little or no increase in population is expected due to the controls contained in this plan.

To determine the maximum permanent population at Fort Myers Beach, all vacant land was analyzed for its development capacity. No development was forecasted for wetlands or recreational lands. Table 4-6 contains details of the additional 1,028 dwelling units that are expected after 1996.

Table 4-6 — Future Development Proposed for Vacant Land (as of July 1, 1996)

Project Name	*Vacant Acreage*	*Additional Dwellings*	*Additional Commercial*	*Additional Hotel Rooms*	*Other Comments*
Seagrape Bay	0.86	21			(52 units in project)
Bay Beach Ostego Bay II	6.31	24			(36 units in project)
Bay Beach Casa Marina	3.50	92			(144 units in project)
Bay Beach Waterside	2.13	58			(116 units in project)
Bay Beach - Parcel 3	1.91	48			(existing tennis club)
Bay Beach - Parcel 14	10.35	100		(or hotel)	(future development area)
Bay Beach - Parcel 15/16	20.10	339		(or hotel)	(future development area)
Bay Beach - Parcel 17	8.93	140	(or commercial)	(or hotel)	(future development area)
Primo's	0.33		7,492		
Diamondhead	2.93		(ancillary)	154	
Matanzas Seafare	0.07		3,000		
Old Estero Suites	0.39			28	(had been cottages)
Pink Shell	0.00		(ancillary)	54	
Mid-Island Marina	0.00		storage-sales		(existing marina)
Fish Tale Marina	0.00		3,280		(existing marina)
(SE of Carousel Motel)	1.23	8		(or hotel)	(no development order)
Gullwing	2.74		150 seats	100	
Vacant beachfront lots	*various*	8			(existing lots)
Vacant canalfront lots	*various*	99			(existing lots)
Vacant inland lots	*various*	91			(existing lots)
TOTALS:		**1,028**		**336**	

Sources: *inventory of Lee County records through June 30, 1996,including development orders, building permits, and litigation files; and this plan's existing land use map (Figure 15)*

Most of these units have been authorized by recent development orders or appear to be vested (such as Bay Beach and Gullwing); the remainder are vacant lots in platted subdivisions. This information is based on a detailed survey of Lee County records conducted during the summer of 1996.

Except for road capacity, all of the land shown in Table 4-6 has access to adequate public facilities as described throughout this plan. This land is not limited by soil conditions, topography, or natural or historic resources.

As described in the Transportation Element, demand for roads during the peak season has exceeded capacity at Fort Myers Beach for many years. Even if the town had the legal ability to forbid all further development, or the financial ability to purchase all of the land described in Table 4-6, congestion would not disappear (although the lines of traffic waiting to pass congested portions of Estero Boulevard will certainly be longer with the additional development). This is because Estero Boulevard's constrained conditions simply cannot handle more traffic during the peak season, regardless of travel demand. Because of the town's highly desirable location at the beach, peak-season day visitors from the mainland will always consume whatever additional road capacity could be constructed.

Stringent growth management techniques, such as limiting the density of future development on vacant land within the town, were adopted by Lee County in its 1984 comprehensive plan (although litigation and plat vacations have allowed some continued development at higher densities). This current planning effort reduces densities further wherever possible (including a new low-density land use category limited to four units per acre). Congestion management strategies will be used by the town to manage demand during the peak season, as described in the Transportation Element.

The growth and timing of housing construction at Fort Myers Beach can be illustrated by showing the historical growth in housing units plus the maximum number of housing units yet to be built (1,028 more units, as calculated in Table 4-6). Figure 12 graphs this data and suggests a future slow-down in the growth rate that is typical of communities as they approach build-out. Growth at Fort Myers Beach also slowed from 1990 through 1996, largely because of the recession, and this slower rate should be expected to continue as the very limited supply of vacant land increases prices and reduces entrpreneurial opportunities.

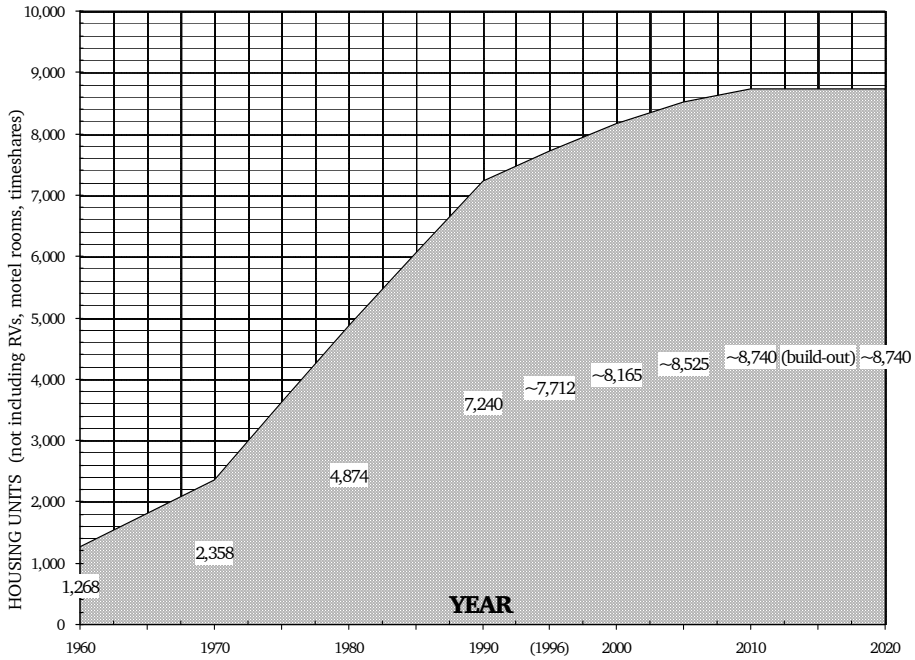

Figure 12, Growth in housing units (forecasted for 2000 through 2020)

Table 4-7 summarizes the population forecasts from Figure 12 for two separate planning periods, the first being the next five years and the second being Lee County's planning horizon of the year 2020. Based on recent development levels as reflected in Figure 12, 40% of the 1,028 additional dwelling units are expected to be in place by the end of the first five-year period, for a total of 8,121 units. Forecasts of the peak-season population are also shown on this table using the 1990 ratio of peak-season to permanent population (as shown in Table 4-5).

Table 4-7 — Population Forecasts

Year	*Source*	*Dwelling Units*	*Permanent Population*	*Peak-season Population*
1990	*Census & Table 4-5*	7,420	5,812	15,091
1996	*Estimates*	7,710	6,039	15,680
2003	*Forecast*	8,121	6,361	16,517
2020	*Forecast*	8,738	6,844	17,772

The number of dwelling units in Table 4-7 was converted to permanent population through several steps, primarily by multiplying it by the rate of their use for permanent occupancy (38.2% in 1990) and multiplying the result by the number of persons per occupied housing unit (2.03 in 1990). As a result, the 1996 population of the Town of Fort Myers Beach will increase by about 805 permanent residents to an expected "build-out" population of about 6,884. The remaining dwelling units would be used by seasonal or short-term guests, not permanent residents. This build-out would occur at an indeterminate time, perhaps around 2010.

The actual future population of Fort Myers Beach will depend on several other factors as well. The percentage of dwelling units that are occupied by permanent residents may go up or down; motels or cottages may be converted into permanent dwellings; and many sites will be redeveloped, with resulting densities that may be higher or lower than existing densities. The town may adopt new policies or regulations that attempt to influence any of these factors. Until the effects of these other factors become apparent, the population forecasts in Table 4-7 should be used for planning purposes at Fort Myers Beach.

Redevelopment needs have been examined at length by Lee County's Community Redevelopment Agency, resulting in a 1991 *Estero Island Redevelopment Plan*, incorporated herein by reference.

SCHOOLS

There is a single public school within the Town of Fort Myers Beach, the historic elementary school on Oak Street. This school serves grades K through 5, with enrollment fluctuating between 180 and 200 students, all of whom live (at least seasonally) on Estero and San Carlos Islands. There are no private schools in the town.

According to the 1990 Census, there were 158 children of elementary school age (6 through 11 on April 1, 1990) residing within the town, or 2.7% of the 5,812 permanent residents.

This element forecasts the permanent population to grow to 6,844, an increase of only 18% over 1990. Future school enrollment will depend less on population growth than on changes to the age make-up of the population and changes in school district policies. For instance, under the district's new "School Choice" program, parents are given a greater degree of choice over which school their children may attend. Although at present the School Choice program does not apply to any island schools, that could change. Also, if the school district were to add middle-school grades (6 through 8) to this school, several additional classrooms would be required.

In the absence of such changes, the existing school is large enough for the current and expected enrollment. The current facility contains 243 "student stations." The school district is planning minor renovations over the next five years to convert excess classroom space for other purposes, which will result in a net decrease in capacity to 197 students.

The school is on an 11-acre site, 7.8 acres of which are buildable uplands. Excellent community facilities are adjacent, including the public library, Bay Oaks park, Matanzas Pass Preserve, and the new public swimming pool. (This clustering of public facilities is consistent with the new law's encouragement of the "co-location" of schools with parks, libraries, and community centers.)

If unexpected enrollment increases occur, the school district's comprehensive busing program could transfer students to off-island schools; also, ample room remains on the current site for expansion. Although there is no apparent or expected need for additional school space, should such a need occur, it can be accommodated by expanding the current school (given the site's excellent location and the available space there).

Although no additional school sites are needed or should be planned for, the state of Florida requires every comprehensive plan to contain a specific policy designating the categories where new public schools would be allowed. Accordingly, this plan designates the "Mixed Residential," "Boulevard," "Pedestrian Commercial," and "Recreation" categories. (The existing school is in the "Recreation" category, with adoining land in "Mixed Residential" and "Boulevard.") This land totals about 880 acres, which is 60% of the town's land area, providing ample choices in case a new school is ever needed. Schools could not be built in the "Low Density," "Wetlands," or "Tidal Water" categories.

The state now also requires a measure of intensity for new or expanded schools. The typical measure for residential intensity is dwelling units per acre, clearly unsuitable for schools. The typical measure of commercial intensity is a floor-area-ratio or "F.A.R." (the total floor area of the building divided by the buildable area of the site); this measure can be adapted for schools. The existing single-story elementary school is on 7.8 acres of buildable land. Disregarding the undeveloped areas, it has about 28,000 square feet of floor area on about 120,000 square feet of land, for a F.A.R. of about 0.23. Since an expanded school should probably be built in a more compact form (such as two stories high), this plan sets a maximum F.A.R. of about double, or 0.50. See the full text of the new school policy in Policy 4-B-14.

SPECIFIC NEIGHBORHOOD GOALS

The Town of Fort Myers Beach can be thought of as having seven separate communities for planning purposes. General goals for each planning community are described below.

"The TIMES SQUARE AREA boasts a revitalized entertainment area with tree-shaded outdoor cafes, pedestrian streets, and an "old Estero Island" character to the buildings. Lynn Hall Park has more recreational facilities and remains the most lively and popular beach in Lee County. A broad array of shopping opportunities serves both residents and visitors, who use convenient on-street parking and new shared parking lots screened from view. On the Bay side, tree-shaded plazas surround the expanded marina which hosts vessels from excursion boats to water taxis to commercial fishing boats bringing fresh seafood to sell from scattered kiosks. New buildings add to the theme originally developed for the area by the Estero Island CRA"

"The CIVIC COMPLEX centered around the public library has expanded and serves as the "other end" of the revitalized portion of Estero Boulevard, with its rows of coconut palms, wide colorful sidewalks, and lively street scene. Opportunities for folks to both live and work here and in the downtown area are available through apartments above commercial uses and from new infill apartments and townhouses designed in the historic cottage character.

"Fort Myers Beach offers many choices of ambience and character in its residential areas, ranging from single-family neighborhoods, areas of predominately higher-rise condominiums and apartments, and "near-town" neighborhoods where residential and commercial uses intermingle. All neighborhoods are safe and lighted at night. Streets are well maintained and have regular street cleaning. Bike paths and sidewalks connect neighborhoods with the Island-wide continuous system. Yet the various residential communities possess their unique characters:

"The BOWDITCH/NORTH END retains its residential and resort identity. Its motel rooms, older cottages, and high-rises all benefit from their proximity to Bowditch Point and the downtown core area, yet are comfortably removed from seasonal traffic congestion and outdoor entertainment activities that many residents find intrusive.

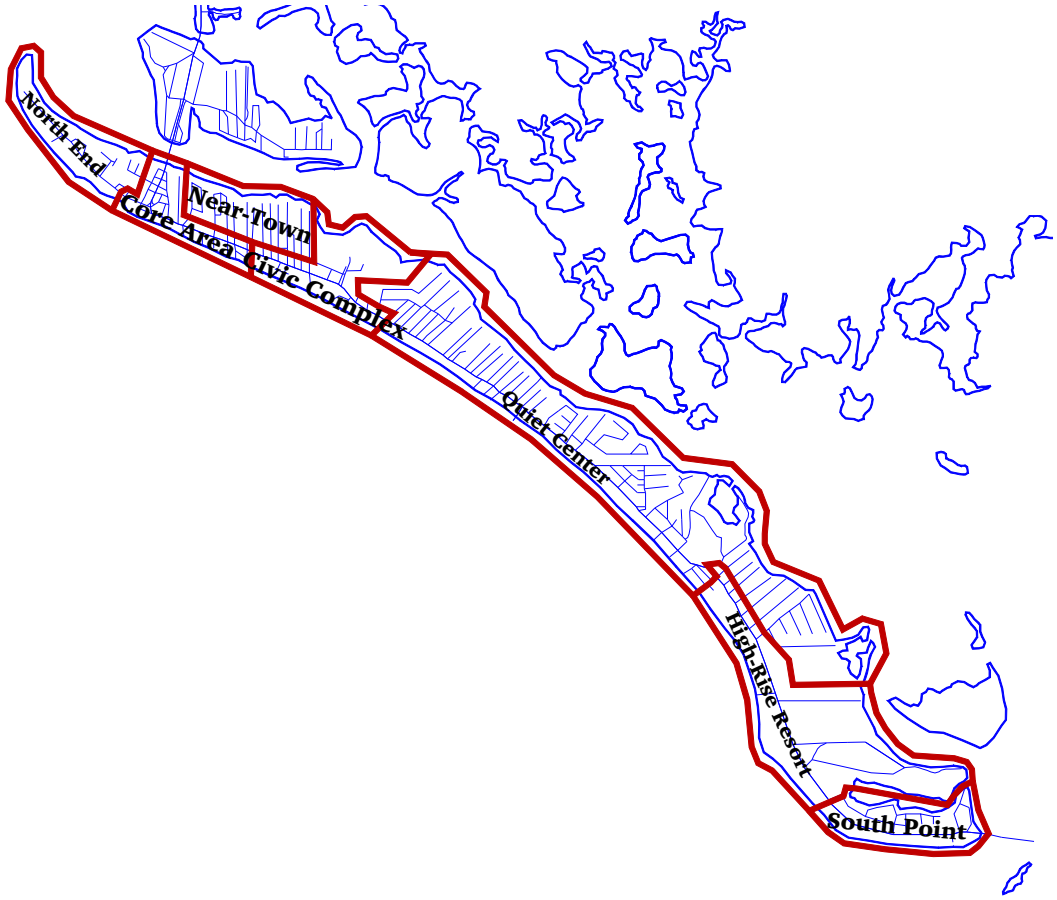

Figure 13, Planning communities for Fort Myers Beach

"The older NEAR-TOWN NEIGHBORHOODS across from San Carlos Islands have shed their blighted characteristics of the 1980s and 1990s. Their pleasantly varied housing types are just steps away from lively Estero Boulevard. Apartments for tourists and local employees mix congenially with new homes, many of which contain quiet home-offices within. The new urban code has ensured that renovations and new homes mix gracefully with the old in these now highly desirable neighborhoods.

"The QUIET CENTER of Estero Island remains peacefully between the bustling portions of Estero Boulevard and the high-rises further down the beach. Some condominiums and smaller resorts co-exist with the predominately single-family neighborhoods. This portion of the island is designated to remain low-rise and residential except for a few existing towers and the big mid-island marina.

"The HIGH-RISE/RESORT district is distinctly different in character. Panoramic views of Estero Bay and the Gulf of Mexico are widely available, along with popular recreational amenities such as golf, tennis, and private swimming pools. The Villa Santini area has been fully redeveloped to become the entertainment, community, and commercial center of this end of Estero Island, replacing its former life as a conventional shopping center. It also serves the needs of visitors to the vast beaches at Lovers' Key. The abundant wildlife on Little Estero Island are a continuing focal point for local residents and visitors alike.

"Estero Island's SOUTH POINT faces the active boating along Big Carlos Pass and the popular state park on Black Island and Lovers' Key. Despite pressures of commercialization to serve park visitors, this area retains its strictly residential character and its mostly low-rise housing style."

HISTORIC DISTRICTS

At present there are no designated historic districts at Fort Myers Beach. Figure 14 shows where older buildings are concentrated. The Historic Preservation Element of this plan proposes the designation of one or two historic districts. One district could cover the residential area north of Estero Boulevard between Primo and Chapel Streets, and another could include the highest concentrations of older houses remaining between Estero Boulevard and the beach.

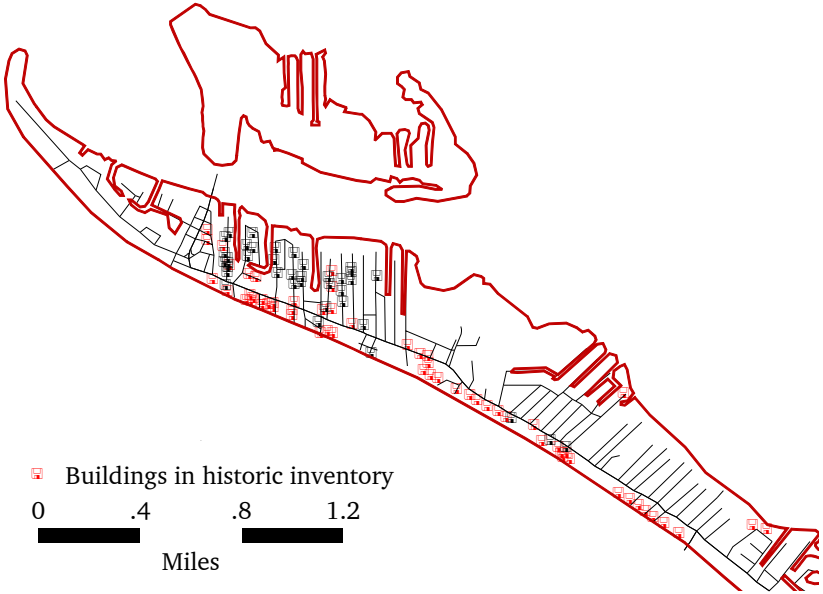

Figure 14, Potentially historic buildings

REVISED FUTURE LAND USE MAP

This plan adopts a new "Future Land Use Map" for the Town of Fort Myers Beach. It replaces the map in the current comprehensive plan, which was adopted by Lee County in 1991 at the urging of the Fort Myers Beach Land Use Plan Committee.

The 1991 map divides Estero Island into four categories:

- **Suburban:** applied to most single-family subdivisions and many multifamily developments (for a total of 541 acres).
- **Urban Community:** applied to areas of greater intensity of development, including most commercial areas and many high-rise residential areas (for a total of 174 acres).
- **Public Facilities:** applied to publicly owned land such as Little Estero Island, the Matanzas Pass Preserve and adjoining school and library, and to Bay Oaks, Lynn Hall, and Bowditch Point Parks.
- **Wetlands:** applied to remaining wetlands.

Several shortcomings with the previous maps and their application have become apparent. These include:

- The special policies that were supposed to apply to the "Urban Community" category to avoid over-commercialization have not accomplished their purpose.
- In conformance with past Lee County practice, land-use categories are often assumed to extend out to the mean high water line. Therefore, the dry sandy beach, including newly accreted sand, has often been counted in determining the allowable density of development. This factor inflates the allowable intensity of development along the beaches.
- No provisions were made to allow density to be transferred from one site to a non-contiguous parcel, even when this may be in the public interest.
- No distinction was made between residential areas of varying densities; single-family neighborhoods and high-rise towers often shared the same category.
- The Town of Fort Myers Beach has municipal jurisdiction over waters as far as 1,000 feet beyond Estero Island. The previous Future Land Use Map is silent as to how continuing activities over those waters (such as marina basins, docks, mooring pilings, and boathouses) should be regulated.

In response to these shortcomings, a new Future Land Use Map has been created for this comprehensive plan, as illustrated in Figure 16[1]. This plan has eight distinct categories:

- **Low Density:** applied to existing subdivisions with an established low-density character (primarily single-family homes). The maximum density is 4 dwelling units per acre. The only commercial uses allowed are home occupations.

- **Mixed Residential:** applied to older subdivisions with mixed housing types on smaller lots, and to newer high-rise buildings. The maximum density is 6 dwelling units per acre, except where a Future Land Use Map overlay indicates a maximum density of 10 units per acre for legally existing dwelling units. Commercial activities are limited to lower-impact uses such as offices and motels.

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[1] *In accordance with Rule 9J-5.006(4): lakes, beaches, canals, bays, and estuaries are also shown on Figure 16. There are no existing or planned public wells at Fort Myers Beach. No historic districts have been established to date. All of the Town of Fort Myers Beach is in the coastal high hazard area. Natural soil types have been obscured by land development activities, but an inventory of remaining soil types can be found in the Soil Survey of Lee County, Florida, U.S. Soil Conservation Service, 1984.*

- **Boulevard:** a mixed-use district along portions of Estero Boulevard, including less-intense commercial areas and mixed housing types. The maximum density of residential development here is 6 dwelling units per acre, except where a Future Land Use Map overlay indicates a maximum density of 10 units per acre for legally existing dwelling units.

- **Pedestrian Commercial:** a primarily commercial district applied to the intense activity centers of Times Square (including Old San Carlos and nearby portions of Estero Boulevard) and the area around the Villa Santini Plaza. The maximum density of residential development is 6 dwelling units per acre, except where a Future Land Use Map overlay indicates a density of 10 units per acre for affordable units consistent with the adopted redevelopment plan.

- **Marina:** water access services, primarily for pleasure boating, including related accessory uses provided they don't displace marina services. Cruise ships and similar uses that draw large amounts of vehicular traffic are not permitted in this category.

- **Recreation:** applied to public parks, public swimming pool, elementary school, undevelopable portions of the Bay Beach golf course, and Gulf beaches (those portions seaward of the 1978 coastal construction control line). Additional accretions of beach, whether by natural causes or through beach renourishment, will automatically be assigned to this category. No new residential development is permitted (although several existing buildings were legally constructed partially seaward of the control line). The maximum density of residential development here is 1 dwelling units per 20 acres, with all units to be constructed outside this category. The application of this category does not affect any party's ownership rights to the beachfront.

- **Wetlands:** a conservation district applied to all remaining wetlands. The maximum density of residential development here is 1 dwelling units per 20 acres.

- **Tidal Water:** applied to all saltwater canals and all waters surrounding Estero Island that lie within the municipal boundary (out 1,000 feet). No residential development is permitted.

Table 4-8 tabulates the total acreage in each category on the new Future Land Use Map. The "Tidal Water" category includes the tidal canals and all open water out to the municipal boundary, which is 1,000 feet beyond Estero Island.

Table 4-8 — Future Land Use Map

Category	*Acres*
Low Density	410.2
Mixed Residential	590.9
Boulevard	64.1
Pedestrian Commercial	77.8
Marina	6.9
Recreation	292.9
Wetlands	105.6
Tidal Water	2,164.6
TOTAL:	**3,713.0 acres**

Four of these categories allow a mixture of land uses. In accordance with state regulations, this plan must include an objective measure for the distribution of land-use mixes in those categories. Table 4-9 identifies the current acreage of non-residential uses (or school and public uses in "Recreation") within each mixed-use category, and then proposes a percentage cap for

Table 4-9 — Mixed-Use Percentages, Existing and Proposed

Category	December 1998 Actual Totals: Commercial Uses	Other Non-Residential Uses	Total Non-Residential Uses		School/Public Use		Proposed Cap	Additional Allowed
	Acres	Acres	Acres	%	Acres	%	%	Acres
Mixed Residential	28.1	18.4	46.5	7.9%			**12%**	**24.2**
Boulevard	24.5	5.6	30.1	46.9%			**70%**	**14.8**
Pedestrian Commercial	44.3	1.5	45.8	58.9%			**90%**	**24.2**
Recreation					7.8	2.7%	**6%**	**9.7**

each category. The final column shows the additional acreage of non-residential (or school/public) uses that would be allowed based on the percentage cap.

Policies 4-B-4, 4-B-5, 4-B-6, and 4-B-8 include the existing percentage plus the proposed cap (as shown in Table 4-9) for each of the four mixed-use categories. The cap defines the maximum percentages of non-residential (or school/public) land uses that can be built throughout each category without an amendment to this plan. For the purpose of these computations, non-residential land uses are defined as commercial and marina uses; according to the definitions in Policy 4-B-12, this also includes motels, churches, and civic buildings. Land used for government purposes and for utility installations are also included, but road rights-of-way are not counted.

Allowable uses for all of the eight new categories are described below under Objective 4-B. Upon adoption, these goals, objectives, and policies become law, and will be implemented where necessary through amendments to the Fort Myers Beach Land Development Code.

These categories will immediately replace the categories shown on the current Future Land Use Map. Where the adopted category descriptions contain absolute limits (such as the density or percentage caps for various land use categories), those limits will have immediate legal effect that will supersede more lenient standards that apply to certain zoning districts. The adoption of these categories does not itself change or eliminate the current zoning district assigned to each parcel of land.

Many parts of this comprehensive plan will be implemented through changes to the Land Development Code, which by state law must conform with this plan within one year (*F.S.* 163.3202). These amendments may include rezoning of many or all properties for various reasons, such as:

- to conform the zoning district of specific properties to the requirements of this plan; or
- to combine several similar zoning districts into a single new district to simplify the Land Development Code.

Landowners whose property is proposed for rezoning will receive notice in accordance with state law.

As described in the Coastal Management Element, the entire town is in the "coastal high-hazard area" as defined in § 163.3178(2)(h), Florida Statutes. Figure 17 on the next page shows the coastal high-hazard area on a map, which is being formally adopted into this plan as part of the Future Land Use Map series.

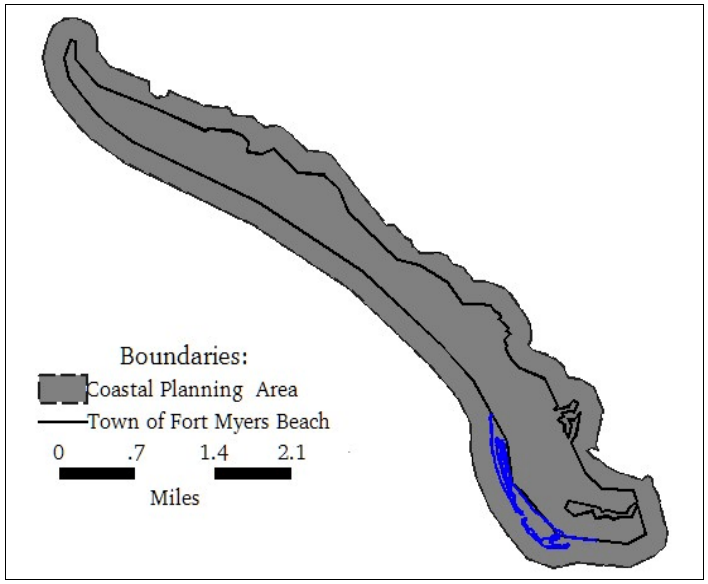

Figure 17, Coastal High-Hazard Area (entire town) as defined in §163.3178(2)(h), Florida Statutes

GOALS - OBJECTIVES - POLICIES

Based on the analysis of land use issues in this element, the following goals, objectives, and policies are adopted into the Fort Myers Beach Comprehensive Plan:

GOAL 4: To keep Fort Myers Beach a healthy and vibrant "small town," while capitalizing on the vitality and amenities available in a beach–resort environment and minimizing the damage that a hurricane could inflict.

OBJECTIVE 4-A SMALL-TOWN CHARACTER — Maintain the small-town character of Fort Myers Beach and the pedestrian-oriented "public realm" that allows people to move around without their cars even in the midst of peak-season congestion..

POLICY 4-A-1 Maintaining the town's current "human scale" is a fundamental redevelopment principle. Fort Myers Beach is best enjoyed from outside a car; new buildings should be designed to encourage use or admiration by people on foot or bicycle, rather than separating them with gates, walls, deep setbacks, or unnecessary building heights.

POLICY 4-A-2 The Town of Fort Myers Beach values its vibrant economy and walkable commercial areas. Through this plan, the town will ensure that new commercial activities, when allowed, will contribute to the pedestrian-oriented public realm.

POLICY 4-A-3 The town shall protect residential neighborhoods from intrusive commercial activities (see Policies 4-C-2 and 4-C-3 below).

POLICY 4-A-4 Easy walking access to the beach is a key element of the town's human scale. Development trends that inhibit this access are undesirable (including traffic improvements to Estero Boulevard that would make it a barrier to the beach for pedestrians).

POLICY 4-A-5 The town contains many important natural resources despite its urbanized character. Preservation of those resources is of the highest importance and is a frequent theme throughout this plan.

POLICY 4-A-6 The beaches provide incomparable recreational and environmental benefits to the town; careful management of the beach, including renourishment when necessary, can increase both. Frequent beach accesses are essential to the town's character and shall be maintained and expanded where possible.

POLICY 4-A-7 Estero Bay also provides great benefits to the town and can be enhanced by improving public access and reversing the decline in water quality. The Conservation and Coastal Management Elements of this plan outline the town's efforts on these matters.

POLICY 4-A-8 The town shall establish clear and consistent rules and processes that govern private and public development. They shall be incorporated into an illustrated Land Development Code that:

i. defines the permitted uses and illustrates the dimensions needed to implement this comprehensive plan;

ii. illustrates the types and dimensions of allowable signs that will identify businesses and other destinations with-

out damaging the aesthetic qualities of the town;

iii. resolves inconsistencies between current zoning and land development regulations and this comprehensive plan using the guidelines found in Chapter 15;

iv. encourages the conservation and re-use of historic buildings as described in the Historic Preservation Element;

v. in existing subdivisions, controls the scale of new homes to avoid the replacement of existing homes with excessively large structures; and

vi. ensures the availability of public facilities at the levels of service specified in this plan concurrently with the impacts of development (see Capital Improvements Element for a summary of these levels of service plus guidelines for the town's Concurrency Management System).

POLICY 4-A-9 Many amenities available to local residents are the result of the local tourist economy and would diminish if hotels and motels were displaced. Landowners may redevelop hotels and motels for other uses, but special incentives of this plan such as post-disaster and pre-disaster buildback (Objectives 4-D and 4-E) only apply if the current use is maintained.

POLICY 4-A-10 Hotels and motels may be constructed or converted to condominium ownership provided they are operated as hotels or motels. The Land Development Code provides detailed regulations that distinguish hotels and motels from residential uses and other types of lodging.

OBJECTIVE 4-B FUTURE LAND USE MAP CATEGORIES — Reduce the potential for further overbuilding through a new Future Land Use Map that protects remaining natural and historic resources, preserves the small-town character of Fort Myers Beach, and protects residential neighborhoods against commercial intrusions.

POLICY 4-B-1 **OVERBUILDING:** Judicious planning could have avoided the kind of overbuilding found at Fort Myers Beach by limiting construction to match road capacity and the physical environment. Since such planning came too late, the town must deal with today's congestion plus the impacts of future development that has vested rights to proceed. These conditions have shaped the vision of this plan, as development rights once granted are not easily or lightly reversed; great care has been taken in this plan to balance important public and private rights.

POLICY 4-B-2 **MAP ADOPTION:** The Town of Fort Myers Beach hereby adopts a Future Land Use Map (Figure 16) to govern further subdivision and development within its municipal boundary. The entire town is located within the coastal high-hazard area, as shown on Figure 17 which is part of the adopted Future Land Use Map series. This map advances the principles of this comprehensive plan by assigning one of eight categories to all land and water, based on its location, condition, and existing uses.

POLICY 4-B-3 **"LOW DENSITY":** designed for existing subdivisions with an established low-density character (primarily single-family homes). For new development, the maximum density is 4 dwelling units per acre, and commercial activities are limited to home occupations as described in the Land Development Code (limited to incidental uses by the dwelling unit's occupant that do not attract customers or generate additional traffic).

POLICY 4-B-4 **"MIXED RESIDENTIAL":** designed for older subdivisions with mixed housing types on smaller lots, newer high-rise buildings, and mobile home and RV parks. This category will ensure that Fort Myers Beach retains a variety of neighborhoods and housing types. For new development, the maximum density is 6 dwelling units per acre (except where the Future Land Use Map's "platted overlay" indicates a maximum density of 10 units per acre for legally existing dwelling units). Commercial activi-

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ties are limited to lower-impact uses such as offices, motels, churches, and public uses, and must be sensitive to nearby residential uses, complement any adjoining commercial uses, contribute to the public realm as described in this comprehensive plan, and meet the design concepts of this plan and the Land Development Code. These qualities and overall consistency with this comprehensive plan shall be evaluated by the town through the planned development rezoning process. Non-residential uses (including motels and churches) now comprise 7.9% of the land in this category, and this percentage shall not exceed 12%.

POLICY 4-B-5 **"BOULEVARD":** a mixed-use district along portions of Estero Boulevard, including less intense commercial areas, historic cottages, and mixed housing types. This category is not intended to allow commercial uses on all properties; its mixed-use nature is intended to remain permanently. For new residential development, the maximum density is 6 dwelling units per acre (except where the Future Land Use Map's "platted overlay" indicates a maximum density of 10 units per acre for legally existing dwelling units). To obtain approval for new or expanded commercial activities, proposals must be sensitive to nearby residential uses, complement any adjoining commercial uses, contribute to the public realm as described in this comprehensive plan, and meet the design concepts of this plan and the Land Development Code. These qualities and overall consistency with this comprehensive plan shall be evaluated by the town through the planned development rezoning process. Non-residential uses (including motels and churches) now comprise 46.9% of the land in this category, and this percentage shall not exceed 70%.

POLICY 4-B-6 **"PEDESTRIAN COMMERCIAL":** a primarily commercial district applied to the intense activity centers of Times Square (including Old San Carlos and nearby portions of Estero Boulevard) and the area around the Villa Santini Plaza. For new development, the maximum density is 6 dwelling units per acre (except where the Future Land Use Map's "platted overlay" indicates a maximum density of 10 units per acre for affordable units consistent with the adopted redevelopment plan). Commercial activities must contribute to the pedestrian-oriented public realm as described in this comprehensive plan and must meet the design concepts of this plan and the Land Development Code. Where commercial uses are permitted, residential uses are encouraged in upper floors. All "Marina" uses in Policy 4-B-7 are also allowed on parcels that were zoned for marinas prior to adoption of this plan. Non-residential uses (including motels and churches) now comprise 58.9% of the land in this category, and this percentage shall not exceed 90%.

POLICY 4-B-7 **"MARINA":** designed for prime sites that can provide access to the valuable waters around Fort Myers Beach. This category provides services for recreational boating, including related accessory uses provided that don't displace recreational marina services. Cruise ships and similar uses that

draw large amounts of vehicular traffic are not permitted in this category. Specific regulations will be placed in the Land Development Code.

POLICY 4-B-8 **"RECREATION":** applied to public parks, schools, undevelopable portions of Bay Beach, and those parts of Gulf beaches that lie seaward of the 1978 coastal construction control line. Additional accretions of beach, whether by natural causes or through beach renourishment, will automatically be assigned to this category. No new residential development is permitted (although several existing buildings were legally constructed partially seaward of the 1978 control line). The maximum density of residential development here is 1 dwelling units per 20 acres, with all dwelling units to be constructed outside this category. Allowable uses are parks, schools, libraries, bathing beaches, beach access points, and related public facilities. Non-recreational uses (such as the elementary school) now comprise 2.7% of the land in this category; additional school sites and public buildings shall not increase this percentage beyond 6%.

POLICY 4-B-9 **"WETLANDS":** a conservation district applied to all remaining wetlands. The maximum density of residential development here is 1 dwelling units per 20 acres. Other allowable uses, if compatible with wetland functions, are passive recreation, walking access to tidal waters (boardwalks and docks), and restoration of degraded habitats. Prohibited activities include placement of fill material; dredging of boat basins and channels; placement of seawalls or other shoreline stabilization; and removal of native vegetation.

POLICY 4-B-10 **"TIDAL WATER":** applied to all saltwater canals and all waters surrounding Estero Island that lie within the municipal boundary (out 1,000 feet). No residential development is permitted. Allowable uses are water sports, boating, swimming, fishing, and similar uses. Also allowed are fixed structures for water access provided they comply with Land Development Code provisions designed to avoid impeding navigation and to minimize environmental damage and interference with aesthetic enjoyment of surrounding waters.

POLICY 4-B-11 **PLATTED OVERLAY**: This is not a separate category on the Future Land Use Map, but is applied in addition to one of the eight categories listed above. Allowable land uses are the same as in the underlying category, but the maximum residential density is 10 units per acre. This density level applies in the Pedestrian Commercial category only for affordable units consistent with the adopted redevelopment plan; in other categories it applies only to recognize existing dwelling units that were built legally but which would be non-conforming under a density cap of 6 units per acre.

POLICY 4-B-12 **LAND-USE TYPES DEFINED:** For purposes of this comprehensive plan, land uses are divided into the following types:

i. **Residential uses** include detached homes, accessory apartments (see Policy 4-C-7), home occupations (see Policy 4-B-3), mobile homes, apartments, and condominiums, provided that no

dwellings are rented for periods shorter than one week.

ii. **Commercial uses** involve the sale or rental of goods or services, including businesses such as retail stores, offices, restaurants/bars, service/craft/rental businesses, RV parks, and hotels/motels/resorts; churches and civic buildings are also included in this category.

iii. **Marina uses** involve the use of prime waterfront sites to support recreational boating, such as wet or dry boat storage, sales/rentals of boats and supplies, and boat repair.

iv. **Industrial uses** such as manufacturing, seafood processing, and warehousing are not permitted in the Town of Fort Myers Beach, except for dry storage of boats at approved marinas.

v. **Recreational uses** include beaches, parks, playgrounds, and similar uses.

vi. **Mixed uses** means some combination of the above land-use types in a single building, or on a single site, or on different sites within a single category on the Future Land Use Map, depending on the context.

POLICY 4-B-13 **PUBLIC FACILITIES:** Most public facilities such as parks, schools, libraries, fire stations, and government buildings will continue be located within the "Recreation" category (but only park structures are allowed seaward of the 1978 Coastal Construction Control Line). When no suitable sites can be found in the "Recreation" category, public facilities may also be located in "Mixed Residential," "Boulevard," and "Pedestrian Commercial" categories as may be allowed by the Land Development Code.

POLICY 4-B-14 **SCHOOLS:** Public and private schools may be located in the following categories on the future land use map: Mixed Residential, Boulevard, Pedestrian Commercial, or Recreation (but never seaward of the 1978 coastal construction control line). The maximum intensity of new or expanded schools shall not exceed a floor-area-ratio of 0.50 (the total floor area of the building divided by the buildable area of the site). Governmental agencies providing parks, libraries and community centers are strongly encouraged to locate them near schools.

OBJECTIVE 4-C **APPLYING THE FUTURE LAND USE MAP — The Future Land Use Map shall be interpreted in accordance with the following policies.**

POLICY 4-C-1 **LEGAL EFFECT:** The density limits and land-use restrictions described above for each category are legally binding immediately upon adoption of this comprehensive plan. During the preparation of the new Land Development Code that will fully implement this plan, conflicts may arise with previous regulations and zoning districts. Chapter 15 of this plan describes how such conflicts will be resolved.

POLICY 4-C-2 **COMMERCIAL INTENSITY:** The maximum intensity of allowable commercial development in any category may be controlled by height regulations (see Policy 4-C-4) or by other provisions of this plan and the Land Development Code. Standards

in the Land Development Code will encourage more intense commercial uses only in the "Pedestrian Commercial" category. The Land Development Code shall specify maximum commercial intensities using floor-area-ratios (the total floor area of the building divided by the area of the site in the category allowing commercial uses). The Land Development Code may allow floor-area-ratios in the "Pedestrian Commercial" category as high as 2.5, and in other categories as high as 1.5,

POLICY 4-C-3 **COMMERCIAL LOCATIONS:** When evaluating proposals for new or expanded commercial uses in categories where they are permitted, the following principles shall apply:

i. No rezonings for commercial uses shall be allowed in the "Low Density" category.

ii. Where new or expanded commercial uses are encouraged, as in the "Pedestrian Commercial" category, the Land Development Code shall specify its permitted form and extent and provide a streamlined approval process. Landowners may also use the planned development rezoning process to seek approval of other forms of commercial development in that category.

iii. In the "Mixed Residential" category, commercial uses are limited to lower-impact uses such as offices, motels, and public uses, and must be sensitive to nearby residential uses, complement any adjoining commercial uses, contribute to the public realm as described in this comprehensive plan, and meet the design concepts of this plan and the Land Development Code. Landowners may seek commercial rezoning only through the planned development process.

iv. In the "Boulevard" category, where mixed-use development including some commercial uses may be permissible, landowners may seek commercial rezoning only through the planned development process. Proposals must be sensitive to nearby residential uses, complement any adjoining commercial uses, contribute to the public realm as described in this comprehensive plan, and meet the design concepts of this plan and the Land Development Code.

v. The following principles shall be considered by the town when evaluating requests for new commercial uses:

   a. Shopping and services for residents and overnight guests are strongly preferred over shopping and services that will attract additional day visitors during peak-season congestion.

   b. Shopping and services that contribute to the pedestrian character of the town are strongly preferred over buildings designed primarily for vehicular access.

vi. The neighborhood context of proposed commercial uses is of paramount importance. The sensitivity of a proposed commercial activity to nearby residential areas can be affected by:

a. the type of commercial activities (such as traffic to be generated, hours of operation, and noise);
b. its physical scale (such as the height, and bulk of proposed buildings); and
c. the orientation of buildings and parking).

Commercial activities that will intrude into residential neighborhoods because of their type, scale, or orientation shall not be approved.

POLICY 4-C-4 **BUILDING HEIGHTS:** The Land Development Code shall limit the height of new buildings under most conditions to two stories above flood elevation (exceptions may include the buildback situations (see Policies 4-D-1 and 4-E-1), and different heights may be applied to officially designated redevelopment areas such as Times Square, Red Coconut/Gulf View Colony, and Villa Santini Plaza). In those few cases where individual parcels of land are so surrounded by tall buildings on lots that are contiguous (or directly across a street) that this two-story height limit would be unreasonable, landowners may seek relief through the planned development rezoning process, which requires a public hearing and notification of adjacent property owners. The town will approve, modify, or deny such requests after evaluating the level of unfairness that would result from the specific circumstances and the degree the specific proposal conforms with all aspects of this comprehensive plan, including its land-use and design policies, pedestrian orientation, and natural resource criteria. Particular attention would be paid to any permanent view corridors to Gulf or Bay waters that could be provided in exchange for allowing a building to be taller than two stories. In each case, the town shall balance the public benefits of the height limit against other public benefits that would result from the specific proposal.

POLICY 4-C-5 **DENSITY:** This plan establishes density levels as the maximum number of residential dwelling units allowed per acre of land (DU/acre). This acreage includes all residential land plus land within the development to be used for street and utility rights-of-way, recreation and open space, water management, and existing lakes that are entirely contained within the residential development. Commercial and other non-residential land shall not be included in this acreage; however, where mixed uses are permitted in a single building, residential densities will be computed without regard for commercial uses located on lower floors. When computing densities on existing subdivisions where lots are smaller than 15,000 square feet, one-half the width of adjoining streets and canals may be included in the acreage, and computed densities greater than 1.50 DU/acre may be rounded up to two dwelling units where multiple dwelling are permitted.

POLICY 4-C-6 **MOTEL DENSITIES:** The Land Development Code shall specify equivalency factors between guest units (which include motel rooms) and full dwelling units. These factors may vary based on size of guest unit and on land-use categories on the Future Land Use Map. They may vary between a low of one guest unit and a high of three guest units for each dwelling unit. (These factors would apply only where guest units are already permitted.) In order to implement the 1999 Old San Carlos Boulevard / Crescent Street Master Plan that encourages mixed-use buildings with second and third floors over shops on Old San Carlos, hotel rooms may be substituted for otherwise allowable office space in that situation and location

only without using the equivalency factors that apply everywhere else in the town. This alternate method for capping the number of hotel rooms applies only to properties between Fifth to First Streets that lie within 200 feet east and west of the centerline of Old San Carlos Boulevard. Hotel rooms built under this alternate method must have at least 250 square feet per rentable unit, and under no circumstances shall buildings they are located in exceed four stories (with the ground level counted as the first story).

POLICY 4-C-7 **ACCESSORY APARTMENTS:** Accessory apartments are common at Fort Myers Beach and may be legal under several circumstances:

i. If the apartment is in a building that meets all requirements (including density limits in this plan); or
ii. If the apartment was built prior to zoning in 1962 and has been in continuous use, it may qualify as a "legally non-conforming use" and can continue in use until taken out of service; or
iii. If the apartment was built between 1962 and 1984 and complies with all requirements except the density cap of 6 dwelling units per acre and the floodplain elevation requirements (both of which took effect in 1984); or
iv. If a single existing apartment is in an owner-occupied home, it is not considered an independent dwelling unit and may be allowed under certain conditions as specified in the Land Development Code.

POLICY 4-C-8 **DENSITY TRANSFERS:** The Town Council may, at its discretion, permit the transfer of residential and hotel/motel development rights from one parcel to another if the following conditions are met:

i. the transfer is clearly in the public interest, as determined by the Town Council;
ii. the parcels affected by the transfer are in close proximity to each other;
iii. the density of residential or hotel/motel units being transferred is based upon allowable density levels in the category from which the density is being transferred;
iv. the transfer is approved through the planned development rezoning process; and
v. binding permanent restrictions are placed on the property from which development rights have been transferred to guarantee the permanence of the transfer.

POLICY 4-C-9 **UTILITY SERVICES:** Utility services may be constructed in any category on the Future Land Use Map provided all development regulations are met including proper zoning.

POLICY 4-C-10 **MAP AMENDMENTS:** The intensity and density levels allowed by the Future Land Use Map may be increased through formal amendments to this plan if such increases are clearly in the public interest, not just in the private interest of a petitioning landowner. Petitions from landowners will be accepted annually. The Town Council may accept applications more frequently at its sole discretion.

POLICY 4-C-11 **SANTOS ROAD:** The town is interested in considering land-use alternatives for parcels bordering Palermo Circle, Santos Road, and Estero Boulevard. Alternatives may include: Santos Road being added into the pedestrian zone; limited retail on the ground floor along Santos, with shared off-site parking; better buffering of existing parking and refuse areas; and a clear separation between all commercial uses and the residential areas on Palermo

Circle. These options would be explored by a privately-funded but town-initiated planning process, with full involvement of affected and nearby landowners.

POLICY 4-C-12 **WETLAND BUFFERS:** Upland development shall maintain a 75-foot separation between wetlands and buildings or other impervious surfaces. This requirement shall not apply to platted lots, or to a previously approved development order to the extent it cannot reasonably be modified to comply with this requirement (see Chapter 15 of this plan for details).

OBJECTIVE 4-D POST-DISASTER REDEVELOPMENT — Provide for the organized and healthy reconstruction of Fort Myers Beach after a major storm by showcasing successful local examples of flood-proofing, by requiring redevelopment activities to meet stricter standards for flood- and wind-resistance, and by improving the current post-disaster buildback policy.

POLICY 4-D-1 **POST-DISASTER BUILDBACK POLICY**: Following a natural disaster, land may be redeveloped in accordance with the Future Land Use Map or, at the landowner's option, in accordance with the following "buildback policy" begun by Lee County in 1989. This policy applies only where development is damaged by fire, hurricane or other natural disaster, and allows the following options:

i. Buildings/development damaged *less than 50%* of their replacement cost (measured at the time of damage) can be rebuilt to their original condition, subject only to current building and life safety codes.

ii. Buildings/development damaged *more than 50%* of their replacement cost can be rebuilt to their legally documented actual use, density, intensity, size, and style provided the new construction complies with:
   a. federal requirements for elevation above the l00-year flood level;
   b. any building code requirements for floodproofing;
   c. current building and life safety codes;
   d. Coastal Construction Control Line requirements; and
   e. any required zoning or other development regulations (other than density or intensity), except where compliance with such regulations would preclude reconstruction otherwise intended by this policy.

iii. Redevelopment of damaged property is not allowed for a more intense use or at a density higher than the original lawful density except where such higher density is permitted under this plan and the town's land development regulations.

To further implement this policy, the town may establish blanket reductions in non-vital development regulations (e.g. buffering, open space, side setbacks, etc.) to minimize the need for individual variances or compliance determinations prior to

reconstruction. The Land Development Code may also establish procedures to document actual uses, densities, and intensities, and compliance with regulations in effect at the time of construction, through such means as photographs, diagrams, plans, affidavits, permits, appraisals, tax records, etc.

OBJECTIVE 4-E HAZARD MITIGATION — Mitigate the potential effects of hurricanes by easing regulations that impede the strengthening of existing buildings, by encouraging the relocation of vulnerable structures and facilities, and by allowing the upgrading or replacement of grandfathered structures without first awaiting their destruction in a storm.

POLICY 4-E-1 **PRE-DISASTER BUILDBACK POLICY:** Owners of existing developments that exceed the current density or height limits may also be permitted to replace for the same use it at up to the existing lawful density and intensity (up to the original square footage) *prior to* a natural disaster. Landowners may request this option through the planned development rezoning process, which requires a public hearing and notification of adjacent property owners. The town will approve, modify, or deny such a request based on the conformance of the specific proposal with this comprehensive plan, including its land-use and design policies, pedestrian orientation, and natural resource criteria. The Town Council may approve additional enclosed square-footage only if an existing building is being elevated on property that allows commercial uses; dry-flood-proofed commercial space at ground level could be permitted in addition to the replacement of the pre-existing enclosed square footage.

POLICY 4-E-2 **COASTAL SETBACKS:** To protect against future storm damage and to maintain healthy beaches, the Town of Fort Myers Beach wishes to see all buildings relocated landward of the 1978 Coastal Construction Control Line. This line has been used on the Future Land Use Map to delineate the edge of land-use categories allowing urban development. Some existing buildings lie partially seaward of this line; when these buildings are reconstructed (either before or after a natural disaster), they shall be rebuilt landward of this line. Exceptions to this rule may be permitted by the town only where it can be scientifically demonstrated that the 1978 line is irrelevant because of more recent changes to the natural shoreline. The town shall seek the opinion of the Florida Department of Environmental Protection in evaluating any requests for exceptions. (Exceptions must also comply with all state laws and regulations regarding coastal construction.)

POLICY 4-E-3 **NATIONAL FLOOD INSURANCE PROGRAM:** The town will continually maintain a floodplain ordinance that reduces future damage from flooding and qualifies landowners for the National Flood Insurance Program. The town shall modify its current floodplain ordinance in accordance with this comprehensive plan through measures such as:

i. not counting costs of strengthening buildings as "improvements" that are limited to 50% of a building's value; and

ii. minimizing the negative effects of the 50% rule on historic buildings; and
iii. adjusting the time period for calculating the 50% rule to encourage healthy redevelopment in this plan's "Pedestrian Commercial" category; and
iv. providing reasonable alternatives for determining the value of older buildings.

POLICY 4-E-4 **FLOODPROOFING OF COMMERCIAL BUILDINGS:** Where commercial development is allowed by this comprehensive plan, full-height dry floodproofing is the most desirable alternative for providing ground-level commercial space in pedestrian areas.

POLICY 4-E-5 **COASTAL BUILDING REGULATIONS:** The town shall request state approval of an island-wide (rather than parcel-by-parcel) approach to limiting obstructions below flood elevation if this change is needed to avoid the loss of pedestrian activity near Times Square.

OBJECTIVE 4-F REDEVELOPMENT — Take positive steps to redevelop areas that are reaching obsolescence or beginning to show blight by designing and implementing public improvements near Times Square to spur private redevelopment there, by supporting the conversion of the Villa Santini Plaza into a pedestrian precinct, by providing an opportunity for landowners to replace vulnerable mobile homes and recreational vehicles with permanent structures in the Gulfview Colony/Red Coconut area, and by providing building code relief for historic buildings.

POLICY 4-F-1 **HISTORIC BUILDINGS:** The protection of historic buildings is of great importance to the town, and shall be aided by implementing the policies set forth in other elements of this comprehensive plan.

POLICY 4-F-2 **SPECIFIC REDEVELOPMENT PLANS**: This comprehensive plan anticipates substantial redevelopment over the coming years. Specific concepts have been developed for three specific areas:

i. ***Times Square*** – The Estero Island CRA's plan for the Times Square area is reflected in this plan, bounded by the "Pedestrian Commercial" category at Times Square. Implementation of that plan will be on-going as discussed through this comprehensive plan and in accordance with the specific regulations provided in the Land Development Code. The Times Square redevelopment plan is described in Community Design Policies 3-D-1 through 3-D-13.
ii. ***Villa Santini Plaza*** – This area is shown as "Pedestrian Commercial" on the Future Land Use Map. Existing land uses may continue. If landowners wish to redevelop part or all of this property, the following concepts shall apply:
   a. buildings are brought closer to the street;
   b. drainage has been placed underground to make room for wide sidewalks, street trees, and some on-street parking (once passive traffic calming activities have

reduced speeding on Estero Boulevard);

c. the shopping center is reconfigured with a central green plaza and better ties to the marina to the rear; and
d. off-street loading areas are provided for delivery vehicles;

This redevelopment plan can only be accomplished through a public-private partnership as described in Community Design Policies 3-C-1 and 3-C-2.

iii. ***Gulfview Colony/Red Coconut*** – This area is shown as "Mixed Residential" and "Boulevard" on the Future Land Use Map. If landowners wish to redevelop part or all of this property, the following concepts are encouraged, and shall form the basis for a pre-approved redevelopment option in the Land Development Code:

a. traditional neighborhood design emphasizing porches on the front; primary entrances visible from the street; and cars to the rear (except for on-street parking);
b. detached houses or cottages (with optional accessory apartments) abutting existing single-family homes;
c. low-rise townhouses or apartments allowed toward the center;
d. walkable narrow streets with shade trees that double as view corridor to the Preserve and Gulf;
e. substantial open space with views to be maintained from Estero Boulevard to the Gulf;
f. mixed commercial and residential uses along the Bay side of Estero Boulevard;
g. quiet internal street connections to the north and south;
h. significantly reduced density from the existing level of 27 RV/mobile homes per acre at the Red Coconut to a maximum level of 15 dwelling units per acre;
i. provision for a publicly acquired access point to the Matanzas Pass Preserve.

This redevelopment plan is described in Community Design Policies 3-A-5 and 3-A-6.

Different redevelopment concepts that are consistent with this comprehensive plan may also be proposed for any of these areas through the planned development rezoning process.

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COASTAL MANAGEMENT ELEMENT

The state of Florida requires all counties and cities along the coast to address special coastal management concerns that do not apply to non-coastal communities. An important reason is the need to protect these resources and human life and property in locations that are subject to large-scale destruction by tropical storms and hurricanes. This element begins with brief inventories of coastal resources in and around the Town of Fort Myers Beach, followed by in-depth treatment of critical coastal planning issues.

COASTAL PLANNING

Coastal Boundaries

The state provides guidelines for local governments in establishing their "coastal planning area," specifying: (1) water and submerged lands oceanic water bodies or estuarine water bodies, (2) shorelines adjacent to oceanic waters or estuaries, (3) coastal barriers, (4) living marine resources, (5) marine wetlands, (6) water-dependent facilities or water-related facilities on oceanic or estuarine waters, (7) public access facilities to oceanic beaches or estuarine shorelines, (8) and all lands adjacent to such occurrences where development activities would impact the integrity or quality of the above resources.

Another important coastal boundary is the coastal high hazard area which is defined by state law as the area below the elevation of the category I storm surge line as established by a Sea, Lake and Overland Surges from Hurricanes (SLOSH) computerized storm surge model.

Based on many of these guidelines, the entire municipal boundary of the town is within the coastal planning area. Figure 1 is an aerial view of the southerly end of Estero Island, taken from the south. Figure 2 illustrates the precise boundary of the town's coastal planning area and coastal high-hazard area (the entire land area of the town plus its 1,000-foot jurisdiction over the waters). Figure 3 depicts the various hurricane vulnerability zones as determined by the Hurricane Evacuation Study, Southwest Florida (SWFRPC, 1995).

***Figure 1**, Aerial view of Estero Island from the south*

Existing Land Use Conditions

The proximity of the Gulf of Mexico and Estero Bay make Fort Myers Beach one of the most desirable places to live and work in southwest Florida. Located within a highly populated county and being located on a bridged barrier island, it is not surprising that the Town of Fort Myers Beach is nearing full build-out of its developable land.

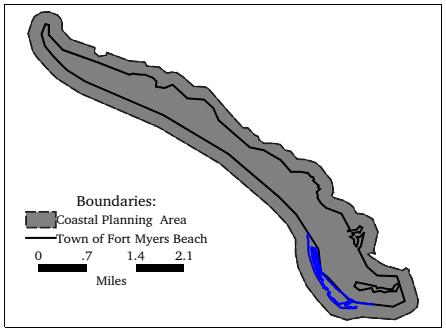

Figure 2*, Coastal Planning Area, Coastal Floodplain, and Coastal High-Hazard Area (entire town)*

The entire coastal planning area, as shown in Figure 2, is in the floodplain for coastal flooding, and also is in the coastal high-hazard area as defined by the state of Florida (see Figure 17 of the Future Land Use Map series and Policy 5-A-6).

The Town of Fort Myers Beach is approximately 1466 acres in size. The town stretches about 7 miles in length and averages ½ mile wide. The town is surrounded by water: to the southwest is the Gulf of Mexico; to the north is San Carlos Bay; to the east is Matanzas Pass and Estero Bay; and to the south is Big Carlos Pass. The town has approximately 41 miles of streets with Estero Boulevard running the length of the island serving as the main thoroughfare.

Because of its proximity to coastal waters, the town's land uses are intimately tied to tourism and resort living. Although the existing uses are linked primarily to tourism, there are distinct areas within the town's municipal limits.

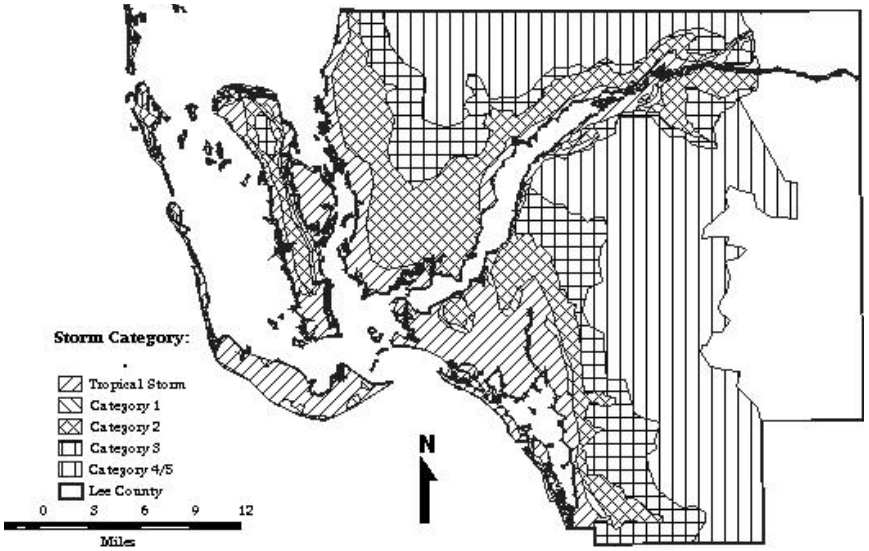

Figure 3*, Lee County Hurricane Vulnerability Zones*

The North End maintains a residential and resort identity. At the northern tip of the island lies Bowditch Point, a regional park. Close to Bowditch Point are several highrise hotels, resorts, and multi-family developments. Single-family dwellings are interspersed among these uses, especially on the bay side.

The Times Square area is filled with restaurants and stores that cater to tourists and residents alike. The centerpiece is Lynn Hall Memorial Park, a popular destination for beachgoers where they can sunbathe and enjoy the Gulf waters within easy reach of parking, shopping, and food.

Many of Estero Island's original settlers located in what is now referred to as the Near Town district. This district, located on the bay side of Estero Boulevard, has primarily single-family homes with a few multi-family units mixed in. The homes are among the oldest on the island. Many of the homesites have direct water access, with canals having been dredged at the time of original development.

The Civic Complex district has a mixture of single- and multi-family dwellings surrounding the town's library, elementary school, and Town Hall. The Bay Oaks Community Park offers assorted recreational activities, with baseball fields, tennis and basketball courts, a playground, and a gymnasium. The northern end of the Matanzas Pass Preserve is located there.

The center of the island comprises the largest land area on the island, with predominately single-family homes. However, multi-family dwelling units and small resorts can be found among them. The island's fire station is located in this district, as is the Mid Island Marina.

A large resort district further south is distinctly different in character from the remainder of the island. High-rise condominium complexes are the predominant land uses. There are various commercial sites including Villa Santini Plaza, a shopping center. This district includes Little Estero Island, a state-owned wildlife preserve, and the island's only golf course at Bay Beach.

At the southernmost tip of Estero Island is a district of mainly single-family homes plus a few condominium towers at Big Carlos Pass. The Buccaneer Lagoon separates the south end from resort district.

Table 5-1 summarizes the existing land uses by acreage for the Town of Fort Myers Beach.

Land Use Conflicts

Shoreline uses lining both the Gulf and bay sides of the island are a mixture of single- and multi-family dwelling units, and commercial resorts, restaurants, marinas, and stores. The greatest potential for conflict among uses lies with the mix of single- and multi-family dwellings. In some cases, one-story homes can be found sandwiched between tall condominiums, thereby having views and sunlight blocked. The Future Land Use Map should limit intense multi-family units to areas of similar uses or to existing sites.

Table 5-1 — Existing Land Uses Within the Town of Fort Myers Beach

Existing Land Use Type	*Acreage*
Vacant (buildable)	79.1
Residential Single-Family	448.8
Residential Multi-Family	338.0
Mobile Homes / Recreational Vehicles	16.2
Commercial (including motels)	127.0
Industrial	0.0
Recreation (parks, golf course)	62.2
Public (schools, government)	16.4
Churches and civic buildings	23.2
Conservation	148.1
Rights-of-way	202.9
Total	1,461.9

Source: Lee County Property Appraiser's Office.

The majority of free-standing restaurants and retail shops are located in or near the Core Area. This concentration reduces the potential for incompatible uses being intermingled in other areas of the island. This should not preclude the locating of other commercial operations elsewhere, but those uses should be clustered in commercial complexes or nodes to reduce incompatibility.

The town's marinas are located along the bay side of the island which offers greater protection from storms and erosion. In a few cases, marinas are completely surrounded by residential dwellings and the only road access is by a residential street, thus limiting future expansion potential to protect other existing uses.

Redevelopment and Historic Sites

The intensive development of Estero Island began during the 1930s. Prior to that time there were only a few buildings. The Winkler Hotel was built in 1912 and renamed the Beach Hotel in 1930. In 1921, a bridge was built which connected Estero Island to the mainland, which resulted in the further development of many hotels, restaurants, a pier and a bathing casino as people became aware of the Fort Myers area as a popular vacation destination. Many of the earlier structures have been destroyed by storms and development of modern structures, such as high-rises, has resulted in a loss of many of the older buildings on the island.

One of the oldest structures on the island is the house built around 1906 by William Case at the end of what is now Connecticut Street. In a historic resources survey of Fort Myers Beach, Lee County officials found no structures which were eligible for designation on the National Register of Historic Places, but determined that the Case house and others would be suitable for local designation. However, the property on which the Case house sits (also known as the "Mound House") is eligible for National Register designation on the basis of its archaeological remains. A complete inventory of structures that are considered to have historic value is located in the Historic Preservation Element; their locations are shown here on Figure 4. Unregulated development and redevelopment may result in the loss of locally significant historic structures. This issue is discussed further in the Historic Preservation Element.

Economic Base

The economic base of Fort Myers Beach depends primarily upon tourism. The 6-mile-long island has approximately 140 motels, apartments, and resorts that cater to part-time residents and visitors. In 1990, the U.S. Census reported a total of 2,349 full-time jobs located on Estero Island. The town's Gulf beach is its primary economic asset.

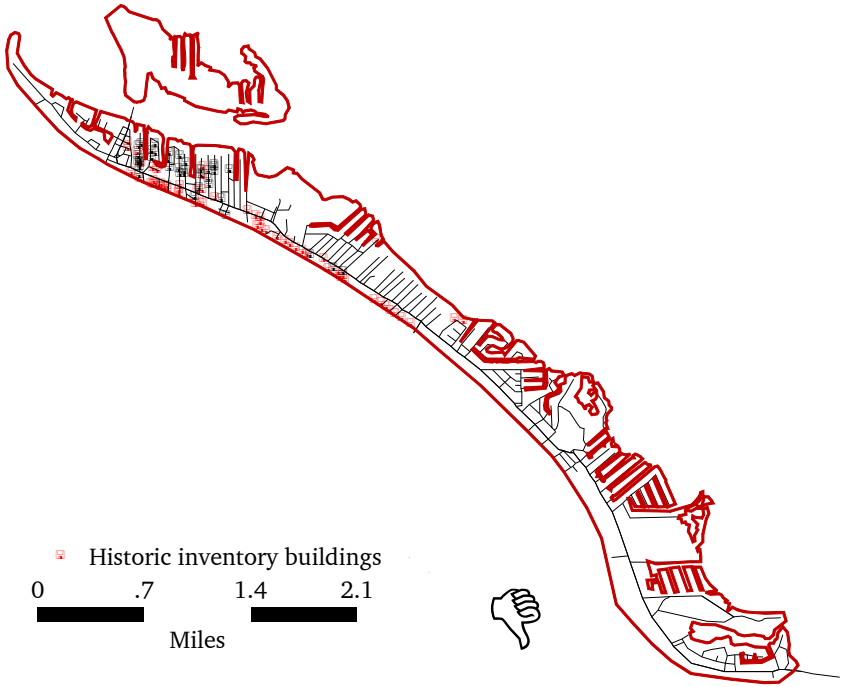

Figure 4*, Historic buildings on Estero Island*

Fort Myers Beach residents held a total of 2,140 full-time jobs in 1990, with 44% of those residents working on Fort Myers Beach, San Carlos Island, or up to Summerlin Road. Of the 2,140 residents with full-time jobs, almost 30% were employed in the retail trade industry. The second largest employment industry was construction, with 12.5% of the jobs. Table 5-2 displays all employment of town residents by industry classifications.

Of the specific occupations which were reported to the Census Bureau (as opposed to specific industries), the most common occupations of town residents were in sales (primarily retail), management, or general services. Table 5-3 shows the occupational breakdown for 1990.

Table 5-2 — Employment by Industry Group, 1990					
Agriculture/ Forest/Fishing	*Mining*	*Construction*	*Non-durable Mfg.*	*Durable Mfg.*	*Transportation*
77	0	268	39	69	116
3.6%	0.0%	12.5%	1.8%	3.2%	5.4%
Communic. Public Utilities	*Wholesale Trade*	*Retail Trade*	*Finance/ Insurance/ Real Estate*	*Business/ Repair*	*Personal Services*
30	47	630	143	112	151
1.4%	2.2%	29.4%	6.7%	5.2%	7.1%
Entertainment/ Recreation	*Health Services*	*Education Services*	*Other Prof. Services*	*Public Admin.*	*Total Industry Employees*
77	133	88	94	66	**2,140**
3.6%	6.2%	4.1%	4.4%	3.1%	**100.0%**

Source: 1990 US Census, STF-3A

Table 5-3 — Employment by Occupation, 1990				
Exec./Adm./ Management	*Professional Specialty*	*Technicians*	*Sales*	*Administrative Support*
338	215	18	440	257
15.8%	10.1%	0.8%	20.6%	12.0%
Private Household	*Protective Services*	*General Service*	*Farming/ Forestry/ Fishing*	*Prec. Prod./ Repair*
18	32	303	68	237
0.8%	1.5%	14.2%	3.2%	11.1%
Machine	*Transportation*	*Misc. Labor*		*Total Labor Employment*
57	78	78		**2,140**
2.7%	3.6%	3.7%		**100.0%**

Source: 1990 US Census, STF-3A

The median per-person income in 1990 was reported to be $19,270, with a median household income of $30,180. It is evident that the main portion of the town's economy caters to the tourism industry. Commercial fishing is not a large industry for the town itself, although it is certainly is for Lee County. The Department of Environmental Protection estimated that well over 9 and 6 million pounds of fish were harvested in the waters surrounding Lee County during 1995 and 1996. At an average price of $1.56 per pound in 1996, these landings added $9.68 million to the Lee County economy that year. Lee County's fishing docks are located primarily on San Carlos Island (42%, across Estero Bay) and Pine Island (48%).

Boating Ordinances

The town has already adopted several ordinances which directly affect the use of the coastal waters surrounding the town. These are (1) the Vessel Control and Water Safety Ordinance, (2) Personal Watercraft Ordinance, and (3) Parasailing Ordinance.

Vessel Control and Water Safety Ordinance

Vessels are restricted from operating within 500 feet of a town- or county-owned public park beach which is designated for swimming or others areas designated by the town. Vessel speeds within regulated areas must not exceed slow or idle speed and ingress and egress to beaches shall be as nearly perpendicular as possible. Regulated areas are all waters within 500 feet of the shoreline, 100 feet of the pier and bridges, and locations with posted signs.

Personal Watercraft Ordinance

Operators of personal watercraft must use U.S. Coast Guard approved personal flotation devices and use a lanyard type engine cutoff. Personal watercraft may not be operated during the night between ½ hour before sunset and ½ hour after sunrise. The town also regulates the operations and locations of rental businesses. Persons are not permitted to operate unregistered personal watercraft within the town's jurisdiction.

Parasailing Ordinance

Parasailing operations within the town must be fully licensed by Lee County, the location of businesses must be located with direct access to the beach and within certain locations, and be protected by commercial insurance. Operators must be located at least 1,000 feet from shore when they inflate or deflate a parachute, and parachutes are not allowed to be flown within 500 feet of the pier or beach. All operations must cease at sunset.

Infrastructure in the Coastal Planning Area

Since the "coastal planning area" comprises the entire town, detailed inventories of existing infrastructure are found in all other elements of this comprehensive plan. Analysis of infrastructure capacities and minimum level of service standards are established in those elements.

NATURAL DISASTER PLANNING CONCERNS

Hurricanes and Tropical Storms

The Town of Fort Myers Beach has serious evacuation problems, being densely developed and located entirely on a bridged barrier island. Estero Island can be easily overtopped by tropical storm wash and by passing Gulf hurricanes. The last time the town was directly struck by a hurricane was in 1960, by Hurricane Donna, a "Class 3" storm on the Saffir-Simpson scale (see Table 5-4). The hurricane passed directly over the island on September 10, causing major damage.

Table 5-4 —Saffir-Simpson Scale for Classifying Hurricanes, With Maximum Surges from SLOSH

Storm Category	*Sustained Wind Levels*	*Saffir-Simpson Surge (feet)*	*Max.SLOSH Surge (feet)*	*Expected Damage*
Tropical storm	39 to 73 mph	< 4	5.6	
1	74 to 95 mph	4 to 5	7.4	minimal
2	96 to 110 mph	6 to 8	12.4	moderate
3	111 to 130 mph	9 to 12	19.5	extensive
4	131 to 155 mph	13 to 18	28.7	extreme
5	> 155 mph	> 18		catastrophic

Source: Florida Hurricanes and Tropical Storms, 1994; and SWFRPC, 1995.

Southwest Florida has not been struck by a hurricane since 1960. Despite its sheltered location (compared to the east coast of Florida or the southerly shore of the Florida panhandle), southwest Florida is considered to be the second most hurricane vulnerable region in the country (SWFRPC, 1997). This vulnerability results from:

- shallow off-shore waters which will allow extremely high tidal surges to develop under certain conditions;
- a large coastal population, with many living in mobile homes; and
- vast low-lying coastal areas which can easily be inundated.

The level of flooding to be expected cannot be determined based on wind speed alone. The precise direction from which the storm approaches, and the exact location that the storm strikes land, both have a tremendous effect on the level of flooding. Figure 3 shows the areas in Lee County that could be flooded from various levels of storms *if those storms strike from the direction and at the location that would cause the highest storm surge* (specifically, striking from the west and making landfall just north of Lee County). When Lee County is struck by one of these worst-case storms (or a lesser but still-severe storm), the flooding will have devastating effects on life and property. (The flooding levels in Figure 3 were projected by the National Hurricane Center's "Sea, Lake, and Overland Surges from Hurricane" (SLOSH) computer model for Lee County.)

The town is accessible by road only through other islands, which in turn are accessible by road through comparatively low-lying mainland areas. This feature compounds the town's hurricane preparedness problems, since the routes the town will use for an evacuation will also be used by the residents of other islands and of low-lying areas that have no other routing alternatives.

Another evacuation problem is the large Australian pine trees that are seen throughout Fort Myers Beach. Due to their shallow root structure, they are especially vulnerable to high winds and can easily fall, blocking critical evacuation routes even before the really high winds begin. A program of removing or regularly pruning these trees along Estero Boulevard could reduce this risk.

Affected Population

The town has in a sense two populations, a "permanent" population made up of those who consider the island their permanent residence, and a "transient" population that peaks each day as workers come and leave during the work day, that peaks each holiday with the occupation of the many transient lodging facilities, and peaks during the winter months as seasonal residents occupy second homes *and* the transient lodging facilities become fully occupied by vacationers.

During hurricane season, the "transient" population is fortunately at somewhat lower levels than the winter months (except for holidays). Further, a portion of the "permanent" population throughout hurricane season is vacationing elsewhere, especially in the summer months. Regardless of these factors, a large portion of the town's population is threatened by inundation by hurricanes, with no part of the town being at natural heights greater than expected storm surges in major storms.

To evaluate the time it would take to evacuate the town, the number of vehicles that would be evacuating is estimated as follows:

- Existing units are estimated from various sources, including the Census, building permit data, and surveys.
- Occupancy rates are based upon local and regional surveys.
- The number of persons per occupied household are drawn from Census data and applied to all units.

- Forecasts of future population are based upon "build-out" unit estimates.
- The number of vehicles that would be used in an evacuation are drawn from the per-unit estimates provided in the Hurricane Evacuation Study (SWFRPC, 1995).

The 1990 Census shows a total of 7,420 dwelling units for the area now in the Town of Fort Myers Beach. Of these, 2,247 were single-family detached, 133 were single-family attached, 3,925 were in structures with 10 or more units, 256 were mobile homes, and the remainder in duplex to 9-unit structures. Since 1990, there have been an additional 290 units built of all types, making a total for 1996 of 7,710. To this total can be added an additional 1,351 units for hotels and motels (SWFRPC, 1995).

About 2.03 persons occupied the average dwelling unit, according to the 1990 Census. There is no reason to believe that this characteristic has changed markedly since that time.

The 1990 Census indicated that the town's units were largely renter, seasonal, or recreational occupied, constituting 72% of the units. The occupancy rate of owner/occupied units is high, about 95%, but that of other units is 64% outside of the "season." From surveys, occupancy rate of hotels/motels varies throughout the seasons, but is a fairly stable 62-64% during hurricane season, but climbing to nearly 100% during holidays.

The estimate of affected persons is thus calculated: ((28% of 7,710 units x .95) +(72% of 7,710 x .36) +(1,351 x .63)) x 2.03 = 9,948. This number will show moderate variations throughout the season from June to November, and may peak by an additional 1,000 during holidays, not including day visitors.

Build-out forecasts expect an additional 1,028 dwellings and 336 hotel units (see Future Land Use Element). Applying the ratios used above to these additional units provides for a build out population during hurricane season (including overnight—or longer—transients) of 11,474.

Vehicles in Use

Through surveys conducted by the SWFRPC, it has been estimated that there would be one evacuating vehicle for every two people. In beach communities, the estimate is conceded to be higher, approaching nearly all vehicles for which a driver can be found since the vehicle is the second most expensive item a person will own and it is mobile. The beach community can be recognized as having higher vehicle usage than the county as a whole. For the purpose of this assessment, though, the one-vehicle/two-person ratio is being applied. The estimated vehicles in use by town residents will be at least 4,974. This number would grow to 5,737 at build-out.

Evacuation Times (On Island)

Within the town, the factor controlling evacuation times is Estero Boulevard, a two-laned facility (with center turn lane along part of the Island). The roadway capacity varies depending upon the degree of direct management that is provided. Without such management, the capacity at service level D (county/regional calculation standard) is 943 vehicles per hour in the primary direction, or 1,660 per hour for both lanes with two way traffic (830 per lane). The town directs about half of its traffic south to Bonita Beach Road (for evacuees south of the fire station) and the remainder north across San Carlos Island.

Using one-way/one-lane capacity, the time to clear the island at the stated level of service is determined by dividing the number of vehicles by the road capacity. This calculation is 4,974/943, or 5.3 hours. Using the two-way option, the number drops to 3.0. When the "build-out" estimate is used, the calculation is 5,737/943, or 6.1 hours for one lane, and 3.5 for two way. No

system-wide road capacity improvements are planned that could improve these capacities.

Evacuation Time (Off Island)

The town's evacuation route off the island extends through Bonita Beach and Bonita Springs to the south and east, and through San Carlos Island and the unincorporated areas of South Fort Myers to the north and east (see Figure 5). When the routes are used for hurricane evacuation, there will be significant traffic from other low-lying areas added to these routes.

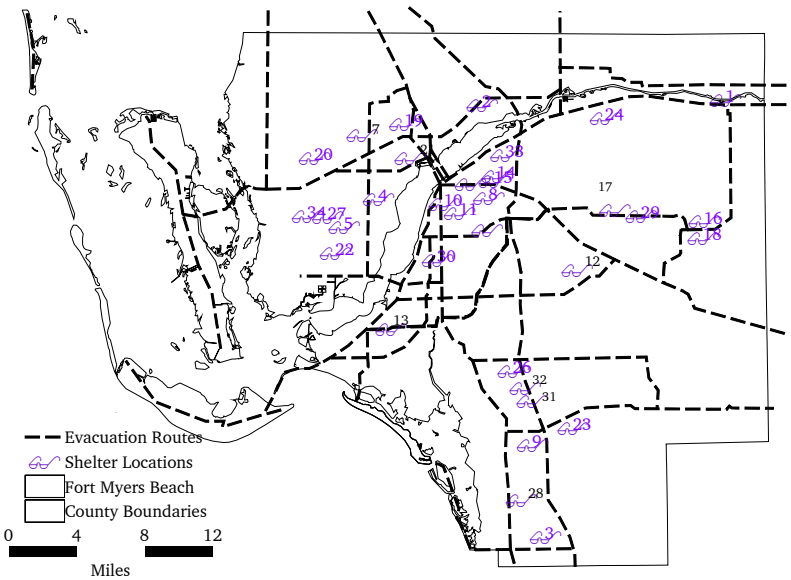

***Figure 5**, Evacuation Routes and Hurricane Shelters*

According to the 1995 assessment by the SWFRPC, the volume of traffic for a category 1 storm will occupy routes used by the town for 7.4 hours in July and 8.4 hours in November. Times for category 2 are the same, but times for a category 3 climb to 12.1 hours in July and 12.6 in November. Short-term forecasts (1998) climb to 7.9 hours for category 1 and 2 storms in July, 9.0 hours for the same storms in November. Category 3 times climb to 12.9 and 13.5. The routes off island and the other communities occupying these routes are shown on Figure 5.

Unfortunately, the "piling on" effect forecasted for Southwest Florida makes these times seem small. Should the worse category storms follow the path of greatest threat, times have been forecasted to climb to 58.4 hours for an out-of-region evacuation, to which the town contributes only a small percentage of the overall traffic. Such times are unachievable, requiring the town and its surrounding region to reexamine their sheltering options.

Sheltering

Public shelter space available to the town is provided through the county school system. There are eight schools along the most likely routes, and a total of 34 schools county-wide. These schools are shown on the evacuation route map (Figure 5) and listed in Table 5-5. The space within all 34 schools is adequate for only 42,740 persons in a minor storm and 52,440 in a major storm, and these same shelters will be used by other evacuating communities. Some also become unusable should the category storm be 3 or greater, reducing the space substantially. Consequently, the overall public shelter space is inadequate for the potential demand.

Town residents also have private sheltering options, including hotels and friends or family that are outside of predicted flood areas. These opportunities also diminish for the more severe storms.

Table 5-5 — Hurricane Shelters in Lee County

Site	School	Capacity Minor/ Major Storm	Site	School	Capacity Minor/ Major Storm
1	Alva Elem./Middle 21290 Park Street	800/1000 1000/1300	18	Lehigh Middle 104 Arthur Avenue	1000/1300
2	Bayshore Elementary 10750 Williams Road	800/1000	19	Littleton Elementary 700 Hutto Road	800/1000
3	Bonita Middle 10140 West Terry St.	1000/1300	20	Mariner High 701 Chiquita Boulevard	2500/3000
4	Caloosa Elem./Middle 610/620 Del Prado Blvd.	800/1000 1000/1300	21	North Fort Myers High 5000 Orange Grove Blvd.	2500/3000
5	Cape Coral High 2300 Santa Barbara Blvd.	2500/3000	22	Pelican Elementary 3525 SW Third Avenue	800/1000
6	Colonial Elementary 3800 Schoolhouse Road	800/1000	23	Pinewoods Elementary 11800 Corkscrew Road	800/1000
7	Diplomat Elementary 1115 Northeast 16th Ter.	800/1000	24	Riverdale High 2815 Buckingham Road	2500/3000
8	Dunbar Middle 3800 East Edison Avenue	800/1000	25	Royal Palm Exceptional 1817 High Street	800/1000
9	Estero High 21900 River Ranch Rd.	2500/3000	26	San Carlos Elementary 17282 Lee Road	800/1000
10	Fort Myers High 2635 Cortez Boulevard	2500/3000	27	Skyline Elementary 620 Southwest 19th St.	800/1000
11	Fort Myers Middle 3050 Central Avenue	800/1000	28	Spring Creek Elementary 25571 US 41 Southeast	800/1000
12	Gateway Elementary 13280 Commerce Lakes	800/1000	29	Sunshine Elementary 600 Sara Avenue	800/1000
13	Heights Elementary 15200 Alexandria Court	800/1000	30	Tanglewood Elementary 1620 Manchester Blvd.	800/1000
14	Lee Middle 1333 Marsh Avenue	1000/1300	31	Three Oaks Elementary 19600 Cypress View Dr.	800/1000
15	Lee County Vocational 3800 Michigan Avenue	1640/1640	32	Three Oaks Middle 18500 Three Oaks Pkwy.	1000/1300
16	Lehigh Elementary 200 Schoolway Court	800/1000	33	Tice Elementary 4524 Tice Street	800/1000
17	Lehigh High 801 Gunnery Road	2500/3000	34	Trafalgar Middle 2120 Trafalgar Parkway	800/1000

Source: SWFRPC, 1995

The problems facing the town also affect the entire region. There is simply not enough shelter space for all evacuees (SWFRPC, 1995). Evacuation times have been reduced in some coastal areas because of aggressive road construction in recent years, but evacuation to areas outside of coastal counties is becoming less feasible each year as roads between counties are not being built at a rate that matches increases in population. For this reason the town will need to work with Lee County and regional agencies to develop feasible in-county alternatives to traditional public sheltering.

Initial work on this concept is detailed in a 1997 study that sought to identify potential private shelters (SWFRPC, 1997). Private shelters wouldn't be staffed and equipped by public agencies or the American Red Cross, but might provide a degree of "lessened threat" for coastal residents than some other alternatives (remaining at home, being caught on the road when high winds make further car travel impossible, or competing for the very limited number of motel rooms).

Potential private shelters include recreation facilities in planned communities; churches; public buildings such as courthouses or airport terminals; and workplaces of major employers. Drawbacks to private shelters can include poor locations, inadequate structural strength, lack of supplies and emergency power, and liability concerns for property owners. The SWFRPC study identified potential space in Lee County for up to 16,500 additional evacuees; unfortunately this number is still far short of the shelter space required.

Town residents and businesses face greater physical risks when a hurricane strikes than do most people in Lee County. The relative infeasibility of providing on-island sheltering options is just one such risk. Another is knowing exactly *when* to evacuate. Emergency management officials are reluctant to suggest evacuation any earlier than is needed because hurricanes can quickly

change direction; they fear that residents who evacuate needlessly will hesitate to heed such an alarm before the next storm.

Island residents are aware of their vulnerability and the increased distance they must evacuate, and would generally be ready to take a greater risk of unnecessary evacuation than other county residents. However, county officials are responsible for a much larger area and cannot be expected to give their full attention to weighing the risks and benefits of an early evacuation for an area as small as Fort Myers Beach.

Compounding the problem is the fact that Lee County officials do not anticipate ordering a mandatory evacuation of Fort Myers Beach under almost any circumstances. Town officials, however, could weigh the local situation and do so, if a system were in place for full communication of relevant information. Or the town could set up such a system in cooperation with the City of Sanibel, which faces the same dilemma. This would be a major undertaking, especially since an early evacuation would have to coupled with arrangements for emergency shelters to open early to accommodate those evacuees seeking refuge there. But given the vulnerability of Fort Myers Beach to even a minor hurricane, the benefits of such a system could be immense.

Community Rating System

The Federal Emergency Management Agency evaluates floodplain management programs of local governments and issues a rating under the Community Rating System (CRS). The Community Rating System encourages and rewards local governments which undertake efforts to reduce flood losses and promote the purchase of flood insurance. The major benefit for citizens of CRS-rated communities is that they will receive flood insurance premium rate credits which lower insurance costs for all property owners. Local governments are rated on a scale of one to ten, with one being the highest rating that could ever be granted. This rating is not a measure of *how safe* a community is from flooding; rather it is a measure of how hard a local government is currently trying to *reduce its vulnerability* to flooding.

Fort Myers Beach is currently rated "7," an improvement from the previous rating of 8. Both ratings now apply to all of Lee County, but Fort Myers Beach has applied for its own rating, which will probably be made in early to mid 1999. All reasonable efforts should be made to receive the best possible rating from FEMA in order to lower flood insurance premiums. Sanibel has been able to obtain a "5" rating; Tulsa Oklahoma has been the only other community in the nation to obtain a rating that high.

Floodplain Management

For Floridians, natural disasters are constant reminders of how fragile barrier islands are. Tropical storms and hurricanes can wreak havoc on citizens lives, homes, and personal property. In hindsight, development should not have been permitted on barrier islands at high densities. The Town of Fort Myers Beach has been developed with fairly high densities, which average 17 units per acre for existing multifamily buildings. Therefore, its disaster planning must center primarily on reducing potential losses of life, improving existing and new structures and infrastructure, and rebuilding more safely after severe damage. Any redevelopment within the town must meet the minimum level-of-service standards established within this comprehensive plan. Some current regulations discourage landowners from making structural improvements to strengthen buildings against the constant threat from hurricanes, contrary to expected public policy. The impacts of floodplain programs, described below, vary depending on the precise location of a parcel of land. Each program has a set of very specific maps or boundaries that delineate their regulatory zones.

Coastal Construction Control Line

The state of Florida began regulating shoreline development in 1971. Along the beachfront, the state imposes stricter construction standards to minimize damage to the natural environment, private property, and human life. The best-known state regulation is the designation of Coastal Construction Control Lines (CCCL), which are precise lines running just inland of barrier island beaches.

In 1978, the state established its first CCCL at Fort Myers Beach. With a few exceptions, new buildings could only be built landward of this line. In 1991, the state established a new and very different CCCL. The new line averages about 200 to 300 feet landward of the 1978 line, often running right along Estero Boulevard. This new line came with quite different rules; it is definitely not a "line of prohibition." Instead the rules are more of a structural building code, administered by the Florida Department of Environmental Protection.

As strict as these rules are, they do not preclude many reasonable uses of land, as was feared by many property owners when the 1991 CCCL was adopted. However, buildings must be elevated, typically even higher than buildings elsewhere on the island, and be extremely well-built. High-rise condominiums and hotels, as well as single-family homes, can be built under these rules.

Several issues regarding the CCCL are discussed further in the Future Land Use Element.

National Flood Insurance Program

The National Flood Insurance Program (NFIP) is one of several federal disaster programs which has established minimum construction standards which serve to reduce damages from storm events in coastal high hazard areas. It was begun in 1968 as a nationwide system of flood insurance for designated flood-prone areas. Each area is studied to produce a map that indicates how high flood waters might rise, which is known as the "base flood elevation." Local governments then adopt regulations to reduce the impacts of future flooding. In exchange for these regulations, property owners can obtain flood insurance that is guaranteed by the federal government. The most important regulation is that the lowest floor level of most new and improved buildings must be raised above the "base flood elevation." The base flood elevations are shown on a series of official Flood Insurance Rate Maps.

Since the 1970s, flood-prone communities have been required to adopt these regulations in order for their residents to qualify for federal flood insurance. Federally insured lenders cannot provide mortgages in these communities on property that does not have flood insurance. As a result, almost no flood-prone community can exist without participating in the NFIP, since few private companies offer comparable flood insurance.

Lee County began participating in the NFIP in 1984 immediately after all of its coastal areas were mapped. Fort Myers Beach was covered under the county's program until the end of 1996, at which time it began the process of joining the program on its own.

The concept of hazard mitigation has become a high priority in the field of emergency management in recent years. Essentially, this kind of mitigation means *actions to prevent, avoid, or reduce the impacts of a hurricane*, especially actions that can be taken in advance to reduce the vulnerability of people and property to injury from a hurricane or tropical storm.

Homes built in Lee County before 1984 were not required to be elevated above the base flood elevation. Since then, through the building permit process, elevation requirements have been strictly enforced for new homes and for "substantial improvements" that cost more than 50% of the appraised value of a

building (*not including* the land's value) over any five-year period. This is one example of the infamous "50% rule" that causes so much difficulty for owners of older buildings when they are trying to maintain and upgrade their property.

Instead, the town should encourage property owners to strengthen buildings before a hurricane hits rather than wait to provide disaster aid or expedited permitting to repair damage that could have been avoided. Such policy would allow property owners to strengthen their buildings by installing storm shutters or shatter-proof glass; strengthening roof attachments, floors, and walls; and minor floodproofing. One way the town can encourage strengthening by excluding these costs from the 50% rule, as proposed in the Future Land Use Element. The entire floodplain management program of the town is discussed in more detail there.

Building Back

When a passing hurricane destroys part of a community, difficult rebuilding questions arise immediately. Landowners have spent thousands and sometimes millions of dollars in developing their property. Not allowing landowners to rebuild places a great economic burden upon them. But allowing redevelopment in the same manner exposes it to destruction in the next big storm.

If a disaster occurs within the Town of Fort Myers Beach, structures could of course be rebuilt in accordance with the adopted Future Land Use Map. (In most cases, the permitted use will be the same as before the storm.) Structures that are damaged greater than 50% of their current value are allowed by Lee County to be rebuilt, however they must be rebuilt in accordance with the regulations that apply to new development. This means that the lowest floor level is elevated; land uses are severely limited on the ground level; and break-away walls may be required.

This "build-back" policy was initiated by Lee County in 1989 to allows post-disaster reconstruction at existing density levels but with improved resistance to future storms. This provision has been popular among landowners at Fort Myers Beach because of the greatly reduced density levels that would otherwise apply after a major storm.

This Future Land Use Element of this plan makes one immediate change in the build-back policy. Owners of existing buildings that exceed the current density or height limits will be offered an opportunity to replace the building at up to the existing density and intensity without waiting for a natural disaster (see Policy 4-E-1). Owners would request this option through the planned development rezoning process, which requires a public hearing and notification of adjacent property owners. The Town of Fort Myers Beach would approve, modify, or deny this request based on the conformance of the specific proposal with this comprehensive plan, including its land-use and design policies, pedestrian orientation, and natural resource criteria.

Major investments by government and private industry are made for public infrastructure. In order to rebuild, damaged infrastructure must be repaired or replaced. In a flood-prone area such as Fort Myers Beach, new or replacement infrastructure should be designed and constructed to minimize damage caused by hurricanes and tropical storms. Power lines can be placed underground. Potable water and sanitary sewer systems should eliminate infiltration of flood waters into utility systems, and they should be capable of running on auxiliary power during post-storm periods. Roads should be designed and constructed to manage minimum levels of storm events and be located in areas least susceptible to storm damage.

Structures with Repeated Damage Due to Storms

A number of structures within the town have experienced damage as a result of past floods. Lee County began a program in 1995 to identify individual buildings that have been repeatedly damaged by flooding, as evidenced by claims under the National Flood Insurance Program (NFIP) of $1,000 or more since 1978.

That program identified the properties in Table 5-6, which are mapped in Figure 6. No meaningful pattern appears on the map that would suggest neighborhood-wide flooding remedies. Of particular interest on Table 5-6, however, is that *none* of the floods that caused considerable damage at Fort Myers Beach in the past 15 years were even minimal hurricanes; in fact two weren't even strong enough to be considered tropical storms.

Lee County is conducting a detailed assessment of the costs of improving the buildings in the unincorporated area that have been repeatedly damaged by flooding. The county hopes to obtain 75% federal funding for many of the actual improvements. If the county is successful, the town may be able to qualify for a similar grant.

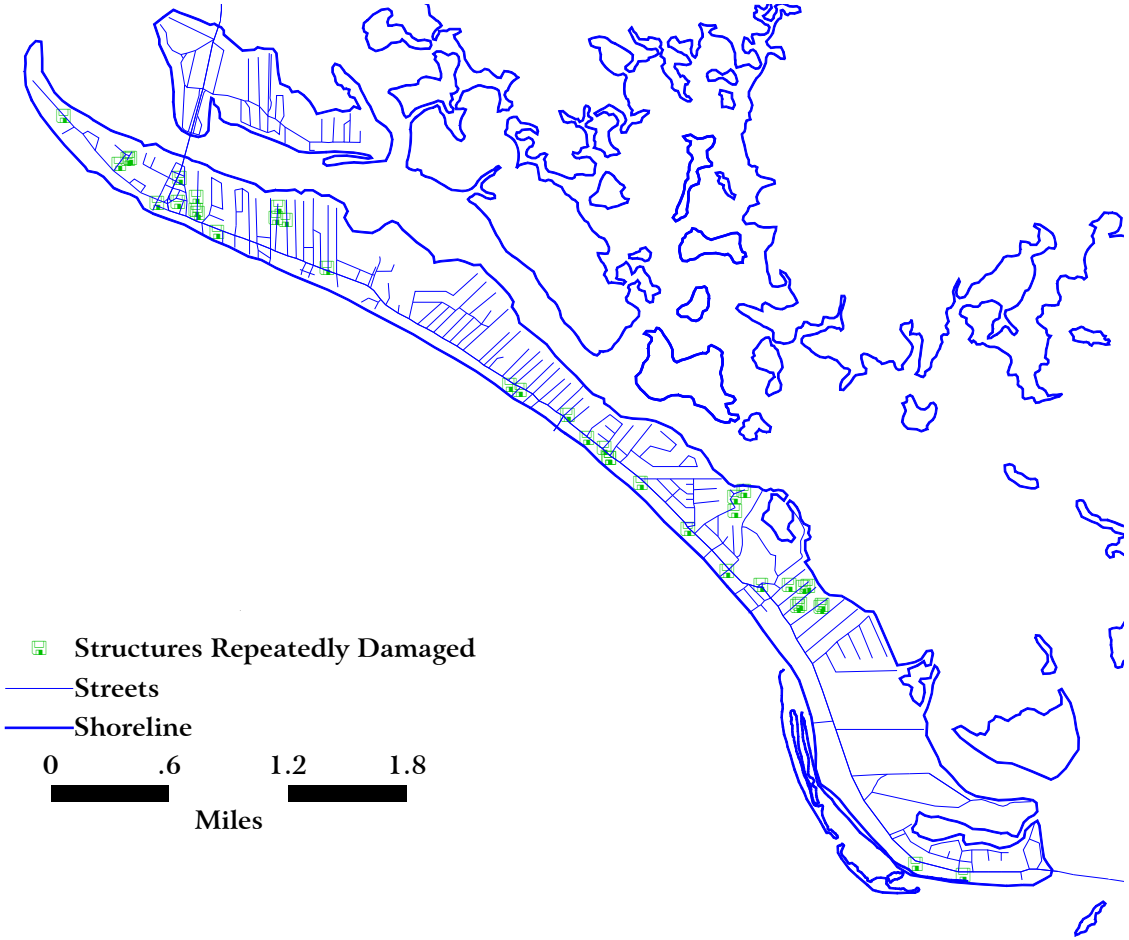

***Figure 6**, Repeated Flood Damage*

Table 5-6 — Structures Reporting Repeated Flood Damage at Fort Myers Beach

STREET ADDRESS	***Mar. 1993*** *("Storm of the century")*	*(other)*	***Nov. 1988*** *(Tropical Storm Keith)*	*(other)*	***July 1985*** *(Tropical Storm Bob)*	***June 1982*** *("No-Name Storm")*	*(other)*
417 Estero	3-13-93		11-23-88				
151 Matanzas	3-13-93		11-23-88		7-23-85	6-18-82	
725 Matanzas			11-23-88		7-23-85		
738 Matanzas				10-12-87		6-18-82	
1042 Second			11-23-88		7-23-85		
1051 Fifth					7-23-85	6-18-82	
1000 Estero			11-23-88		7-22-85		
140 Primo			11-23-88		7-23-85		
153 Primo		7-18-91	11-23-88	1-6-89			
207 Primo			11-23-88		7-23-85		
1400 Estero	3-13-93					6-18-82	
223 Pearl			11-23-88		7-23-85		
290 Pearl			11-23-88	12-31-86			10-31-85
273 Delmar		7-22-91	11-23-88	12-31-86			
145 Tropical Sh.	3-13-93	5-26-90	11-23-88				1-1-87
3860 Estero	3-13-93		11-23-88				
3970 Estero	3-13-93		11-23-88				
120 Gulfview			11-23-88		7-23-85		
4701 Estero					7-23-85		9-14-79
315 Bayland		6-25-92	11-23-88				
5000 Estero					7-22-85	6-18-82	
5000 Estero	3-13-93		11-23-88				
5210 Estero	3-13-93		11-22-88				
5607 Estero					7-23-85		9-21-79
292 Sterling			11-23-88		7-23-85		
306 Seminole	3-13-93		11-23-88		7-23-85	6-16-82	
395 Seminole	3-13-93		11-23-88		7-23-85		
5890 Estero	3-13-93		11-23-88				
75 Mound			11-23-88		7-23-85		
260 Flamingo	3-13-93		11-23-88				
269 Driftwood	3-13-93		11-23-88		7-23-85	6-18-82	
290 Driftwood			11-22-88		7-23-85		
230 Bahia Via	3-13-93		11-23-88	11-22-88		6-18-82	
250 Bahia Via	3-13-93		11-23-88				
258 Curlew	3-13-93		11-23-88		7-23-85	6-18-82	
266 Curlew			11-23-88		7-23-85		
7904 Estero	3-13-93		11-23-88				
8102 Estero	3-13-93		11-23-88				

Source: Lee County Department of Public Safety

BEACH EROSION

Beach and dune systems are the zones of interaction between oceanic waters and land located on barrier islands or the mainland. A typical beach can be divided into four distinct zones which are dunes, backshore, foreshore, and nearshore. The dunes and backshore areas are beyond the influence of regular wave activity; however, they are influenced by wind and surges in wave activity. The foreshore zone is where waves generally break and is the area of most activity. The nearshore zone is generally submerged and great amounts of sand are deposited there as sand descends from waves. Sand is deposited along beaches through wave action in a process know as littoral drift. Wave and tidal action move sand in many different ways. Many times, it is pushed parallel to the shore since wave action is not always perpendicular to the beach. It is also pulled away from the beach by the backwash action of waves. This process transports sand in and away from beaches, resulting in gradual changes.

A number of coastal protection structures have been built over time to combat beach erosion. Many of these are concrete seawalls which have been installed in the central and southern locations of the island where erosion has been the greatest. Revetments have also been used (piles of rocks that function like seawalls), as well as groins (which are built perpendicular to the beach to trap sand).

Some of the southern portion of the island is protected by Little Estero Island, which began as an offshore sand bar that is visible in aerial photographs from as early as 1944. It began to support vegetation and wildlife during the 1970s. Little Estero Island and Bowditch Point are the island's major areas of beach *growth* (accretion).

Like most beaches, much of the rest of the Estero Island shoreline has suffered from erosion caused by storms and tidal action. Figure 7 shows the major areas where continued erosion threatens Estero Island, according to a recent comprehensive study for Lee County (Humiston and Moore Engineers, 1997).

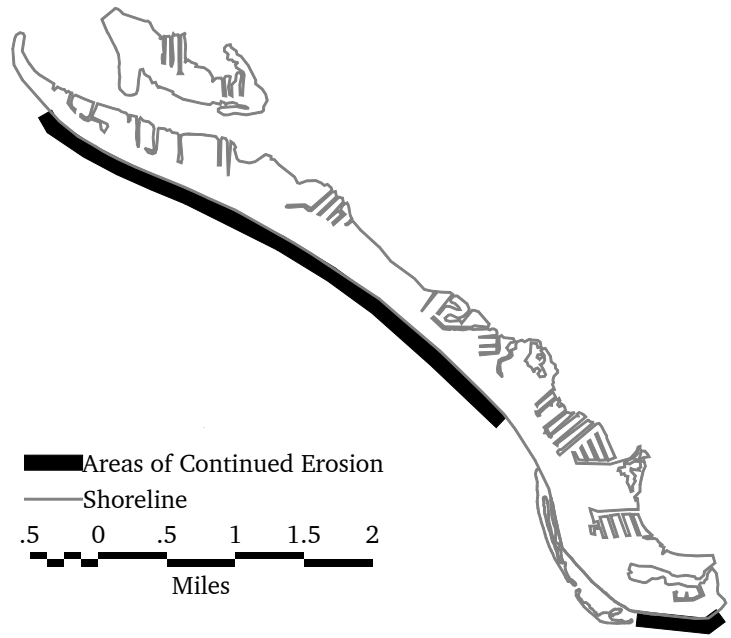

***Figure 7**, Areas of Continued Erosion*

Beach Renourishment

Some "renourishment" of the northern end of the island occurred in 1985/86. Approximately 190,000 cubic yards of sand was restored to the beachfront from Bowditch Point Park to Times Square. Another small beach renourishment project was completed in April 1996 along the beach from the Best Western Hotel to the north of the Estero Island Beach Club. The project involved approximately 4,500 feet of beach and helped to stabilize this section of severely eroding shoreline. Both of these projects were initiated to remove excess material from the main

navigation channel near Bowditch Point; beach renourishment was only a secondary benefit.

Renourishment programs are quite expensive. The recent county study made a through evaluation of historical erosion/accretion rates at Fort Myers Beach and all feasible alternatives for shoreline protection (Humiston and Moore Engineers, 1997). The study recommended a beach renourishment program, at an estimated cost of $9 million for engineering design, permitting, and construction, to renourish the two shoreline sections shown in Figure 7. The report also indicates that maintenance renourishment would be needed every ten years at an annualized cost of $546,000 per year.

The U.S. Army Corps of Engineers had previously estimated a cost at $5.95 million, but the Corps had not included the southern shoreline area and had proposed a smaller volume of sand.

In a recent application to the Department of Environmental Protection, Lee County estimated the cost for the northern segment at $9.57 million of which $4.53 million was requested from the Federal government, $2.51 million from the state government, and $2.53 million would be provided by local government. The requested amount for the southern segment is $3.23 million of which the state and local governments would each provide $1.62 million. Renourishment of the northern segment would involve approximately 25,600 linear feet of beach, while the southern one would involve about 3,155 linear feet. These funding requests include design, permitting, construction, monitoring, and maintenance through the year 2008. This proposal is being supported by the county's Tourist Development Council and its Coastal Advisory Council.

A large renourishment project for Estero Island would be extremely beneficial to the town. The major attractor for tourism and the town's economic base is the Gulf of Mexico and its beaches. For the town and Lee County to continue competing for tourist dollars, investments in beach amenities are necessary and would contribute substantially to the economies of both.

Other Shoreline Protection Measures

Shoreline protection within the Town of Fort Myers Beach should be accomplished by a series of steps:

- The beach renourishment project just described should be a town priority for the critically eroding areas. The long-term recreational and economic benefits derived from this project will offset the initial cost.
- Sand dunes should be protected and re-created where they have been removed. Native dune plants should be protected and non-native exotics removed. Dune walkovers should be constructed where they do not exist and existing walk-overs should be maintained. The use of vehicles on beaches should be limited to law enforcement, public lands management and emergency vehicles, state-licensed turtle monitoring, once-daily delivery and pickup of beach equipment, and minimal use for cleaning litter and excessive accumulations of natural debris.
- Buildings and other structures should be located (or moved) as far away from the shoreline and dune system as possible, since the beach is a constantly changing environment.
- The last resort for shoreline protection is the use of hardened structures.

New hardened structures such as groins, jetties, and seawalls should only be used as a last resort when an entire series of major structures is in imminent danger of collapse, and after methods such as emergency renourishment with trucked-in sand have failed. If it is determined that a new hardened structures is ever acceptable, rip-rap revetment is less damaging than a seawall. Rip-rap consists of one or more layers of natural stone,

boulders, concrete rubble, or sand bags placed on a gentle slope. Rip-rap is very effective on low energy coasts where wave heights are not large (for instance, along Matanzas Pass). It is less effective on beaches, and greatly interferes with sea turtle nesting and public use of the beach.

Groins, jetties, and seawalls along the beach should be the absolute last resort since their use may damage the shoreline in other locations and they impede the public's ability to walk along the beach. The only exception would be for "terminal groins," which extend perpendicular from the shoreline near major inlets. A properly designed terminal groin does not rob adjoining beaches of sand moving along the coast; because of its location, it keeps sand from moving off the beach and into inlets that need to remain open for navigation or tidal circulation.

PUBLIC ACCESS TO THE WATER

Water-Related and Water-Dependent Land Uses

Water-related land uses are plentiful within the Town of Fort Myers Beach. Virtually all of the resorts, retail shops, and restaurants cater to tourists who visit for the Gulf of Mexico and its beaches. In addition, many of the homes are built adjacent to saltwater canals which lead to Estero Bay. In one sense, all of the island's land uses are water-related. In contrast, water-dependent uses absolutely must be on land directly adjoining the water. Examples are marinas, boat ramps, public beaches, or commercial fishing ports.

Marinas

There are four marinas within the Town of Fort Myers Beach. Each offers sales, service, or storage (wet and dry) of boats. Figure 8 and Table 5-7 summarize the location and services offered by the island's commercial marinas.

The Town of Fort Myers Beach does not have a deep water port, nor is one planned for the future. The marinas and docks cater to recreational boaters, tourists, and, occasionally, commercial fishermen.

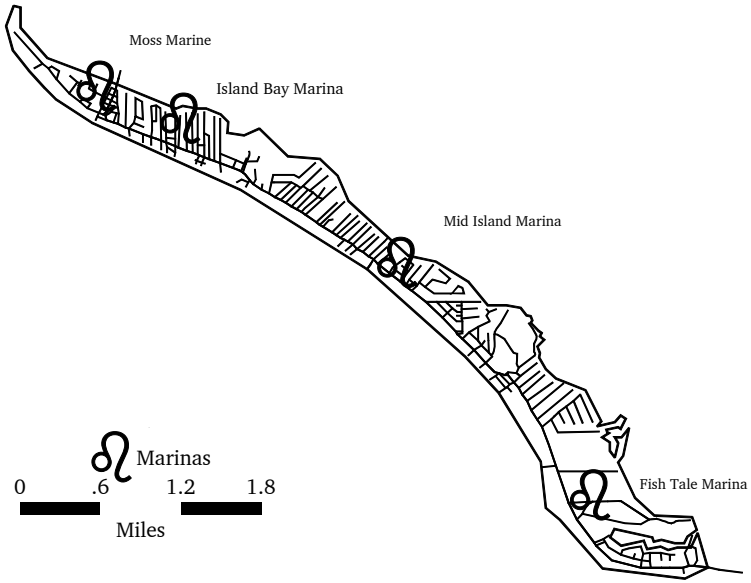

Figure 8*, Marinas*

Table 5-7 — Marinas

	Storage Type	
Name	*Wet*	*Dry*
Mid Island Marina	68	90
Island Bay Marina	22	0
Fish Tale Marina	40	250
Moss Marine	33	up to 220 depending on size of boats

Boat Ramps and Piers

Lee County has long maintained a magnificent pier which attracts tourists, fisherman, and residents to the Times Square area. The pier, 584 feet in length, is located at the Lynn Hall Memorial Park. Figure 9 shows the present pier, which underwent structural renovations in 1997.

Figure 9*, Fishing Pier*

The town does not operate a public boat ramp. Lee County provides public boat ramps with parking for tow vehicles and trailers to the north at Punta Rassa and Sanibel Island and to the south at the Imperial River. The state of Florida provides a boat ramp at the Lover's Key/Carl Johnson State Recreation Area. The ramp at the Lover's Key is the closest at approximately 1½ miles. Figure 10 shows the locations of publicly owned boat ramps.

Within the town's boundaries are 3 quasi-public ramps, each apparently on public land but without space for parking. These ramps are on Bayview Drive and at the end of Miramar Street and Coconut Drive.

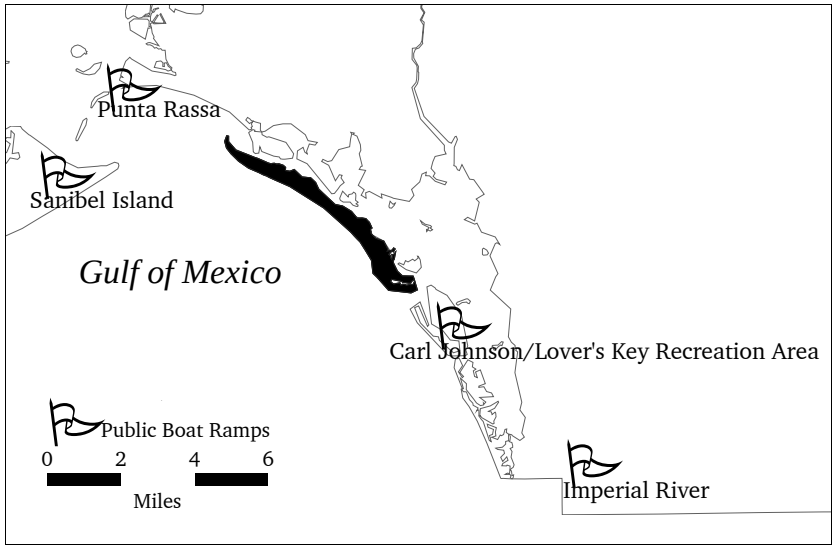

Figure 10*, Public Boat Ramps*

Artificial Reefs and Fishing Areas

Man-made reefs are highly sought destinations for the sport fisherman because the reefs attract numerous varieties of fish. There are several off-shore artificial reefs in the Lee County area, 5 of which are within 13 nautical miles of Fort Myers Beach. They are identified in Table 5-8 and Figure 11.

In addition to artificial reefs, there are other popular fishing areas in the Fort Myers Beach vicinity. The Fort Myers Beach pier provides access to off-shore water for those without boats. Fishermen also fish from fishing piers under both ends of the Sky Bridge, as well as from the gulf and bay shorelines.

Table 5-8 — Artificial Reefs

Artificial Reef	*Material*	*Depth*	*Distance from FMB in miles*
Michael A. Yakubic Reef	Rubble	20 feet	2.9
GH Reef	Culverts	28 feet	5.4
Sanibel Reef	Rubble	20 feet	5.9
Lee-Collier Reef	Buses, truck	35 feet	6.3
Doc Klein Reef	Culverts	32 feet	12.6

Source: A Boater's Guide to Lee County, January 1997.

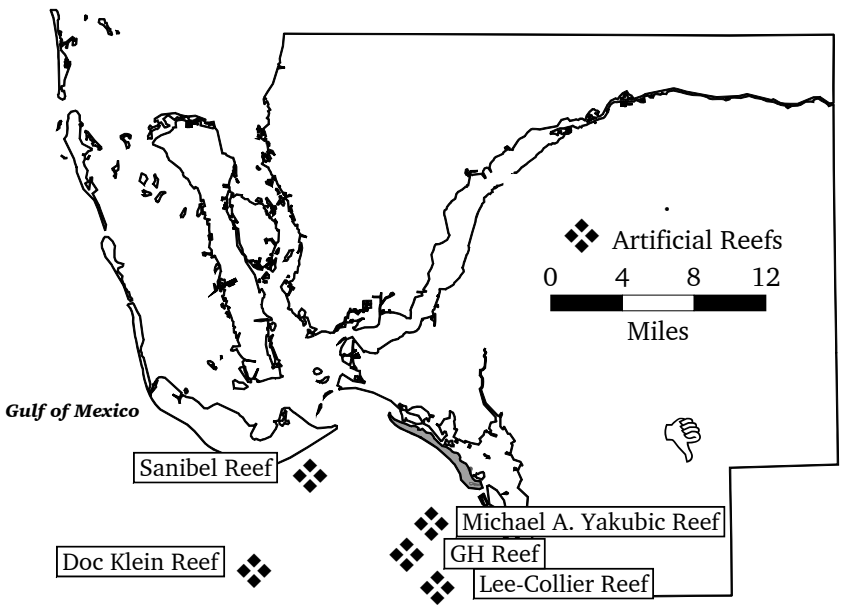

***Figure 11**, artificial reefs*

Beach Access

Access to beaches is very important to residents of any community, not just to visitors. Although many of the town's residents live along the shoreline, not everyone does. Long before incorporation, Lee County has been maintaining and improving the numerous public access points to the beach through the use of easements, rights of way, and purchase of land. There are 46 public access points along the approximately seven-mile island — 36 are located along the Gulf of Mexico and 10 are along Estero Bay (see Table 5-9 and Figure 12). The county has continued to maintain these access points since incorporation, using funding from the Tourist Development Council. The town may wish to take formal responsibility for this maintenance. An opportunity exists to meter the parking spaces and generate revenue to be used for further beach improvements.

Two of the access points are operated by Lee County as public parks. Bowditch Park is approximately 17 acres with 1,850 linear feet of beach along the Gulf of Mexico. Located at the northern tip of Estero Island, the park has playground equipment, fishing areas, picnic tables, nature trails, and restroom facilities. Lynn Hall Memorial Park is about 5 acres in size and has 600 feet of beach. The pier, grills, shelters, playground equipment, and restroom facilities are located at the park.

Most of the town's hotels, motels, and resorts are located along the Gulf of Mexico. They provide access to their guests and, in some cases, to the general public.

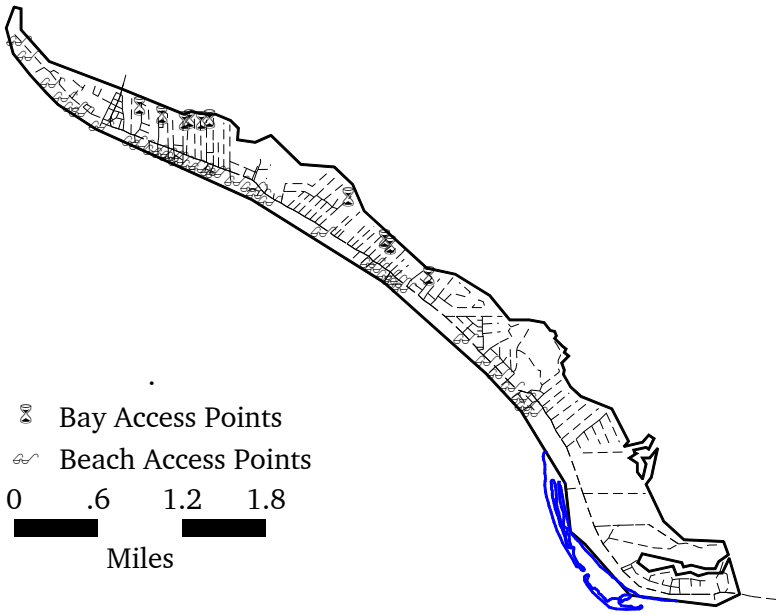

***Figure 12**, Public Access Points*

Need for Additional Access

As demonstrated in the inventory, public access facilities to the beaches and water are quite good. However, given the number of visitors wishing to use these facilities, additional sites should be considered which can provide parking or provide beach access on the southern quarter of the island since no public sites are currently located there. Access acquisition would likely be expensive at the south end, but this is where public access is most lacking at present. An especially critical location would be a southerly access to Little Estero Island, where little Gulf-front land remains available.

Table 5-9 — Public Access Points

Site #	Location	Site #	Location
1	Bowditch Point Regional Park	24	Connecticut Street
2	Island Shores, Lot 42/43	25	Hercules Drive
3	Island Shores, Lot 26	26	Coconut Drive
4	Island Shores, Lot 20	27	Bayview Avenue
5	Island Shores, Lot 15	28	Gulfview Avenue
6	Island Shores, Lot 9	29	Strandview Avenue
7	Island Shores, Lot 4	30	Hyde Park
8	Lynn Hall Memorial Park	31	Dakota Avenue
9	Canal Street	32	Sterling Avenue
10	Avenue “A”	33	Aberdeen Avenue
11	Avenue “C”	34	Lanark Lane
12	Alva Street	35	Gulf Drive
13	Avenue “E”	36	Flamingo Street
14	Miramar Street	37	Palermo Circle
15	Palm Avenue	38	Miramar Street
16	Pearl Street	39	Pearl Street
17	Delmar Avenue	40	Delmar Avenue
18	Mango Street	41	Mango Street
19	Chapel Street	42	Chapel Street
20	Gulf Beach Road	43	Connecticut Street
21	Pompano Street	44	Hercules Drive
22	Seaview Street	45	Coconut Drive
23	Lovers’ Lane	46	Bayland Road

Sites 1 through 36 provide access along the Gulf of Mexico; Sites 37 through 46 provide access along the Bay side.

Source: Lee County Department of Community Development, 1996

Even a single lot here could provide a walking access, a gazebo to provide shade, a small parking area, and educational exhibits about wildlife on Little Estero Island. The parking area would avoid public use of adjoining homesites for this purpose, and would help the town acquire state and federal funding for beach renourishment, funding which is dependent on public access (including parking).

If the town were to construct a public boat ramp, a fairly large site would need to be selected to provide parking for tow vehicles and trailers. Since most of the island is already built up, a public boat ramps would be very expensive. Given the existing traffic congestion during the peak season, off-island residents and visitors would have difficulty using a boat ramp on Estero Island, and would contribute to further congestion whenever they did so. Fortunately, the existing boat ramp situation is sufficient to meet current needs.

Competition for Marina Space

In many coastal locations, available space for public or semi-public access to the water has been drastically reduced through conversions of water-dependent uses (such as marinas) to water-related uses (such as condominiums or restaurants).

To forestall this eventuality, Lee County's comprehensive plan designated "water-dependent overlay zones" that include Fish Tale Marina, Mid-Island Marina, and Moss Marine on Estero Island. That designation began a county-initiated rezoning process to formally zone such sites for marina uses (since in some cases the marinas were not properly zoned, or were zoned for a category that allowed non-marina uses as well). The purpose of rezoning was "to protect their [marina's] rights to rebuild and expand and to prevent their conversion to non-water-dependent uses without a public hearing" (Objective 8.1 and Policy 98.1.1).

Directly across Matanzas Pass, extensive water-dependent overlay zones were also established on San Carlos Island. Those zones were designed to protect "marine industrial" activities such as boat yards, shrimp docks, shrimp packing plants, and certain other compatible uses (these policies are now found under Objective 12.1).

In the intervening years, the shrimping industry has become a potential new competitor for existing marina space. The shrimping industry had been declining for over a decade. Shrimp docks were recently eliminated from Key West, leaving Tampa and San Carlos Island as the only viable shrimping ports on the west coast of Florida. The relocation of the Key West boats is causing serious overcrowding on San Carlos Island, and has led the Community Redevelopment Agency there to evaluate various ideas on expanding the existing docks. A private shrimping firm has also purchased docks at the end of Delmar Avenue and proposes to greatly expand that facility to accommodate overflow parking of shrimp boats.

Although the potential conversion of this marina for overflow shrimp boat docking would not preclude its later re-use as a recreational marina, it does raise other planning issues. Recreational marinas are used in ways that are quite different than quasi-industrial marinas or commercial ports. The potential compatibility issues arise on the waterside of the docks (conflicts between the regular comings-and-goings of small recreational boats and large occasional influxes of large shrimp boats) and on the landside (the potential introduction of industrial activities into a residential neighborhood).

If the San Carlos Island CRA is able to provide alternate overflow docking for shrimp boats or if it is found there is no longer a need, this conflict may never occur. If needed alternate arrangements are unpermittable or otherwise prove to be infeasible, the town may choose to establish its own water-dependent overlay zone for the Island Bay Marina and similar sites to avoid conversion of recreational marinas to industrial uses.

The San Carlos Island CRA recently received a state grant designed to aid waterfront industries. An initial goal is a management plan for the waterfront that balances environmental protection, public recreation, economic development, and hazard

mitigation. The Town of Fort Myers Beach has agreed to participate in this planning process.

The Need for a Balanced Harbor Planning Process

Conflicts between waterfront uses can escalate in the absence of a balanced forum where conflicting uses of Matanzas Pass can be examined and workable solutions devised. With the advent of the Town of Fort Myers Beach, Lee County would have difficulty in establishing such a forum on its own. A forum controlled exclusively by the town, or by San Carlos Island interests, will inevitably be viewed with suspicion by the other side, and ultimately will not have the credibility to resolve many of the difficult issues. It would be in the interests of all parties to create a continuous and more balanced planning process for Matanzas Pass, regardless of which entity initiated this process.

Other harbor issues also need to be addressed and balanced against the needs of the commercial fishing industry and of recreational boaters. These include live-aboard boats; water shuttles; cargo shipping; oil spills; jet skis; boat speed regulations to protect manatees; channel dredging; and estuarine water quality. Currently, each of these issues are considered somewhat in isolation. For instance, a regional harbor board was recently established to address problems faced by (or caused by) anchorages for recreational boaters, including live-aboard vessels. Although this is a positive step, the current anchorage in Matanzas Pass cannot be isolated from other activities there.

Important participants in a balanced planning process might include:

- Lee County;
- The Town of Fort Myers Beach;
- San Carlos Island Local Redevelopment Planning Committee;
- Shrimping industry representatives;
- Recreational marina representatives;
- Estero Bay Aquatic Preserve;
- U.S. Coast Guard
- Lee County Port Authority; and
- West Coast Inland Navigation District.

Ideally this planning process would be an integral part of a new entity established to manage (not just plan for) the future conflicts and activities that can be expected in Matanzas Pass.

A good approach toward establishing such an entity would be for through a formal committee that would advise either the Lee County Commission or the Lee County Port Authority on Matanzas Pass matters. (A similar committee now advises the Port Authority on airport issues; it has been very successful in mediating conflicts and planning a major airport expansion.) The current Lee Plan proposes such an advisory body, with specific responsibility to prepare a "Matanzas Harbor Management Plan" (Policy 94.6.3). However, no ongoing entity has been established to serve this important function.

Since Lee County has not sponsored this process, the Town of Fort Myers Beach has taken the initiative through a newly formed Marine Resources Task Force. In addition to other issues, this task force has focused on Matanzas Pass, and included:

- consideration of all interests in the harbor (not just the anchorage, or just the shrimping industry, or just environmental preservation); and
- an intent to prepare a plan and begin implementing it within a short period of time.

Since formation, this task force has become an active forum for identifying and resolving marine-related conflicts.

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GOALS - OBJECTIVES - POLICIES

Based on the analysis of coastal issues in this element, the following goals, objectives, and policies have been drafted for inclusion in the Fort Myers Beach comprehensive plan.

GOAL 5: To keep the public aware of the potential effects of hurricanes and tropical storms and to plan a more sustainable redevelopment pattern that protects coastal resources, minimizes threats to life and property, and limits public expenditures in areas subject to destruction by storms.

OBJECTIVE 5-A COASTAL PLANNING GENERALLY — Protect and enhance coastal resources through an on-going planning process that recognizes the advantages and limitations of living within a sensitive coastal environment. Enhancement of coastal resources can be measured by increased sea turtle nesting, improvements in estuarine water quality, and restoration of sand dunes. Important limitations on development in this coastal high hazard area include the existing over-concentration of people plus town, state, and federal policies against public expenditures that subsidize further private development.

POLICY 5-A-1 The town shall maintain and enforce building codes at least as stringent as required by Florida law to limit the potential damage of structures from hurricanes and tropical storms. These codes shall include wind-resistance commensurate with the risk of a coastal environment and building elevation requirements that conform with federal laws and Flood Insurance Rate Maps.

POLICY 5-A-2 The maximum density of future residential development is limited to the densities described in the Future Land Use Element in recognition of natural hazards and existing population concentrations. For rebuilding of existing development, refer to the buildback policies under Objective 4-D and 4-E of the Future Land Use Element.

POLICY 5-A-3 When state funding is required for the relocation of replacement of infrastructure currently within the Coastal Building Zone, the capacity of the replacement structure shall be limited to maintaining required service levels, protecting existing residents, and providing for recreation and open space needs.

POLICY 5-A-4 Since the entire Town of Fort Myers Beach is within the coastal planning area and is designated as a coastal high hazard area, specific policies addressing historic buildings, phasing of infrastructure, limitations on development, and environmental resources are contained in other elements of this plan and are not repeated here.

POLICY 5-A-5 Due to the physical constraints of its coastal location, the Town of Fort Myers Beach commits to a future policy of no increase in the net development capacity (island-wide) that would be allowed by the Fort Myers Beach comprehensive plan.

POLICY 5-A-6 The entire town is located within the coastal high-hazard area, as shown on Figure 17 which is part of the adopted Future Land Use Map series (see Policy 4-B-2).

OBJECTIVE 5-B NATURAL DISASTER PLANNING — Reduce the threat of loss of life and property resulting from catastrophic storms by reducing evacuation times and improving shelter capabilities from their current levels.

POLICY 5-B-1 The town shall work to improve the capability of evacuating Fort Myers Beach when a tropical storm or hurricane threatens to strike. Specific problem areas include:

i. County officials may be reluctant to order a county-wide evacuation even though an evacuation may be warranted for low-lying coastal areas such as Fort Myers Beach. town officials should be prepared to order a local evacuation if one is warranted.

ii. Australian pines and other trees along evacuation routes can pose a threat to evacuation routes due to decay or shallow root systems; such trees need to be identified and pruned or removed.

iii. In a cooperative process with Lee County, Sanibel, and the Southwest Florida Regional Planning Council, the town shall seek to improve mainland shelter capacities including private sheltering options.

iv. The town shall work closely with Lee County and Florida DOT to maintain or improve hurricane evacuation times and procedures, including off-island traffic bottlenecks.

POLICY 5-B-2 The town shall participate fully in the federal government's National Flood Insurance Program and seek constant improvements under the Community Rating System.

POLICY 5-B-3 The town shall encourage owners of private buildings to strengthen or otherwise protect them before severe storms strike to reduce avoidable damage to life and property. Town regulations that unnecessarily interfere with this important form of hazard mitigation shall be modified as described in Policy 4-E-3 of the Future Land Use Element.

POLICY 5-B-4 The town shall develop and adopt a storm emergency plan for preparing for, responding to, and recovering from a hurricane or tropical storm. Hazard mitigation recommendations of local peacetime emergency plan or interagency hazard mitigation reports shall be evaluated for inclusion in the town's plans.

POLICY 5-B-5 Capital improvements to infrastructure and facilities under the town's jurisdiction that can maintain or improve evacuation times will be identified and included in the Capital Improvements Element.

POLICY 5-B-6 The town shall maintain substantial reserve funds for emergency work that will be needed immediately following a major storm.

OBJECTIVE 5-C POST-DISASTER REDEVELOPMENT — Plan for post-disaster rebuilding that will reduce the exposure of human life and property to future disasters and improve the community in other ways during the rebuilding process.

POLICY 5-C-1 By 1999, the town in cooperation with Lee County officials shall prepare a post-disaster redevelopment plan. Such plan shall be consistent with this comprehensive plan and use the following priorities:

i. Activities which prevent further loss of life or that minimize public health risks;
ii. Activities which restore the basic public infrastructure and services to support the population;
iii. Activities which prevent further damage to public or private property;
iv. Activities which begin the rebuilding process as promptly as possible.

POLICY 5-C-2 By 1998, the town shall evaluate the elevation and drainage characteristics of evacuation routes to the mainland to identify problem areas that may prematurely block evacuation. Solutions shall be sought in cooperation with agencies having jurisdiction over such facilities.

POLICY 5-C-3 Rebuilding after a natural disaster is allowed in accordance with the "buildback policy" found in Policy 4-C-7 of the Future Land Use Element.

POLICY 5-C-4 To further coordinate the redevelopment activities proposed under this plan with state and federal floodplain management programs, the town shall pursue the following activities:

i. Pursue all potential measures to encourage corrective and preventative measures to existing houses and businesses to increase their resistance to flooding and high winds before a disaster occurs. Examples include storm shutters; shatterproof glass; strengthening roof attachments, floors, and walls; and minor floodproofing.
ii. Allow non-conforming buildings to be modified provided the modifications do not increase the non-conformity.
iii. Investigate the feasibility promoting pedestrian activity in some redeveloping commercial zones by raising the existing grade of roads and sidewalks one to three feet, thus allowing adjoining commercial space to remain at ground level while reducing the required height of dry floodproofing.
iv. Explore with the Department of Environmental Protection an alternative method of controlling building intensity seaward of the Coastal Construction Control Line. The current rule allows 20% of any single building's frontage to be enclosed at ground level. This percentage may be too high for most parts of the town, but is too low where pedestrian zones exist or are being created. An alternative means of computing the 20% rule could better meet the state's coastal management goals and the town's revitalization program.

POLICY 5-C-5 New publicly funded buildings within the town shall be designed to withstand major storms and be able to serve as shelters/operation centers for emergency personnel.

POLICY 5-C-6 Design new and replacement infrastructure to minimize damage caused by flooding and high winds:

i. Power lines shall be relocated underground whenever possible.
ii. Water and sewer systems should eliminate infiltration of flood waters and be designed to function with auxiliary power when needed.

iii. Roads should be designed to manage minimum levels of flooding and be located where least susceptible to storm damage.

POLICY 5-C-7 Continue to inventory buildings that are repeatedly damaged by flood waters to identify those that have recorded one or more National Flood Insurance Program (NFIP) flood losses of $1,000 or more since 1978.

OBJECTIVE 5-D BEACHES AND DUNES — Conserve and enhance the shoreline of Estero Island by increasing the amount of dunes, renourishing beaches to counter natural erosion, and reducing negative man-made impacts on beaches and dunes.

POLICY 5-D-1 The town's policies on shoreline protection measures shall be as follows (see also Objective 5 and related policies in the Conservation Element of this plan):

i. Beach renourishment will be necessary along much of the Gulf beach. The long-term recreational and economic benefits will offset the cost. The town shall work closely with Lee County, which has agreed to take the lead role in carrying out this important activity. All practical measures shall be taken to ensure that beach renourishment improves sea turtle nesting habitat rather than interfering with it. Public access to existing and renourished beaches is an important priority of the town of Fort Myers Beach.

ii. Sand dunes should be protected and recreated wherever they have been removed. Native dune plants should be protected and non-native exotics removed. Dune walkovers should be constructed where they do not exist and existing structures should be maintained.

iii. The use of vehicles on any part of the beach should be severely limited in accordance with Conservation Policy 6-E-4(iv).

iv. Buildings and other structures should be located as far away from the shoreline and dune system as possible since the beach is a constantly changing environment. Beachfront development shall be protected from coastal erosion, wave action, and storms by vegetation, setbacks, and/or beach renourishment rather than by seawalls or other hardened structures which tend to hasten beach erosion, interfere with public access, and block sea turtle nesting.

v. Development (other than minor structures) shall not be allowed seaward of the 1978 Coastal Construction Control Line. Development seaward of the 1991 Coastal Construction Control Line may be permitted provided it complies with this comprehensive plan and all state and local permitting requirements.

vi. Where buildings are threatened by erosion that cannot be reversed by major beach renourishment, the town's priorities are (1) to allow the structure to be

moved away from the beach; (2) to allow emergency renourishment (including the use of trucked-in sand); and (3) to allow rip-rap only when the previous priorities are not possible. Existing seawalls on the beach may be maintained or removed but not rebuilt.

vii. The absolute last resort for shoreline protection is the use of hardened structures (except that terminal groins may be permitted at inlets if acceptable to state and federal permitting agencies). New beachfront buildings requiring seawalls for protection from coastal erosion shall not be permitted.

OBJECTIVE 5-E ACCESS TO THE WATER — Increase the number of well-maintained accesses to beaches, bays, and navigable waters to serve the existing and future population and visitors.

POLICY 5-E-1 Ensure the continued maintenance of existing beach access points, currently provided by Lee County with funds from the Tourist Development Council.

POLICY 5-E-2 Evaluate the need for expanded parking areas and the potential for revenue generation from metered parking as a funding source for additional public access amenities.

POLICY 5-E-3 The town encourages Lee County to continue its program of improving beach access points that are not currently marked.

POLICY 5-E-4 The town shall identify any water access points that are hidden, fenced off, or blocked by encroachments, and then ensure that appropriate public access is restored.

POLICY 5-E-5 The town shall attempt to acquire one or more beach access points at the southern end of the island.

POLICY 5-E-6 The town shall monitor the effectiveness of its ordinances regulating water activities (vessel control, water safety, personal watercraft, and parasailing), and install manatee habitat education signs at waterfront locations. In cooperation with providers and citizens, develop a program of education, interagency cooperation for enforcement, and additional regulation as needed to protect the coastal waters and the safety and welfare of residents and visitors.

POLICY 5-E-7 This plan minimizes the potential for land use conflicts between waterfront uses and other land uses through the following priorities for development/ redevelopment of the shoreline:

i. Intense multi-family uses are limited to areas vested by previous regulations; to the rebuilding of existing sites following a natural disaster (see Policy 4-D-1); and to voluntary rebuilding of existing sites in accordance with the Future Land Use Element.

ii. Future development or redevelopment of shoreline land uses must ensure compatibility with surrounding lands and provide proper buffering where needed.

iii. In determining applicable land uses for a site, priority shall be given to water dependent land uses in the following order:

- Conservation uses

- Water-dependent uses such as marinas which are available for use by the general public;
- Recreational uses; and
- Other uses that are compatible with the surrounding neighborhood.

OBJECTIVE 5-F HARBOR PLANNING — Initiate a cooperative planning process for Matanzas Pass and surrounding waterways by 1998.

POLICY 5-F-1 The town shall take an active role in initiating and participating in the planning process for Matanzas Pass and nearby waters envisioned by Policy 94.6.3 of the Lee County Comprehensive Plan. This process would be conducted by a new entity charged with both planning and implementation. This entity would have the following characteristics:

i. Balanced representation of competing interests such as local governments, recreational and commercial boating interests, and regional/state/federal agencies with jurisdiction over these waters;
ii. A commitment to address and resolve competing interests for use and protection of these water, including commercial fishing and shipping, recreational boating, public anchorage, environmental protection, and protection of other shoreline users; and
iii. The process will be public to seek the active support of all interests so that this planning process can be the first step towards long-term cooperation and protection of these valuable resources.

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CONSERVATION ELEMENT

INTRODUCTION

The town's favorable location on the Gulf of Mexico continues to attract tourists year after year. The Gulf-front beaches provide an attractive place for recreational pursuits but also critical habitat for nesting sea turtles, overwintering and nesting shore-birds, and other wildlife. The continuing challenge to the town is to identify the proper balance between human use and the protection of natural resources, and then to establish programs of stewardship, education, incentives, and regulation to maintain that balance.

Estero Island (the entire Town of Fort Myers Beach) is bounded on the southwest by the Gulf of Mexico and on the northeast by Matanzas Pass and Estero Bay. Figure 1 illustrates the town's location and adjoining preserved areas. The town's land mass is about 1,466 acres in size. Topography ranges from sea level at the coast to natural elevation of about 6 feet; higher elevations result from activities of man (including pre-Columbian landfilling).

Estero Island is part of the Gulf barrier chain, which is a system of lagoons and islands formed by erosion and movement of sand along the shoreline driven by wave energy (also known as littoral drift). In geological terms it is a relatively young and still dynamic system that consists primarily of sand and shell deposits.

Fort Myers Beach has a humid, subtropical climate with an annual average temperature of 74 degrees. Average annual rainfall is about 45 inches, the majority of which occurs during the summer months. Monthly averages are low during the winter and spring and as high as 9 inches in the summer.

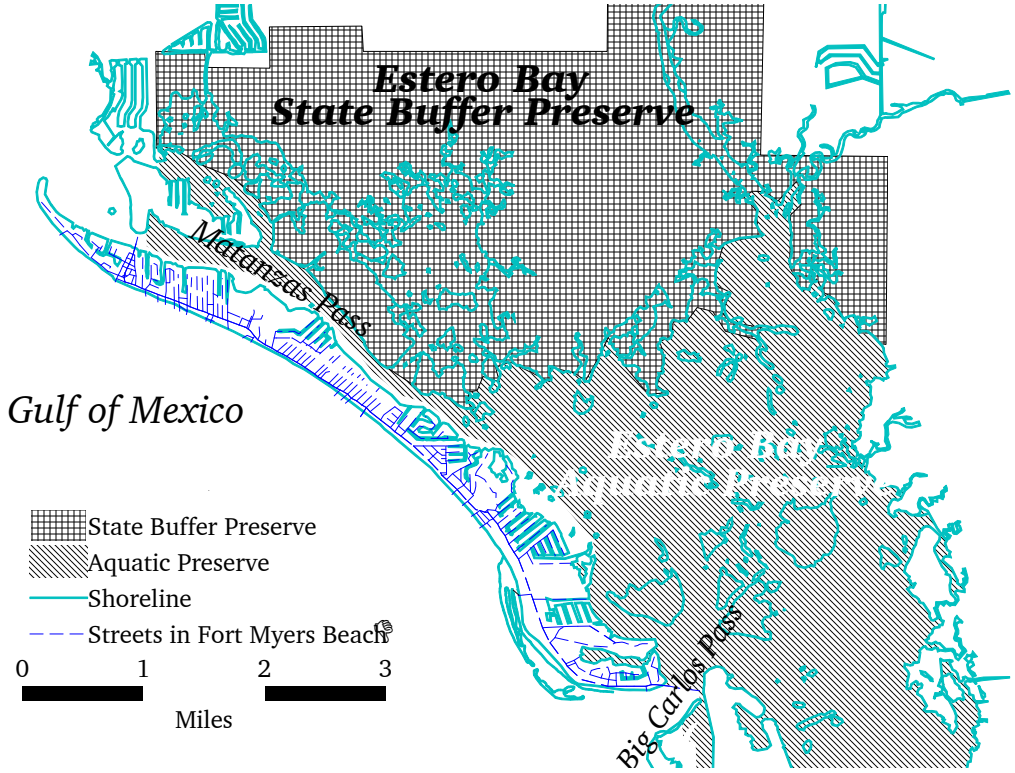

***Figure 1**, Estero Bay Aquatic Preserve and State Buffer Preserve*

SURFACE WATER CLASSIFICATIONS

Fort Myers Beach is surrounded by exceptional surface water resources that are important environmentally as well as economically. The island protects inland areas from wave energy, providing an estuary for seagrasses and mangroves, both of which provide food and shelter for a variety of wildlife. It also protects a small harbor and anchorage for human use.

Florida's surface waters are classified into five classes according to their "present and future most beneficial uses," as shown in Table 6-1.

Table 6-1 — Classes of Surface Waters

Class I:	Potable water supplies
Class II:	Shellfish propagation or harvesting
Class III:	Recreation, propagation and maintenance of a healthy, well-balanced population of fish and wildlife
Class IV:	Agricultural water supplies
Class V:	Navigation, utility, and industrial use

Source: Section 62-302.400 FAC

Class I surface waters are generally of the highest quality and subject to the most stringent protective measures. Because of their intended uses, Class II and III waters may, for certain uses and water quality parameters, receive equal or even greater protection. Class II waters are further divided into three categories by the Florida Department of Environmental Protection (DEP) on the basis of their safety for harvesting shellfish for human consumption. These classes include areas approved or conditionally approved for shellfish harvesting (safe for human consumption), prohibited for shellfish harvesting (polluted and potentially unsafe), or lacking significant shellfish resources. These classes apply to shellfish such as oysters and scallops that feed by filtering microscopic particles from the water, and are thus capable of filtering bacteria, viruses, and red tide organisms from the water and concentrating these organisms in their tissues. These shellfish can also concentrate dissolved contaminants such as heavy metals and organic compounds from polluted waters.

Special consideration is also given to waters classified as "Outstanding Florida Waters" (OFWs) or "Outstanding National Resource Waters," which are defined by Chapter 62-302, *FAC*, as:

> ***Outstanding Florida Waters*** *- waters designated by the Environmental Regulation Commission as worthy of special protection because of their natural attributes; and*
>
> ***Outstanding National Resource Waters*** *- waters designated by the Environmental Regulation Commission that are of such exceptional recreational or ecological significance that water quality should be maintained and protected under all circumstances…*

Finally, the Florida Legislature has declared as "aquatic preserves" certain submerged lands and associated waters that are of "exceptional biological, aesthetic, and scientific value." These preserves are "set aside forever… for the benefit of future generations." (Section 258.36, *FS*). The Town of Fort Myers Beach is separated from the Estero Bay Aquatic Preserve only by the Matanzas Pass navigation channel.

Estero Bay's tributaries have been designated as Outstanding Florida Waters, including Hendry Creek, Big Bayou, Mullock Creek, Estero River (both branches), Halfway Creek, Spring Creek (both branches), Imperial River, Oak Creek, and Leitner Creek (see Chapter 62-302.700(9)(i)(12) *FAC* for precise boundaries).

Figure 2 generally depicts the town's surface water features, plus underwater contours at 6-foot intervals.

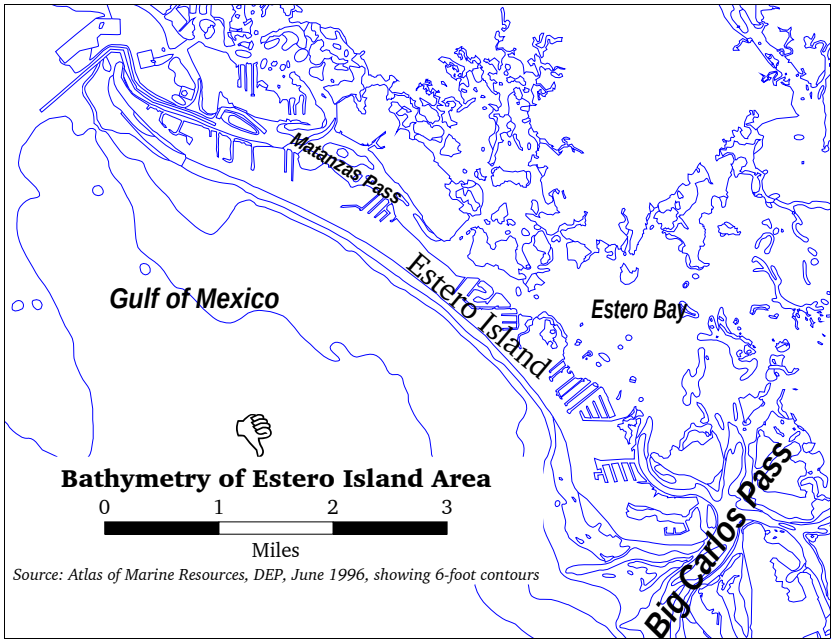

***Figure 2**, Bathymetry of Estero Island Area*

The following sections summarize conditions of major surface waters features. They are presented as separate systems, but these distinctions are somewhat artificial; from an ecological standpoint, Lee County's surface waters (and ground waters with which they are hydrologically connected) are actually part of a larger interconnected system.

ESTERO BAY

This system consists of Estero Bay itself; the adjoining barrier islands including Estero island; and its contributing watershed which includes land surrounding the Imperial and Estero Rivers (both OFWs) and the Ten Mile Canal, which flows into Hendry Creek. Estero Bay is a shallow subtropical lagoon (11,300 acres) separated from the Gulf by the barrier islands. Seagrass beds are common in the bay; however, high turbidity (cloudiness) restricts seagrasses to shallow depths. Estero Bay has no major rivers flowing into it, and only weak tidal exchanges due to restricted inlets. Some of the land surrounding Estero Bay, especially Fort Myers Beach, is heavily developed.

Water Quality

Estero Bay is classified as Class III/Outstanding Florida Waters. Water quality in Estero Bay is generally considered to be fair to good; however, degradation has occurred in recent years (Godschalk and Associates 1988; Lee County 1994). Nutrient and turbidity levels have increased. Estero Bay sediments are enriched in cadmium, lead, and zinc. The freshwater inflow pattern has been altered. Water quality problems are attributed to urbanization of the watershed (shown in Figure 3), which increases pollutants levels and turbidity in the bay. Urbanization in the enter watershed that drains into Estero Bay was projected to increase by over 130% (based on number of dwelling units) from 1986 to 2010 (Godschalk and Associates, 1988). Actual growth has been much higher than projected in Bonita Springs and Estero. Environmental quality in Estero Bay is particularly vulnerable to future degradation due to poor flushing, the bay's small volume of water, and increasing urbanization of the watershed (Godschalk and Associates, 1988).

The bay continues to be a major anchorage for pleasure boats. An informal survey by the DEP indicated that 40% of the boats are anchored permanently and lived on; the remainder are moored temporarily for storm protection or as part of a recreational outing. Some boats dump raw sewage into the bay because they do not have proper sanitary equipment as required by the Florida Clean Vessel Act. In August 1997, the Florida Marine Patrol inspected boats in the anchorage. They made 14 arrests and gave 28 written warnings and 22 verbal warnings.

Nonpoint pollution sources to Estero Bay (those without specific discharge points) were identified by the Lee County Division of Natural Resources Management and DEP, as shown in Table 6-2. These sources will continue to affect water quality in Estero Bay. The following nonpoint source pollutants were identified: nutrients, bacteria, sediments, pesticides, other chemicals, debris, oxygen depletion, salinity, metals, habitat alteration, flow alteration, and thermal pollution. Reactions to the increasing urban pressure have included fish kills, algal blooms, weeds, turbidity, odor, decline in the fishery, and swimming prohibitions.

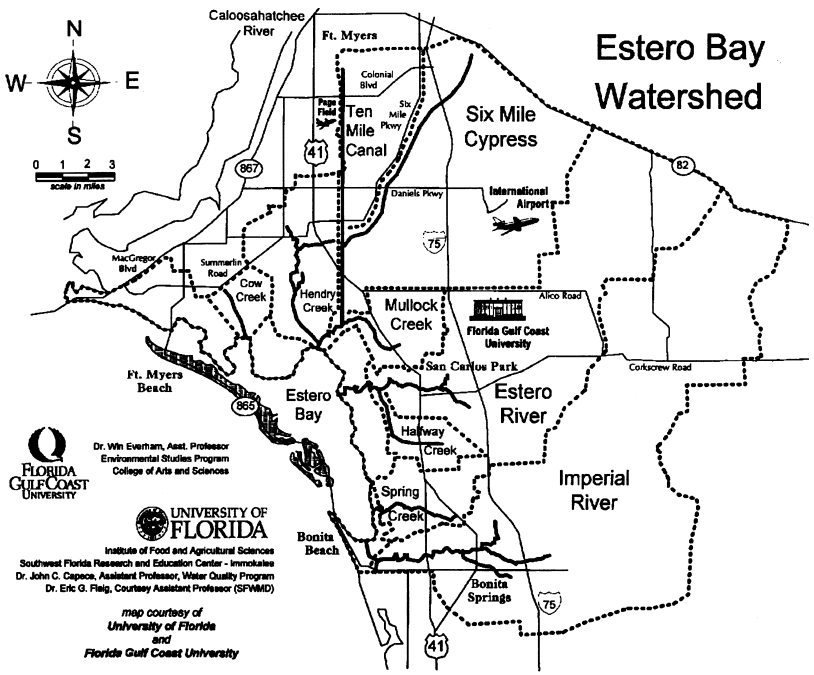

***Figure 3**, Estero Bay watershed boundaries (further studies in progress)*

The Lee County Environmental Laboratory (a branch of Lee County government) has been monitoring water quality in south Estero Bay since 1981 to determine if the closing of Big Hickory Pass degraded water quality. Results as of 1990 indicated good water quality, although urbanization has increased somewhat since the 1990 report.

Table 6-2 — Nonpoint Source Categories Affecting Estero Bay Watershed, 1994

Agriculture:	Irrigated crop production, specialty crops, rangeland
Resource Extraction:	Surface mining
Silviculture:	Forest management (minimal)
Hydromodification/ Habitat Alteration:	Channelization
Dredging:	Dam construction, flow alteration
Bridge construction:	Removal of riparian vegetation, streambank modification, wetland dredging/filling
Urban Stormwater:	Municipal, industrial
Construction:	Highway/road/bridge construction, land development
Other Miscellaneous:	Marinas, waste storage/storage leak tanks, highway maintenance and runoff,
Land Disposal:	Wastewater, landfills, septic tanks, hazardous wastes, utility installations, contaminated sediments, recreational activities, upstream impoundments, groundwater withdrawal

Source: Lee County - 1994 Nonpoint Source Assessment, Lee County Division of Natural Resources Management and Florida DEP

Current Conservation Programs

Estero Bay State Buffer Preserve

The Estero Bay State Buffer Preserve currently consists of 6,346 acres on the north and east sides of Estero Bay. This land has been purchased by the state of Florida after decades of disputes over the environmental impacts of a massive residential community that had been proposed there in the 1970s, which ironically was to be known as "The Estuaries." A management plan has been prepared by DEP for the entire buffer preserve, which contains many environmental and cultural assets including four archaeological sites.

A larger area is also being considered for state purchase, a total of 16,000 acres comprised of wetland and other natural communities that adjoin Estero Bay (including mangrove swamps and other saltwater marshes and salt flats). These communities provide important nutrients to the bay, contributing substantially to its biological productivity. These wetlands serve to help maintain high water quality in the Estero Bay Aquatic Preserve. The 6,346-acre buffer preserve is made up of the initial purchase of this larger area. The prospects for further acquisition dim every month due to strong urbanization pressures.

Estero Bay Aquatic Preserve

Estero Bay was the state's first aquatic preserve, designated in 1966. The Preserve consists of almost 10,000 acres from the Skybridge to Bonita Beach Road. It supports a remarkable diversity of plant and animal life, which in turn supports a variety of human activities such as commercial fishing and tourism. The vegetation of the shallow waters is dominated by seagrasses and mangroves, which trap sediments with their roots, thereby reducing erosion and stabilizing the shoreline. These plants also serve as cover for many animals, from birds roosting or nesting in the mangroves to small crabs camouflaged among the seagrass blades. Leaves of these plants break off and become the substrate for microscopic organisms. This decaying plant matter, known as detritus, serves as the first link in the estuarine food chain. More than 40% of the endangered species or threatened species found in the state occur within southwest Florida's estuaries, including the manatee and bald eagle.

Estero Bay Agency on Bay Management

The Estero Bay Agency on Bay Management (ABM) is one of the results of a settlement agreement for the completion of permitting for the new Florida Gulf Coast University. The ABM is a non-regulatory advisory body whose directive is to develop scientific data and make recommendations for the management of Estero Bay and its watershed. The ABM will also comment to regulatory agencies on issues affecting Estero Bay and its watershed through an annual report. Later in 1997, the ABM is expected to complete a land use analysis of the Estero Bay watershed.

This agency is currently staffed by the Southwest Florida Regional Planning Council (SWFRPC). Members are from Lee County legislative delegation, chambers of commerce, citizen and civic associations, Lee County, South Florida Water Management District (SFWMD), Florida Game and Freshwater Fish Commission (FGFWFC), DEP, SWFRPC, the university, commercial and recreational fishing interests, citizens, and other interested parties. The Town of Fort Myers Beach has a representative on this agency.

The ABM will also review an Estero Bay management and improvement study as it is developed (another aspect of the university settlement). SFWMD has begun work on plans for the Caloosahatchee River watershed and the Estero Bay watershed; they are administering over $200,000 in state funds to develop an Estero Bay Watershed Plan to maintain and improve water quality in Estero Bay. The plan will collect water quality data

and develop goals and standards to improve water quality, and will include a freshwater inflow study.

Charlotte Harbor National Estuary Program

In 1995, the Charlotte Harbor estuary was selected for inclusion in the National Estuary Program (NEP) administered by the EPA. The Charlotte Harbor NEP is also administered by the SWFRPC, with technical assistance from the Mote Marine Laboratory in Sarasota.

This program includes the watersheds of the Peace River, the Myakka River, and the Caloosahatchee River, all of which feed freshwater into the coastal areas of southwest Florida including Matlacha Pass, Pine Island Sound, Charlotte Harbor, and Estero Bay. This entire area including Lemon Bay is the focus of the Charlotte Harbor National Estuary Program (see Figure 4).

The purpose of the NEP is to compile existing data and develop a plan of watershed and waterbody activities that will restore or maintain the water quality and biological functions of the estuary. Because of the many entities that affect the NEP area, coordinated efforts such as this can help maintain the estuary's productivity and overall integrity.

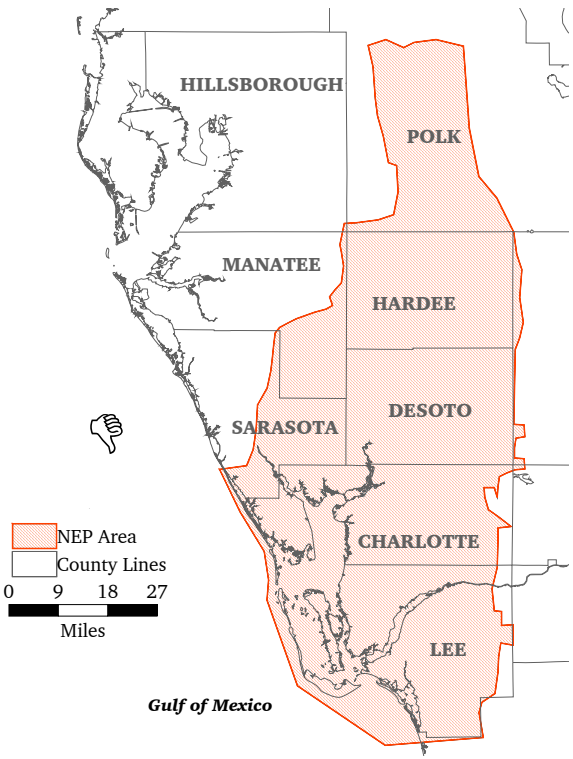

***Figure 4**, Charlotte Harbor National Estuary Program*

The NEP planning process will take three years. The goals, policies, and implementing actions of the NEP will be contained in a Comprehensive Conservation and Management Plan (CCMP). Some demonstration and research activities may also be conducted. Implementation of its goals will be carried out by appropriate local, regional, and state governments after the completion of the planning period.

Other Surface Water Management Activities

As is apparent, the waters around Estero Island are the focus of numerous studies. In addition, the SFWMD has identified several water bodies in Lee County as potential "SWIM" water bodies, including the Caloosahatchee River Estuary, Estero Bay, and Pine Island Sound/Matlacha/Ding Darling.

Florida's Surface Water Improvement and Management (SWIM) Act of 1987 requires each of the five water management districts to identify those surface waters most in need of restoration or preservation. The act mandates the development of management plans ("SWIM plans") for each waterbody so identified, including detailed schedules of implementation. This means that the plan focuses primarily on maintaining and protecting existing water quality and natural systems, and enhancing and restoring water quality or natural systems when necessary and feasible.

Projects included under SWIM plans include establishing water quality targets, determining the loading capacity of major pollutants (including nutrients), identification of point and non-point sources of pollutants, habitat protection and land acquisition, regulatory enforcement, compliance monitoring, and public education.

Coastal Drainage Issues

Coastal communities like the Town of Fort Myers Beach must respond to flooding that arises from two different sources. One source of flooding is unrelated to rainfall and stormwater; it occurs when the Gulf of Mexico and Estero Bay rise to unusual heights due to strong on-shore winds. Often this type of flooding occurs without rainfall. Another source is caused by stormwater runoff utilizing an inadequate conveyance system. Drainage on the island is hampered by low relief and slope and increased area impervious surface due to development. Both of these flooding sources are analyzed in the Stormwater Management Element of this plan.

WILDLIFE AND NATIVE COMMUNITIES

The Town of Fort Myers Beach has several remaining native coastal habitats. These habitats are an important resource which perform a number of vital functions. Coastal wetlands, mangrove swamps, and tidal marshes improve water quality, act as storm buffers, provide shelter for wading birds, and perform a vital role in the important and complex estuarine food chain which is the foundation of a multi-million dollar fishing industry (3rd largest seafood landing in state of Florida).

Upland habitats are important as well in that they provide habitat for a number of endangered species such as the bald eagle and perform flood control functions and buffer the area's waterways from pollutants found in stormwater runoff. The town is fortunate to have some areas set aside as publicly owned reserves which not only perform some of the functions mentioned above but also provide for outdoor recreation and education. The challenge facing the town is to ensure that its preserve areas continue to provide the functions and values needed to maintain the quality of life enjoyed by residents and visitors, as well as their benefits to wildlife.

CONSERVATION AREAS

There are a variety of local, state, and federal efforts protecting wildlife and native communities. Important "critical wildlife areas," preserves, and buffer preserves near Fort Myers Beach.

Little Estero Island Critical Wildlife Area

The FGFWFC establishes Critical Wildlife Areas (CWA) at the request of, or with the concurrence of, the owner of property where such an important area is located. The purpose is to prohibit human disturbance to wildlife during critical periods (for example, when shorebirds are nesting, or are concentrating during overwintering times). "Establishment Orders" for CWAs define the area to be protected and the time of year when protected wildlife may not be disturbed (limited to April 1 through August 31 on Little Estero Island). FGFWFC is responsible for posting closed areas and clearly marking the places closed to trespass during periods when nesting is actually taking place.

Human disturbances are a serious problem for nesting and overwintering birds. Each disturbance adds up; on a busy weekend, these birds may spend a great deal of effort flying around and "defending" their area. Valuable energy is expended that is needed for bearing young or preparing for the long flights back to summer breeding grounds. Sometimes people take their dogs out onto the sand bars and allow them to run free (where animals find great sport chasing birds); small planes sometimes fly low over Little Estero Island, chasing away the very birds they are trying to watch. When disturbances become too great, many species of birds will simply abandon the area.

Little Estero Island is the only CWA in Lee County. This area includes the island itself (now joined to the mainland) and the wetlands and lagoons that have formed behind the island. The northern boundary is the Holiday Inn's riparian line (an

extension of their southerly property line gulfward); the easterly line is the mean high water line of the old developed shoreline.

These habitats provide nesting areas for birds such as the least tern and snowy plover, and prime nesting habitat for sea turtles. During the winter months over 150 species of birds have been known to frequent the area for feeding and resting. The habitat of Little Estero Island is rare, known as coastal dune scrub. This habitat is home to such flora as sea oats, beach berry, seagrape, beach elder, and bay cedar. Non-native species can also be found such as Australian pines and Brazilian pepper. Wildlife is abundant. Marsh rabbits, raccoons, prairie warblers, herring gulls, skimmers, red-breasted merganser, ruddy turnstone, whimbrel, and white ibis have all been seen on Little Estero Island.

Due to the tidal accretion of sand, the southern portion of the island's channel has been filled in. The continual accretion of sand is creating another channel further south, which may again be entirely filled in with new sand.

Problems on the island are mainly due to human activity. Water-craft, domestic pets, and people are a disturbance to wildlife on the island. Every time a bird takes flight for fear of a person, boat, or dog, its energy is reduced for tending to its young, resting, and feeding.

FGFWFC has funding available for signage on the island to inform residents and visitors of the uniqueness and fragility of the island habitat. Enforcement of the rules is another issue. Voluntary enforcement and possible citizen volunteer "patrols" would be an ideal way to educate residents and visitors of the rules of the island and why they are needed.

Matanzas Pass Preserve

The Matanzas Pass Preserve is located behind Fort Myers Beach Elementary School, providing the students with a living classroom. The Fort Myers Beach Library, Bay Oaks Recreation Center, and public beach access are conveniently located nearby. The preserve is one of the few remaining undeveloped open spaces in the town that provide significant wildlife habitat (along with Bowditch Point and Little Estero Island). In addition it has one of the few remaining mangrove forests on Estero Island. The site provides pedestrian access for viewing Matanzas Pass and part of the Estero Bay Aquatic Preserve.

History

The Matanzas Pass Preserve occupies land once owned by John Dunning, a Fort Myers Beach resident and noted nature photographer, who purchased the property from the Martha Redd estate for $125,000 in October, 1974 to save the property from future development. Dunning donated 21 acres of the property and sold 20 acres to the Nature Conservancy in 1975. (Later surveys revealed the property is actually 56 acres.) The Nature Conservancy acquired the rest of this tract through grass-roots fund-raising in 1977, an effort that involved all segments of the Fort Myers Beach population. In 1994, the property was donated to Lee County, and name was changed from Matanzas Pass Wilderness Preserve to simply Matanzas Pass Preserve. In 1995, the Estero Island Historic Society's San Castle Cottage was relocated to a newly acquired area at the entrance and will now serve as a local historical museum and a small interpretive center for the preserve.

Vegetation and Wildlife

Approximately 65 percent of the Matanzas Pass Preserve is a tidal mangrove community. The uplands support live oaks, cabbage palms, sea grapes, and other hammock vegetation. The

mangrove fringe is dominated by red mangrove (*Rhizophora mangle*) and includes black mangrove (*Avicennia germinans*), white mangrove (*Laguncularia racemosa*) and buttonwood (*Conocarpus erectus*), which is a mangrove associate. Mangrove communities perform numerous ecologically important functions and are among the most productive ecosystems in the world.

Additional functions of mangrove systems which contribute to the value of these areas include:

- Providing habitat for a wide range of mammals, birds, reptiles, amphibians, fish, and invertebrates. This includes those species and subspecies classified by FGFWFC as endangered, threatened, or of special concern (see later discussion and listing).
- Providing critical nursery habitat for fishes and invertebrates, thus representing economically vital resources for industries such as commercial fishing and shrimping;
- Helping stabilize intertidal sediments; and
- Providing possible protection for landward edges from hurricane-driven waves.

Existing Conditions

The renovation of the Estero Island Historic Society's San Castle Cottage was completed in early 1997. The existing trail system consists of approximately 1,640 feet of foot trails and 1,055 feet of elevated boardwalk. The trail is essentially a single loop that travels through primarily mangrove on the bay side with habitat communities on the inland side varying from mangrove to transitional uplands. The pass is visible along most of the boardwalk and at the Rotary Pavilion. The pavilion and boardwalk are in need of repair from vandalism and age (Lee County Division of Parks and Recreation, 1996).

Restoration Plan

The preserve has been heavily damaged by invasive, non-native plants. A great deal of work has already occurred removing non-native plants. In October 1995, the Lee County Division of Parks and Recreation cleared approximately 18.3 acres of a dense canopy of Australian pine with an understory of Brazilian pepper and air potato (*Dioscorea bulbifera* L.) as well as areas of mahoe (*Hibiscus tiliaceus*) and seaside mahoe (*Thespesia populnea*). Objectives of the restoration plan include:

- Design and establish a native plant community that likely existed on the site before displacement by invasive exotics. In doing so, native wildlife species may be supported, and the balance of the natural ecosystem may be restored;
- Design and establish buffers between private residences along Nature View Court and Donora Boulevard and the Matanzas Pass Preserve restoration site;
- Minimize cost; and
- Minimize long-term maintenance.

The restoration plan of the preserve is being implemented in three phases: preparing the site; revegetating the site; and managing the site. Future improvements include extending foot trails, repairing and extending boardwalks, providing a canoe/kayak access point, and adding a fishing pier/observation deck. A $100,000 state grant was received in 1997 to improve the boardwalk and add a canoe/kayak launch; this grant is being matched with $33,335 from the local tourist tax.

Bowditch Point Regional Park

Lee County purchased the 16-acre northern end of Estero Island in the late 1980s when development was imminent. Following a series of public workshops, the county prepared a master plan and has developed the first phase of a regional park there. The only further park development is planned is a 78-space public parking lot (the only parking spaces at present are for maintenance staff and handicapped patrons).

The site is surrounded by water on three sides. The bay side has suffered erosion from continued dredging for the main navigation channel; the beach side has been accreting at a rapid rate. A seawall originally built for shoreline protection is now located far inland. Extensive wetlands have formed between the original uplands and the beachfront. Beach renourishment will not be needed because continued natural accretion of the beach is anticipated (see recent shoreline changes in Figure 5).

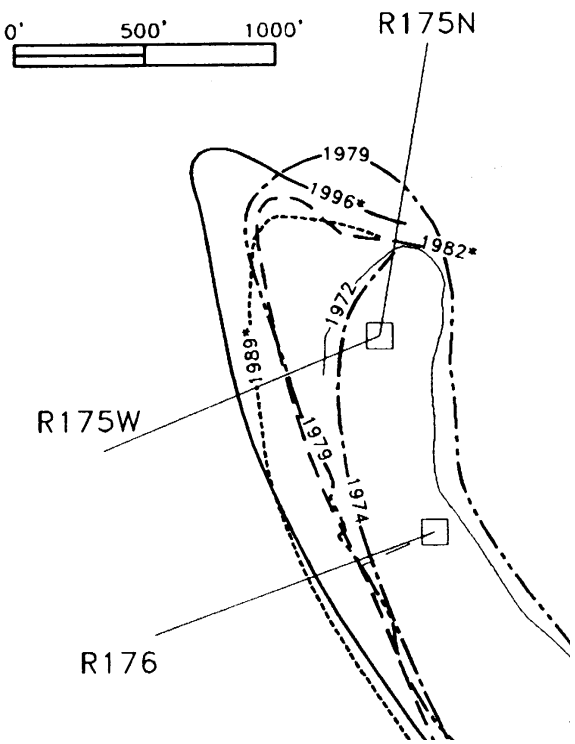

Figure 5*, Bowditch shoreline changes, '72-'96*

Although Bowditch Point is well known for its peaceful beach, it continues to be a haven for wildlife. The only known gopher tortoises burrows remaining on Estero Island are found at Bowditch Point. Sea turtle nesting is not common but occasionally occurs on the beachfront. Over forty species of resident and migratory birds have been identified at Bowditch in recent years, including the threatened bald eagle and six species of birds identified by the state as of "special concern." The shoreline is heavily used by migratory birds.

PROTECTED SPECIES

Fort Myers Beach hosts a diversity of wildlife, both in its preserves (public and private) and in areas which still retain habitat despite urban development. In addition to wildlife commonly found throughout southwest Florida, there are a number of species which are protected (or "listed") as endangered, threatened, or "of special concern." The U.S. Endangered Species Act and the Florida Wildlife Code use slightly different definitions, which may be summarized as follows:

- *Endangered Species:* any species which is in danger of extinction throughout all or a significant portion of its range (summary from ESA);
- *Threatened Species:* any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range (summary from ESA); and
- *Species of Special Concern:* any species that could easily become threatened unless "appropriate protective or management techniques are initiated or maintained" (Florida Wildlife Code). "Special concern" is a designation applied by the state of Florida and not used by the federal government.

In addition, marine mammals such as dolphins are protected by the federal Marine Mammal Protection Act.

Several listed wildlife species of particular concern to the town are listed in Table 6-3, followed by a discussion of some of the most important species. A complete inventory of listed plant and animal species which are known to occur, or which are likely to occur, in Lee County is now being created by the Lee County Division of Planning.

Table 6-3 — Species and subspecies classified as endangered, threatened, or species of special concern

	Scientific Name	*Common Name*
Mammals, Endangered:	*Trichechus manatus*	West Indian manatee
Birds, Special Concern:	*Ajaia ajaja*	roseate spoonbill
	Egretta thula	snowy egret
	Dichromanassa rufescens	reddish egret
	Egretta caerulea	little blue heron
	Egretta tricolor	tri-colored heron
	Eudocimus albus	white ibis
	Haematopus palliatus	American oystercatcher
	Pandion haliaetus	osprey
	Pelecanus occidentalus	brown pelican
	Rynchops niger	black skimmer
Birds, Threatened:	*Charadrius melodus*	piping plover
	Characrius alexandrinus	SE snowy plover
	Sterna hirundo	least tern
	Haliaeetus leucocephalus	bald eagle
Reptiles, Endangered:	*Crocodylus acutus*	American crocodile
	Chelonia mydas	green turtle
	Lepidochelys kempii	Kemp's ridley turtle
	Dermochelys coriacea	leatherback turtle
	Eretmochelys imbricata	hawksbill turtle
Reptiles, Threatened:	*Caretta caretta*	loggerhead turtle
Fish, Special Concern:	*Centropomus undecimalis*	common snook

Source: Matanzas Pass Preserve Resource Management Plan, Lee County Division of Parks and Recreation, 1996; FDEP; Turtle Time Inc.

Bald Eagles

The bald eagle is classified as threatened by both the State of Florida and the Federal government. Florida is home to the second largest breeding population of bald eagles in the nation, and Lee County provides habitat for a substantial portion of that population. During the 1993-1994 nesting season, there were 32 active nests in Lee County. No nests are currently located within the town, but Estero Bay is frequently used as feeding ground for eagles, and they are often seen flying over Estero Island.

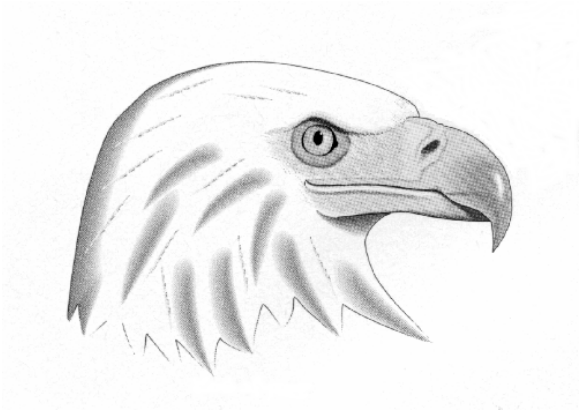

***Figure 6**, Bald Eagle*

Protection of bald eagle nest sites is considered a critical issue, since some of these sites could be located on lands which are subject to development pressure. At present, the eagles frequently seen flying over Estero Island probably nest around the bay on the mainland; the nearest known nests are on the Estero Bay State Buffer Preserve. The town relies on Lee County's ordinance which specifically protects bald eagle nesting habitat, which was adopted in 1986. An Eagle Technical Advisory Committee was established to monitor and create management plans for all known eagle nests in Lee County. The county cooperates with the Florida Game and Fresh Water Fish Commission and U.S. Fish and Wildlife Service (USFWS) in their enforcement of state and federal regulations regarding the bald eagle.

The "Habitat Management Guidelines for the Bald Eagle in the Southern Region" prepared by the USFWS provides guidance for protecting bald eagles during development activities. The guidelines recommend the establishment of a primary protection zone with a radius of 750 to 1500 feet around active nests in which no development should occur. A secondary zone extending an additional 750 feet to a mile from the outer edge of the primary zone should not be disturbed during the nesting season (October through May). In addition to protecting nest sites, consideration should be given to maintaining adequate future nesting habitat, particularly along coastal areas. No nest trees may be touched in any way by development activities unless the nest site has been de-classified by FGFWFC.

In Lee County, bald eagles usually build nests in stands of mature slash pine along coastal bays, estuaries, and rivers. Suitable eagle nesting habitat should be identified and protected by public acquisition or by offering incentives to landowners to maintain their property in a condition suitable for eagle nesting.

West Indian Manatees

Listed as endangered by both the USFWS and FGFWFC, these large marine mammals are found throughout Lee County's surface waters. The manatee's range extends from the panhandles's Big Bend on the west coast, south to the Keys, and north again to Jacksonville.

Figure 7*, West Indian Manatee*

Manatees are typically found in shallow water that has an abundance of seagrasses and other aquatic vegetation. During the winter, Lee County has one of the largest populations of manatees in the state. Manatees are especially attracted to Florida Power and Light's warm-water discharge from their power into the Orange River (near its confluence with the Caloosahatchee River).

San Carlos Bay, Matanzas Pass, and Estero Bay are important to manatees. Manatees may be found feeding on the abundant seagrass beds of San Carlos Bay and Estero Bay, resting and mating in quiet canals and creeks of Fort Myers Beach and San Carlos Island, searching man-made canals for artificial freshwater sources, and using the channels and waterways as travel corridors to move north and south from the Caloosahatchee to Estero Bay and points south.

Historically, manatee mortality in the Lee County has been high. In 1996, manatee mortality in Southwest Florida increased dramatically, when 145 were found dead in Lee County alone. Research conducted by the DEP, Mote Marine Laboratory, the University of Miami, and others finally determined that the manatees died of a respiratory infection caused by brevetoxins (toxins associated with *Gymnodinium breve)*, a red tide organism (Steidinger, 1996). Though manatees and red tide have coexisted for millennia, four specific conditions—early manatee aggregation, mid winter dispersal, high salinities in the affected areas' waters, and high concentrations of *G. breve*—combined to produce the circumstances which led to the 1996 die-off (Steidinger, 1996). Time will tell if such a series of events will occur in the future with equally catastrophic results.

Table 6-4 illustrates the causes and quantities of manatee fatalities in Lee County from 1974 to 1997, and Figure 8 shows the locations near Fort Myers Beach where carcasses were found.

Table 6-4 — Lee County Manatee Mortality, Causes and Quantities, 1974-1994

Year	Water Craft	Other Human	Perinatal	Other Natural	Undetermined	Total
1974	0	0	0	0	0	**0**
1975	0	0	1	0	0	**1**
1976	1	0	2	0	1	**4**
1977	2	0	2	0	7	**11**
1978	2	0	0	2	5	**9**
1979	0	1	1	1	1	**4**
1980	2	0	2	1	2	**7**
1981	4	1	3	3	7	**18**
1982	3	0	1	38	6	**48**
1983	1	1	4	3	6	**15**
1984	1	0	6	2	10	**19**
1985	5	0	4	3	4	**16**
1986	3	0	2	1	9	**15**
1987	3	0	2	1	4	**10**
1988	8	0	5	2	4	**19**
1989	0	0	5	2	9	**16**
1990	5	0	6	6	10	**27**
1991	7	0	6	2	3	**18**
1992	2	1	4	3	9	**19**
1993	5	1	5	3	3	**17**
1994	10	1	9	4	9	**33**
1995	8	1	9	6	7	**31**
1996	14	0	7	50	74	**145**
1997	9	0	7	15	12	**43**

Source: Florida Department of Environmental Protection

Boat-related manatee mortality in Lee County is high, with ten deaths—almost one per month—being at least indirectly attributable to manatee/boat collisions. As the county's boating population increases, the number of boating-related manatee deaths will also increase unless preventative actions are taken.

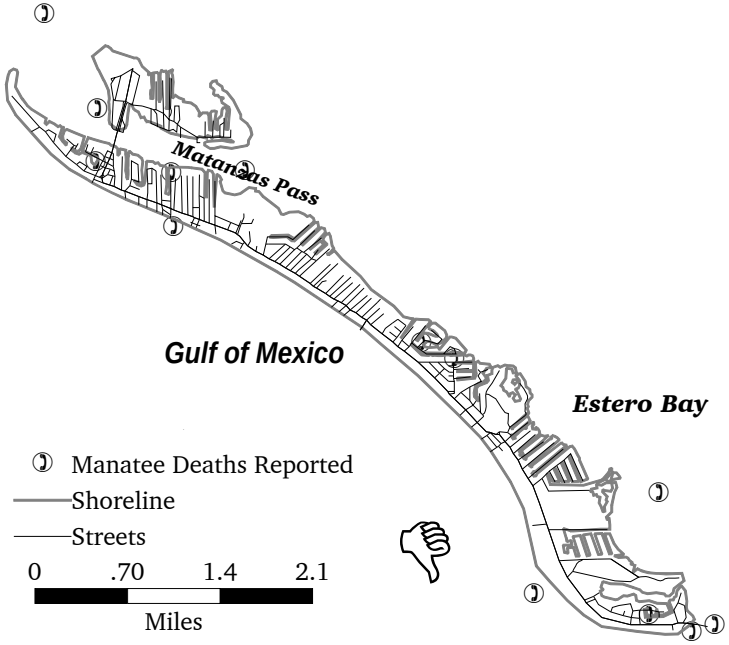

***Figure 8**, Reported Locations of Manatee Deaths*

The DEP is establishing speed zones in intracoastal waterways and other surface waters that manatees are known to frequent. County and state governments have previously passed some basic manatee protection speed zones for certain portions of the county, including the Caloosahatchee. The current effort is expected to be completed in late 1998, to be followed by a Manatee Protection Plan with more extensive speed zones in 1999. The town should cooperate with Lee County and DEP in drafting the new manatee plan. By the year 2000, the SWFRPC's marina siting study should be completed and can be incorporated into the Lee County Manatee Protection Plan.

Sea Turtles

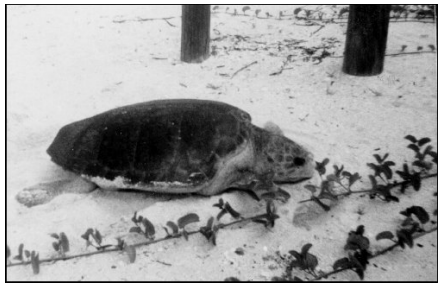

***Figure 9**, female loggerhead*

Five of the world's eight sea turtle species (the loggerhead, green turtle, leatherback, hawksbill, and Kemp's ridley) are found in Florida's coastal waters. Three species (the loggerhead, green, and leatherback) nest regularly along the state's beaches. The loggerhead population that nests in Florida is the second largest in the world, accounting for 35-40% of loggerhead nesting worldwide (FMRI, 1995). In particular, southern Florida hosts approximately 90% of loggerhead nesting efforts. In Lee County, nearly all nests (Table 6-5) are loggerhead nests, although an occasional green turtle and one Kemp's ridley nest have been documented. Sea turtles that nest along Florida's beaches are protected under Florida Statutes (Chapter 370.12). All are protected under the U.S. Endangered Species Act of 1973. The loggerhead is listed as "threatened" while the green, hawksbill, Kemp's ridley, and leatherback are listed as "endangered."

Table 6-5 — Lee County Sea Turtle Data, 1989-1997

Year	*All Nests*	*Disorientation Cases*	*Strandings*
1989	199	1	96
1990	478	8	17
1991	559	1	26
1992	448	6	24
1993	487	6	24
1994	695	4	21
1995	703	3	33
1996	687	12	65
1997	*not available*	*not available*	35

Source: Florida Marine Research Institute and Turtle Time Inc.
Note: 1997 stranding data is through 7/17/97 only

Each year, sea turtles migrate from their feeding grounds, hundreds or even thousands of miles away, to congregate near nesting beaches. Genetic research has provided evidence that most female sea turtles return to the beaches where they were born. Under cover of night, the females come ashore, crawl towards the dune vegetation area, dig a nest cavity with their rear flippers, deposit approximately 100 eggs, cover and camouflage the site, and return to the sea.

***Figure 10**, hatchling*

A female may return three to six times to nest during one season. After a two-month incubation period, the hatchlings emerge as a group at night and scramble to the Gulf waters. Thirty to fifty years later, the female survivors will return to nest. Nesting season begins May 1 and ends October 31.

***Figure 11**, hatchlings scampering toward the water [photos courtesy Turtle Time Inc.]*

Despite national and international protective legislation, sea turtle populations have suffered worldwide decline, primarily as a result of human interference. Some causes include:

- habitat alteration and degradation including beach armoring (seawalls or rocks);
- mechanical beach raking and beach driving;
- entanglement in a variety of fishing gear, crab lines, gill nets, and shrimp trawls;
- increased coastal boating resulting in boat strikes;
- ingestion of plastics and other non-biodegradable debris;
- commercial exploitation or poaching;
- predation of eggs by red ants or raccoons;
- increased human night activity on beaches;
- beach equipment and furniture obstructing nesting sites;
- artificial lighting; and
- coastal development and beach renourishment activities that compact or alter the temperature of the sand.

Turtle Time, Inc., a state-licensed nonprofit organization, has been monitoring sea turtle activity on Fort Myers Beach since 1989. Table 6-6 show the results of that monitoring for all of Estero Island.

A "false crawl" in Table 6-6 refers to a turtle emerging onto a beach and returning without having nested. Contributing factors are: lights, seawalls, human disturbances, dogs, raccoons, pooled water, compacted sand, beach furniture, and exotic vegetation such as Australian pines. Table 6-7 provides more complete data on "false crawls" and total sea turtle nests at various locations along the Estero Island beachfront.

Disoriented nests refer to emerging hatchlings orienting in the wrong direction (away from the Gulf waters). This often results in their death.

Table 6-6 — Estero Island Sea Turtle Data, 1989-1997

Year	*Nests*	*False Crawls*	*Nests Disoriented*
1989	5	-	-
1990	15	52	1
1991	13	36	0
1992	18	35	0
1993	20	40	0
1994	27	25	1
1995	46	35	0
1996	30	53	6
1997	28	66	2

Note: false crawls not tracked in 1989

Turtle Time identifies all false crawls and actual nests by their geographic location on Estero Island. Figure 12 shows the 9 monitoring zones plus a graphic representation of those portions of the beach that are most heavily used for sea turtles nests since 1989. The bar nearest the beach shows the ratio of successful nests per mile of shoreline during that seven-year period. The bar further from shore shows the ratio of false crawls per mile for the same period, at the same scale.

The beach from Palm to Strandview Avenues has by far the highest density of successful turtle nests, ranging from 45 nests per mile in Zone 4 to 62 nests per mile in Zone 5.

The next beach segment to the south (Zone 6, from Strandview to Sterling Avenue), has a surprisingly low ratio of nests per mile (12). However, sea turtles frequently try to nest there, with 58 false crawls per mile during the same period. The likely cause of these poor results is the alteration of nesting habitat such as the number of seawalls and rock revetments, and extensive outdoor lighting. As a general pattern, the density of successful nests and false crawls is lower at both ends of Fort Myers Beach, although Zone 9 at the southerly end is becoming increasingly important in recent years.

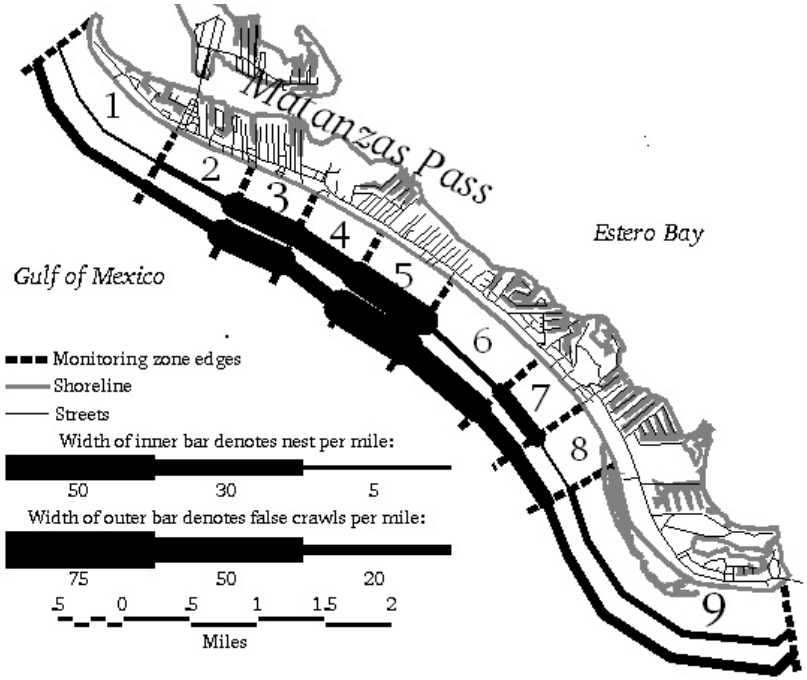

***Figure 12**, Cumulative Sea Turtle Nesting Density, 1989-1996*

The total number of nests has been increasing since 1989, but there are significant problems along the beaches of Estero Island that negatively affect sea turtles. A good indication of interference to nesting is the number of "false crawls" where a turtle emerges from the Gulf but does not nest. It is not safe to assume that turtles who are unable to nest at Fort Myers Beach will simply lay their eggs elsewhere. Prime nesting habitat is very limited, and even more so in view of turtles' tendency to return to their natal beach to nest. In fact, individual turtle populations are genetically distinct; the elimination of suitable habitat will cause a further decline in turtle populations.

Table 6-7 — Estero Island Sea Turtle Data, 1989-1997

	Monitoring Zone Numbers									
	1	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***all***
	Total Number of Nests									
1989	0	0	0	1	3	1	0	0	0	5
1990	0	2	2	1	4	1	1	1	3	15
1991	0	0	4	1	4	1	2	0	1	13
1992	0	0	3	2	2	3	3	0	5	18
1993	1	2	4	4	5	1	1	0	2	20
1994	2	0	5	1	10	0	5	1	3	27
1995	3	5	7	7	10	1	5	0	8	46
1996	3	1	1	9	6	2	1	1	6	30
1997	1	0	2	11	1	2	0	2	9	28
totals:	10	10	28	37	45	12	18	5	37	202
	False Crawls (non-nesting emergences)									
1989	-	-	-	-	-	-	-	-	-	
1990	7	5	7	4	9	7	2	6	5	52
1991	4	5	4	0	8	4	4	1	6	36
1992	0	0	4	2	7	5	7	1	10	36
1993	4	0	2	1	5	20	1	3	4	40
1994	1	0	3	3	4	5	4	2	3	25
1995	3	3	6	7	8	1	1	1	5	35
1996	7	2	5	4	12	7	1	5	9	52
1997	5	1	1	6	3	8	12	14	16	66
totals:	31	16	32	27	56	57	32	33	58	342

Notes: false crawls weren't tracked in 1989

Some causes of declining turtle populations, such as commercial exploitation, are beyond the town's influence. However, many others can be controlled through proper stewardship by local residents and by official actions of the town. The local issues affecting sea turtle nesting and hatching success include:

- ***Artificial lighting.*** Artificial lighting on beaches during the nesting season disrupts critical nocturnal behaviors including nest-site choice and sea-finding ability of both hatchlings and nesting females. As a rule, any artificial light source that is visible from the nesting beach may disorient sea turtles. Even distant lighting, such as that now used to light the sports fields at Bay Oaks Park, can disorient turtles. Lee County passed a Sea Turtle Protection Ordinance in 1989 (Ordinance No. 89-09, which is now a town ordinance). It provides standards for existing and new coastal development, prohibiting lights along beaches during the nesting season. In 1996, the Florida Department of Environmental Protection established new guidelines for the creation of local regulations that control beachfront lighting. The current local regulations should be updated to the standards of the state model. Of the many environmental disturbances initiated by humans, excessive light is among the most serious threats to turtle survival; fortunately it is also the most manageable. Solutions using the best available technology include low-pressure sodium lighting; shielding, redirecting, or recessing light; minimizing the number and wattage of lights; or using 25-watt yellow bug lights. Ground-level barriers of vegetation can also be effective. The goal for lighting near nesting beaches is: *No point source of light or any reflective surface of the light fixture can be directly visible from the beach, and areas seaward of a frontal dune must not be directly, indirectly, or cumulatively illuminated.* Consistent monitoring for compliance, with timely follow-up checks, is imperative for a successful sea turtle protection program.

- ***Mechanical beach scraping.*** This activity removes vegetation and detritus (natural marine material such as seaweed) that contributes to dune formation. Sometimes the dune is actually scraped away. The use of a tractor-pulled box blade is illegal but common.
- ***Sand compaction.*** Tractors and trucks can contribute to sand compaction, which interferes with nesting and hatching turtles. Compacted sand drains poorly, which causes further compaction. (Other physical characteristics of the beach that also determine the success of embryonic development are salinity and thermal and hydric environments.) Nests constructed in severely compacted sand often are improperly shaped, insufficiently deep, and have poor respiratory gas exchange, resulting in decreased hatching rates and possibly affecting the strength and survivorship of the hatchlings. Beach-dune preservation, stabilization, and restoration would greatly enhance the beauty, economic value, and well-being of the beach.

- ***Beach equipment.*** Sea turtles can become entangled in beach furniture that interferes with access to suitable nesting areas, which often are located up the beach in the vegetation. Sea turtles are unable to crawl backward, and thus must expend tremendous energy trying to extricate themselves. Several hotels have converted to lightweight beach furniture which is removed at the end of each day. A significant decrease in beach litter has been noticed in these areas. Storage of concessions stands, jet skis, tables, chairs, tents, and kiosks can also be a barrier to nesting habitat.

- ***Water run-off.*** Many gulf-front properties drain their roofs, parking lots, and swimming pools directly onto the beach. This flow of water almost always erodes the beach, sometimes pollutes the Gulf of Mexico, and on occasion floods turtle nests. (This issue and possible solutions are discussed further in the Stormwater Management Element.)

Dolphins

Bottlenose dolphins are among the most popular wildlife in this area. These marine mammals reside world-wide in warm oceanic and brackish waters, where their carnivorous diet includes fish and the occasional crustacean. Local dolphins are often called porpoises, which are actually another species of toothed whale that prefers cooler water and tends to be smaller and have a blunt snout and triangular teeth. Adding to the confusion, visitors to local restaurants are sometimes dismayed to find "dolphin" on the menu, which actually refers to an unrelated fish that is also known as "mahi-mahi."

***Figure 13**, Dolphin (Tursiops truncatus) [photo courtesy Project Pod]*

Coastal bottlenose dolphins (the ones frequently seen in Estero Bay) have a range of about 8 to 10 miles. However, any one particular dolphin has a particular home range. Open-ocean (or pelagic) bottlenoses have much larger home ranges. These two populations – coastal and pelagic – do not interbreed and are sometimes considered to be separate species.

Dolphins have reputation for being friendly and sometimes swim along with passing boats. This behavior sometimes encourages boaters to feed or even unintentionally harass dolphins, both of which are unlawful. The federal Marine Mammal Protection Act was passed in 1972 to regulate human interaction with marine mammals. The initial thrust was to reduce the number of dolphins killed in tuna nets. In 1992 this statute was strengthened to prevent the harassment and feeding of marine mammals.

The National Marine Fisheries Service (NMFS) recommends that boaters stay at least 50 yards away from dolphins. This distance isn't in the statute, but boaters can be certain of not harassing dolphins by maintaining that distance. The NMFS is the primary branch of government responsible for enforcing the statute, although any law enforcement agency can do so if knowledgeable about its provisions.

Distance is particularly important when calves are involved. If calves are scared away from their mothers or separated from them by over-eager boaters, the calves can become easy targets for sharks. Matings, restings, and feedings can also be completely disrupted by onlookers who don't have proper knowledge of these behaviors.

Feeding dolphins encourages them to approach boats for handouts, putting them at greater risk of propellor injuries. It also encourages mothers to teach their young to beg rather than hunt. Additionally, the food people give to dolphins can be contaminated and lead to sickness and death.

Dolphins are important to tourism, especially as part of the gradual shift away from aquariums and zoos and toward "eco-tour" or out-in-the-wild experiences. Maintaining a safe distance ensures the safety of dolphins and is the best way to see their whole range of behaviors in a relatively short time. Boaters who approach dolphins too closely often see nothing but fleeing animals.

Gopher Tortoises

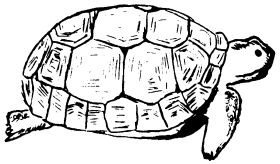

Figure 14*, Gopher tortoise*

Once abundant throughout the southeastern United States, the gopher tortoise (*Gopherus polyphemus*) is now principally found in southern Alabama, Georgia, and all of Florida. It is listed as a species of special concern by FGFWFC; habitat loss from a variety of land use activities is its principal threat. Gopher tortoises prefer dry, well drained soils for their burrows, such as are found in beach scrub, coastal dunes, and oak hammocks. Unfortunately these same areas are highly prized for urban development. Although once abundant at Fort Myers Beach, gopher tortoise burrows are now rare, with several remaining in protected areas at Bowditch Point.

The gopher tortoise is considered a keystone species on which the survival of many other animals depend. In fact, beyond sheltering the tortoise, a gopher tortoise burrow may provide shelter for any of more than 360 different animal species, including the listed indigo snake, gopher frog, and burrowing owl. Gopher tortoises, like sea turtles, regularly live 50 years or more.

Figure 15*, Gopher tortoise emerging from burrow*

Although relocation of tortoises is permitted, this should be undertaken as the final alternative on a development site. Establishment of protection zones or conservation areas are the first choice for the long-term protection of gopher tortoises.

Protective Measures

Lee County has attempted to take additional steps that would protect certain species and their habitats. The county has passed various ordinances protecting species and environmentally sensitive lands within the county for the purpose of protecting these important natural resources from the potential adverse impacts of future land development activities. Environmentally sensitive lands protected include wetlands; Outstanding Florida Waters (OFWs), Class I and Class II water bodies, and adjacent uplands; scrub habitats; portions of the barrier islands; and wildlife corridors.

Due to the public's requests for additional environmental protection for wildlife and native habitats, the town can adopt additional ordinances or acquisition programs, and attempt to provide local direction or legislation addressing listed species and the habitats upon which they depend. The town should adopt land use policies that clearly require that all applicable permits from jurisdictional agencies be acquired prior to the issuance of local approval for land use activities which may affect listed wildlife species. The town may also support public education through brochures, newspaper articles, public presentations, and workshops; and it may wish to increase its involvement with non-profit organizations such as Turtle Time, Ostego Bay Foundation, and the Friends of Matanzas Pass Preserve which are all actively involved with such measures.

WETLANDS

Tidal Marshes

Tidal marshes are found along gradually sloping, low-energy coastlines. In south Florida, mangrove swamps are much more common in the tidal zone than tidal marshes. An exception is the tidal marsh surrounded by Little Estero Island, where typical plant species include sea grape, beach berry, sea oats, bay cedar, and some mangroves.

Mangrove Swamps

These brackish or salt-water swamps are found along Matanzas Pass and surrounding all of Estero Bay. Florida is the only state in which all three species of mangroves occur. The red mangrove is an intertidal species that is typically found growing along the waters' edge, identifiable by its tangled network of reddish prop roots. The black mangrove is also an intertidal species which is usually located inland of red mangroves. They occur in the part of the system that has less tidal flushing and circulation. The black mangrove can be identified by its numerous finger-like projections, called pneumatophores, that protrude from the soil around the tree trunks. The white mangrove typically occupies the highest elevations farther inland than the red and black mangroves, although it can be interspersed throughout the swamp. White mangroves differ from the red and black mangroves in that they have neither an aerial root system norpneumatophores. Identification is best accomplished by examining the leaves, which are elliptical, light yellow-green, and have two distinguishing glands at the base of the leaf blade where the stem starts.

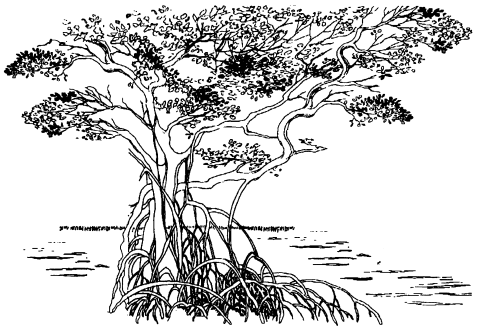

Figure 16*, Red mangrove tree*

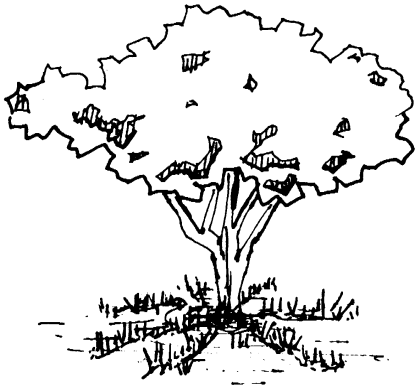

Figure 17*, Black mangrove tree*

It is interesting to note that, while other coastal habitats are known to have experienced significant declines in aerial extent, mangrove forest acreage has increased by approximately 10% between 1945 and 1982 (Harris et al., 1983). However, during that same period, most mangrove forests at Fort Myers Beach were eliminated because of dredge-and-fill activities along Matanzas Pass.

There are only about 105 acres of wetlands remaining on Estero Island, almost entirely forested with mangrove trees. They have been given a separate category on the Future Land Use Map in this comprehensive plan to ensure their protection. Except for occasional spoil piles from previous dredging activities, these mangrove forests are in good condition. Daily tidal flows are almost unimpeded, although freshwater flows from adjoining uplands have been reduced from historic conditions. Management needs are limited to protection from future dredging and filling; removal of exotic vegetation that will encroach from adjoining uplands; and occasional removal of trash and debris that is dumped or floats in on high tides.

Environmental Values and Functions

The animals that rely on tidal marshes for habitat include the salt marsh snake, diamondback terrapin, Florida clapper rail, seaside sparrow, black-necked stilt, Marian's marsh wren, sharp-tailed sparrow, marsh rabbit, marsh rice rat, and raccoons. Many wading birds feed on the small crustaceans and fishes abundant in salt marshes. The salt flats are used as corridors by

raccoon, opossum, rabbit, and bobcat, which come to the estuarine edges to feed.

Mangrove swamps provide habitat for a multitude of forage species including mosquitoes, small fishes, bivalve and gastropod molluscs, fiddler crabs, amphipods, and other small crustaceans. Birds comprise the most diverse and numerous group of larger animals inhabiting mangrove swamps. Herons including the little blue, green, tri-colored, great blue, and both the yellow-crowned and black-crowned night herons nest in mangrove habitats, as do the snowy, reddish, cattle, and great egrets. Roseate spoonbills, white ibis, wood storks, and double-crested cormorants also nest in mangroves. Other species characteristic of these swamps include the red-shouldered hawk, osprey, belted kingfisher, turkey vulture, black vulture, pileated woodpecker, fish crow, mangrove cuckoo, blue-gray gnatcatcher, Carolina wren, prairie warbler, and boat-tailed grackle. Many species are abundant in mangrove habitats as seasonal residents such as the cardinal or migrants including the robin, American redstart, palm warbler, black-throated blue warbler, and black and white warbler.

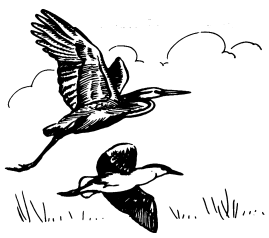

Figure 18*, Great blue heron (above) and black-crowned night heron*

In addition to wildlife habitat, coastal wetlands provide many other environmental benefits, including buffering of storm tides and winds, shoreline stabilization, biological filtration, and assimilation of nutrients and other pollutants contained in upland runoff. However, the most significant function of coastal wetlands is the production of food for estuarine and coastal waters. Detritus is the broken-down plant material produced by wetland plants. Detritus from mangroves, tidal marsh, and salt flats forms the base of the food web which supports virtually the entire estuarine and near shore marine communities. Mullet, redfish, spotted sea trout, snook, tarpon, mangrove snapper, stone crab, blue crab, pink shrimp, oysters and clams are but a few species sought by commercial or sport fishermen which are dependent upon this nutrient base. Mangrove wetlands may significantly contribute to the estuarine system via heavy utilization by wading birds and other predators of forage fishes, fiddler crabs, and other primary consumers of mangrove detritus.

Threats to Habitat

About half of the salt marsh habitat that once adjoined the Charlotte Harbor estuary has been lost in the past 30 to 45 years, primarily due to the dredging of manmade finger canals and the construction of other facilities for residential and commercial purposes (Harris et al. 1983). In addition, many miles of existing shoreline along the rivers and (to a lesser extent) the Harbor proper have been sea-walled or otherwise hardened. If undertaken, restoration of these areas to their natural condition will be difficult and expensive process.

Destruction of coastal wetlands has been a significant factor in the deterioration of South Florida's natural resources. Filling for residential or commercial use encroaches on the edges of the bays and tidal streams by replacing productive mangrove swamp or tidal marsh with upland habitat, greatly impacting the productivity of the estuarine system. Dredging of boat basins and channels has a similar impact. The use of seawalls, rip-rap and other forms of shoreline stabilization replaces the estuarine edge and results in a direct loss in the amount of detritus produced and available to estuarine organisms. Ditching for mosquito control has had a significant impact in that the mangrove ditching may have actually created more mosquito habitat, the associated fill has clogged natural tidal channels, and has encouraged the invasion of exotic species such as Brazilian pepper and Australian pines.

Although state and federal regulations offer considerable protection, these habitats continue to be conditionally disturbed by the above activities and by the destruction of adjacent upland communities which have historically provided clear freshwater inflow. Some recent changes to local, state, and federal regulations and guidelines in recent years have been harmful. For example, the 1995 Mangrove Trimming and Preservation Act, which amended Section 403 *FS*, provided numerous exemptions and general permitting criteria which allowed the alteration of mangroves in natural and man-made waterways, including aquatic preserves and State-owned lands. Though the Act was further amended during the 1996 Legislative Session to provide better protection for mangrove systems, significant damage occurred as a result of this brief-lived but unfortunate legislation. If the state continues to enact such legislation, it will again fall upon local governments to implement more stringent regulations before the functions of these habitats are forever altered.

HABITAT TYPES IN ESTUARIES AND BAYS

The Charlotte Harbor and Estero Bay estuaries are created by the mixing of fresh water rivers and the oceans, and are typically highly productive systems. Their general characteristics include typically shallow depth (less than 20 feet), good mixing of the water column, and flushing by tides and freshwater inflow. Salinity varies from fresh-water to normal sea water, and may fluctuate seasonally. Mangroves, salt marshes, seagrass beds, phytoplankton, tidal flats, and oyster bars all play significant roles in estuarine ecology. Wildlife resources are abundant and diverse, with many commercial or sport fishes and crustaceans inhabiting these areas permanently or as juveniles. Many wading birds, waterfowl and shorebirds winter, feed, and nest in these areas or on landward fringes and islands.

Seagrass Meadows

Seagrass meadows (or seagrass beds) are underwater fields of flowering vascular plants that grow on the bottoms of coastal bays and estuaries. Major seagrass concentrations are found in Estero Bay. Several types of seagrasses are found in area coastal waters and illustrated here, including:

- Turtle grass (*Thalassia testudinum*) is the most common of the Florida seagrasses and characteristically has a deeper root structure than the other (see Figure 190).
- Shoal grass (*Halodule wrightii*) is an early colonizer of disturbed areas and usually grows in water too shallow for other species (see Figure 20).
- Manatee grass (*Syringodium filiforme*) is easily recognizable because its leaves are cylindrical (see Figure 21).
- Widgeon grass (*Ruppia maritima*) grows in both fresh and saltwater and is widely distributed through Florida estuaries (see Figure 22). *[sketches courtesy Florida Marine Research Institute]*
- Star grass (Halophila englemannii) and paddle grass (*Halophila decipiens*) also may occur in this area.

Seagrass meadows are highly productive habitats. They serve as nursery areas for many popular fish species. A single square yard of seagrass can harbor 3,000 marine worms and 1,500 amphipods (small shrimp-like organisms); both are important food sources for fish. Seagrass meadows provide critical feeding habitat for sea turtles and the West Indian manatee, and foraging habitat for resident and migratory coastal birds. Over 80 species of birds feed on the fish and invertebrates found among Florida's seagrasses.

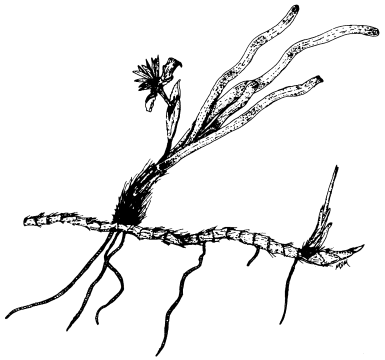

Figure 19*, Turtle grass*

Seagrasses stabilize marine sediments. Without the grass cover, waves and currents would resuspend sediments, clouding the water and reducing sunlight needed for plant growth. The plants remove nutrients from the water and convert them into forms usable by higher organisms.

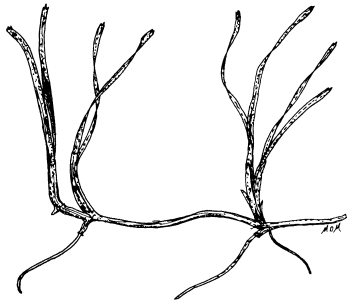

***Figure 20**, Shoal grass*

In 1990, the Lee County Environmental Laboratory conducted a baseline study to assess the status of the bay and provide a point of reference for future research. The study indicates healthy seagrass beds are abundant in most of the bay, with turbidity restricting seagrasses to fairly shallow depths.

Increased motor boat traffic in shallow waters with seagrasses can damage seagrass beds in two ways:

- motors can re-suspend bottom sediments which can settle out onto seagrasses, effectively shading the seagrasses and reducing their growth or eventually burying entire seagrass beds; and
- propellers can cut furrows into seagrass beds; this is known as "prop scarring" or, when intentional, "prop dredging." These furrows take many years to recover.

To help combat these problems, the town may consider an ordinance restricting access over certain seagrass beds within the town limits by motorized boats, or marking seagrass beds clearly so that boaters can avoid them.

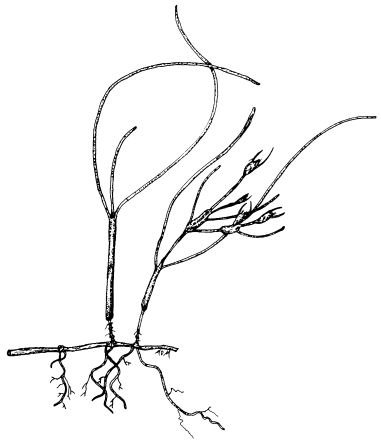

***Figure 21**, Manatee grass*

Motor boats are not the only source of impacts to seagrass beds. Drainage and the introduction of sewage pollutants and storm water runoff increases the suspended load in Estero Bay. The loss of natural filtration of nutrients also has probably increased phytoplankton production. All of these factors tend to eliminate seagrass meadows in the deeper waters.

***Figure 22**, Widgeon grass*

Tidal Flats

Tidal flat areas are periodically inundated flats located at the mouths of rivers, near inlets, along the shoreline of the Harbors and bays, immediately waterward of tidal marshes or mangrove forest, or in dredge spoil disposal areas. They range from transient unstable areas used primarily by shorebirds and wading birds, to stable mudflats with extensive algal, mollusc, crustacean, and worm communities. Cuban shoalgrass, turtlegrass, red mangrove saplings, cordgrass, or other plants may occur sporadically, but these flats are generally devoid of vascular vegetation. Fiddler crabs, spider crabs, horseshoe crabs, quahog clams, oysters, slipper shells, barnacles, moon snails, various sponges, and numerous additional molluscs, crustaceans, and worms are often abundant in such habitats.

Soft Bottoms

The bottoms of estuaries and bays are generally made up of unconsolidated sediments. These unvegetated soft bottoms are colonized by animals that live on or in the sediments (called "benthic" animals, or "benthos"), including fish and many invertebrates such as clams, worms, and blue crabs which are an important component in the estuarine food web.

Oyster Bars

Reefs or bars built by successive generations of the American oyster (*Crassostrea virginica*) and other marine encrusting organisms are conspicuous features of tidal creeks and shallow waters. Oysters and other shellfish may be harvested from surface waters classified by the State of Florida as Class II waters. However, in Lee County, waters south of the Caloosahatchee River are permanently closed for shellfish harvest (Rodriguez, DEP, 3/94).

Tidal Creeks

Tidal creeks in Lee County are typically small, natural flowways that usually drain from freshwater marshes and wet prairies into larger estuaries and bays. Typically these creeks have tidal marsh vegetation along their banks and mangroves at their mouths, and may contain oyster reefs and islands of marsh and mangrove vegetation. Tidal creeks represent a complex of wetland habitats that function as an integrated and unique habitat type.

Open Water

Lee County's coastal waters support a diverse array of plants and animals. Estevez and co-workers (1981) reviewed existing information on the biological diversity of the Charlotte Harbor Estuary and tabulated the number of species that have been reported for the estuary, or that probably occur in the estuary. The presence of 1,122 species from several groups of plants and animals have been verified in various surveys of Charlotte Harbor. While this list does not cover all groups of plants and animals that occur in the county's coastal area, it does illustrate that the coastal area supports an impressive diversity of flora and fauna.

Of particular value to the coast are the benthic invertebrates and fishes that live in coastal and estuarine waters. Benthic invertebrates are the invertebrate animals (e.g., clams, worms, crabs, etc.) that live on or in the bottom of the rivers, bays and harbors and "make their living" by feeding on detritus, bacteria, algae and other aquatic organisms, and which in turn constitute an important food source for fishes. The number of species (diversity) and types of species of benthic invertebrates can also be used to assess the health and environmental quality of aquatic ecosystems.

Table 6-8 summarizes DEP Marine Fisheries Information System's annual landings summary for selected "indicator" fish and shellfish species in Lee County from 1986 through 1991.

Table 6-8 — DEP Annual Landings Summaries for Lee County from 1986 through 1991

Year	Indicator Fish Species[1] (lbs)	Indicator Shellfish Species[2] (lbs)
1986	2,326,475	4,529,389
1987	6,045,288	4,577,582
1988	5,952,885	4,495,520
1989	6,245,295	3,865,447
1990	6,444,250	3,555,052
1991	6,165,342	3,309,797

[1]Indicator Fish Species include specific species of grouper, jack, mullet, pompano, spotted sea trout, and sheepshead.

[2]Indicator Shellfish Species include specific species of crab, lobster, scallops, and shrimp.

Source: Florida Department of Environmental Protection Marine Fisheries Information Systems, 1986-1991.

Environmental Functions and Values

An estuary is a semi-enclosed water body having an open connection to the sea with a measurable dilution of sea water from freshwater inflow. It is a zone of ecological transition between fresh and saltwater systems, and is the ecological heart of the coastal area.

Estuaries and bays provide extensive habitat for fish and wildlife and are among the most productive areas on earth. These areas provide feeding, breeding, and nursery grounds for most of the commercially important fish and shellfish such as shrimp, blue crabs, mullet, sea trout, and redfish. As discussed in greater detail above, it is estimated that nearly 70% of Florida's recreational and commercial fisheries species are dependent on estuaries for at least a part of their life cycle, usually as juveniles. Because juvenile fish can tolerate waters of low salinity, but many of their predators cannot, estuaries and bays act as nursery areas, providing refuge for the young fish.

The town's estuaries provide habitat for a number of listed bird species. Most of the actively nesting bald eagles in the county are found in close proximity to the estuaries, and the food supply they provide. Pelicans and ospreys can be seen fishing the areas productive waters, while egrets, herons and roseate spoonbills wade the shallow waters in search of food.

Seagrasses stabilize bottom sediments, carry on primary productivity, provide food directly to manatees, sea turtles and sea urchins, and provide refuse, habitat, and food organisms for shrimp, crabs, and fish. Benthic communities, including oyster beds, play a large role in the nutrient and sediment cycles of the bay. Filter-feeders take suspended particles, ingest them, and extrude them as pellets that settle to the sediments. Nutrients stored in the sediments can be used and even re-suspended by burrowing organisms. After becoming concentrated in the tissues of oysters and other filter feeders, various contaminants may find their way up the "food chain" when these organisms are ingested by a variety of predators, including humans.

Recreational opportunities offered by the bay and estuaries are almost endless. Boating, fishing, water skiing, sailing, swimming, bird watching and aesthetically pleasing vistas are some of the benefits derived from these systems.

Threats

Threats to the estuarine environment generally include point and non-point sources of pollution, changes in the quantity and timing of freshwater inputs, destruction of habitat from dredge and fill activities, and shoreline stabilization such as seawalls. Seagrass meadows are severely damaged by "prop scarring" when boats are run across shallow areas with seagrasses. High sediment loads resulting from dredging, improper disposal of dredge spoil, and poor land management practices can literally bury seagrass meadows. Seagrasses are also lost as a result of shading from docks constructed over seagrass meadows.

Dredging of mud and salt flats for boat basins and channels, and eliminating the "ugliness" and "unpleasant odors" associated with these habitats, are often cited by developers as reasons to destroy tidal flats. As with other land-water interface communities, destruction of adjacent uplands or wetlands can also have significant impacts on the preservation and productivity of tidal flats.

Another threat to living marine resources is the indiscriminate collecting of live shells. The occasional shell taken for a collection or souvenir will have a negligible effect, but the wholesale collection of shells for potential resale can deplete a locally valuable resource. Many communities have regulations against the collection of more than a few live shells, but without active education or enforcement, a simple regulations will not protect this type of resource. A successful beach patrol would use a code enforcement office and a knowledgeable volunteer on weekly patrols to observe violations of shelling restrictions, reduced lighting for sea turtles, and other beach regulations. The code enforcement officer would follow up on observed violations during the following week.

COASTAL UPLANDS

The 1988 Lee County Coastal Study recommended the need for the conservation of "Rare and Unique (RU) Uplands." RU uplands are native upland habitats which are limited in distribution either naturally or due to overdevelopment. These uplands are defined in the Lee Plan to include the following habitat types: sand scrub; coastal scrub; those pine flatwoods which can be categorized as "mature" due to the absence of severe impacts caused by logging, drainage, and exotic infestation; slash pine/midstory oak; tropical hardwood; live oak hammock; and cabbage palm hammock. The Coastal Study inventoried only a part of Estero Island's vegetative habitats (due to the extensive development), but did identify 117 acres of coastal scrub and 4 acres of oak hammock.

Coastal Strand

The coastal strand is a thin strip of fragile herbaceous and woody vegetation that lies between beach dune systems and more forested coastal areas (often called maritime forests). This important community often is composed of saw palmetto, oak, seagrape, cabbage palm, Spanish bayonet, and other plants.

Coastal Hammocks

Coastal hammocks are heavily forested areas on barrier islands. In some places, coastal hammocks look like traditional mainland hammocks, with cabbage palms and live oaks. In other areas, these hammocks take on a tropical appearance and may include Hercules club, wild lime, saffron plum, prickly apple, Florida coontie, sea grape, gumbo limbo, and strangler fig. The maritime oak hammock at the Matanzas Pass Preserve is the only intact system of this type remaining on Estero Island.

Dunes and Beaches

Beaches and sand dunes are dynamic systems which are in a constant state of change, exhibiting both erosion and accretion (building up) trends at various times as a result of wind, waves, tides, storms. Dunes can easily be destroyed by human activity, and can also be rebuilt and enhanced.

Dunelands include the active dunes, sand ridges, troughs, and flats lying behind the beach berms that mark the upper limit of the dry beach. Many of the dunes at Fort Myers Beach have been removed by development or by continuing management practices that inhibit their restoration by natural processes. Bounded at their seaward edge by the upper line of the beach at the annual highest tide mark, or a coinciding vegetation line, dunelands extend landward as far as the land is subject to active gain or loss if sand because of the sea or wind. Dunes are fairly narrow at Fort Myers Beach and in some areas no longer exist at all. Figure 23 shows an example of a healthy mature dune at Fort Myers Beach, and Figure 24 shows a new dune emerging at Bowditch Point Regional Park.

Dunes on Estero Island are generally low lying and are dominated by plants which are salt tolerant and able to grow in the dry, nutrient sparse habitat. Plant species present on the dunelands include sea oats (*Uniola paniculata*), with beach elder (*Iva imbricata*), beach berry (*Scaevola plumieri*), and railroad vine (*Ipomoea pescaprae*).

Wildlife uses dunes for foraging and nesting habitat include ghost crabs and raccoons. Sea turtles also frequently use the dune areas for nesting. The beaches and dunes of Estero Island perform a vital role in that they serve as the primary source of natural protection for Gulf-front property against storms and hurricanes, and protect important public facilities like Estero Boulevard from inundation during extreme tides. Where the dunes have been removed by human activity or destroyed by natural factors, the town should establish a strong policy to re-create dunes.

The beach itself is the unvegetated face of the shoreline that extends from the upper edge of the beach berm (the lower edge of the dunes) seaward to the low water mark. The beach system consists not only of the foreshore area, but also of the unvegetated submerged near shore area out to depths approaching 40 feet. Beaches are unique environments occupied by animals that have adapted to the constant motion of the sand, gravel, or shell. Coquina clams and sand fleas fight for position and filter seawa-

Figure 23*, Mature sand dune at Fort Myers Beach (dune photos courtesy of Turtle Time Inc.)*

ter for microscopic prey just below the sand's surface. A variety of shorebirds and wading birds like sandpipers and herons search for prey along the waters' edge. A number of rare and endangered species utilize beaches for foraging or as nesting habitats including least terns, American oystercatchers, and loggerhead and green sea turtles.

Figure 24*, Emerging sand dune at Bowditch Point*

Environmental Functions and Values

Perhaps the most important function of the beach and dune areas is to continuously adapt to the changing hydrogeologic conditions operating at the beach. Sand movement is the key to the continuous adjustment of the beach. Moving sand can be washed over the island, adding height, or be blown into the backshore and be trapped by plants. During major storms, the stored sand can move off the upland beach and form an offshore bar that reduces the impact on the remaining beach. Gentler post-storm waves can move the offshore bar back onto the beach face. Practices such as removal of dune vegetation, dune destruction, stabilization of the submerged beach, and stabilization of the exposed beach all interfere with the natural system of sand movement, collection, storage, and use. Two main factors are responsible for the coastal erosion problem along the coast: human activities that either increase erosion or increase the impact of erosion, and rising sea level.

Maintained in a natural state, beaches and dunes provide the temporary storage of sand required for the natural processes of shoreline building and erosion that are critical to the existence of barrier islands. The deep roots of sea oats and other native vegetation stabilize active dunes, providing moderate protection from shoreline erosion.

These coastal ecosystems also provide habitat for a number of plant and animal species, many of which thrive nowhere else. Terns, gulls, plovers, and sandpipers are common along the sandy beach where they feed on small fish and invertebrates. Many shorebirds nest on the open beach and in the dunes, including the following listed species—least tern, roseate tern, piping plover and southeastern snowy plover. The threatened loggerhead sea turtle uses the beach and dunes as nesting habitat. The scrubby back-dunes are occupied by beach mice, raccoon, skunk, and occasionally by gopher tortoises. In addition, the coastal hammocks play key roles in the migration of many birds that summer to the north. They rely upon the fruits and berries of the hammock species during their biennial trips along the coast.

Coastal areas, in particular beaches, are among the most desired natural resources in the state. This is due mainly to the ideal recreational opportunities afforded by these areas, as well as their scenic, and aesthetic values that make them attractive places to live.

Threats to Habitat

Coastal uplands are subject to a number of threats, including removal of beneficial native vegetation, development, shoreline hardening, recreational use, introduction and encroachment of exotic vegetation, and treasure hunting.

Some practices that have been forbidden in many coastal communities are still common at Fort Myers Beach. For instance, dunes sometimes recreate themselves even when they had been removed during the development process. This restoration ought to be valued and assisted, but many property owners at Fort Myers Beach continually destroy the re-emerging dunes. This activity destroys sea turtle nesting habitat and eliminates a natural blockage that protects upland property from extreme tides, in addition to eliminating a valued scenic resource.

Whenever native dune plants are removed, either intentionally as an end unto itself (collection, site preparation, etc.), or incidentally due to pedestrian or other forms of traffic, the ability of the dune system to collect and hold sand is reduced and erosion results. Total habitat destruction may occur. Dune vegetation (such as sea oats) acts as a buffer to the more landward, less salt tolerant plants, and removal of seaweed vegetation can cause salt spray damage to the less resilient species. Thus, removal of dune vegetation may have an ecological ripple effect in addition to the direct physical impacts.

Another frequent but unfortunate practice at Fort Myers Beach is the direct drainage of stormwater onto the beach. Many older buildings have drains from their parking lots and buildings emptying through pipes onto the beach. This causes severe erosion following every rain, in addition to the pollutants that untreated stormwater carries into the Gulf of Mexico. This issue is discussed further in the Stormwater Management Element of this plan.

Invasion of coastal uplands by exotic vegetation such as Brazilian pepper and Australian pine can result in the displacement and replacement of the diverse native plant communities of these habitats with dense monocultures of these exotic species. Australian pines (*Casuarina equisetifolia*), while favored for their shade they provide on the open beach, replace the native dune vegetation which can actually accelerate the erosion of dunes since their shallow roots do not hold the soil together like the deep roots of sea oats and other native species.
In the past, little attention was given to the coastal hammock species in many areas as island tracts were cleared to provide housing. Outright elimination of the coastal hammocks has been a long-term trend. While undeniably better than outright clearing, selective clearing can open the canopy and expose the hammock to wind, salt spray, increased drying, and other debilitating factors.

In addition to causing stress to dunes and dune plants, recreational uses of beaches frequently displace shorebirds and wading birds that, to various extents, rely upon beach habitat for foraging, nesting, overwintering, or as a resting point along migratory flyways. The human demand for beaches is so great that people often use even isolated beaches, which can cause further displacement of wildlife.

Occasionally group events such as beach volleyball tournaments are held directly on the beach. If held during sea turtle nesting season, several precautions must be taken. State and local permits are often required. The same restrictions against beach lighting that apply to upland development must be observed on the beach itself; even light from beach fires would be harmful during nesting season. Coordination with those monitoring sea turtle nests is critical to avoid damage to existing nests.

Attempts to stabilize the exposed and submerged portions of beaches through the use of artificial structures such as rock revetments, sea walls, and groins limits the beaches natural

ability to adapt continuously to changing conditions; sand or stabilized beach is not free to be moved and stored under favorable conditions, and may remain vulnerable to loss under storm conditions. Most attempts at stabilization, particularly on a lot-by-lot basis, actually increase the erosion problem while impeding public enjoyment of the beach and reducing or eliminating important habitat areas. As provided by the Federal Emergency Management Agency's *Coastal Construction Manual*:

> *Bulkheading on an individual lot basis should be avoided. Because of the abrupt vertical transition in profile, bulkheads generally promote toe scour and this can lead to beach loss and steepening at sediment-starved beaches. Experience has shown that erosion accelerates at adjacent unprotected areas, possibly resulting in the flanking of individual bulkheads. (FEMA, 1986).*

Because of the drawbacks associated with groins, seawalls, revetments, or jetties, many coastal communities have undertaken restoration or renourishment programs to stabilize beaches.

Though often used interchangeably, the terms "beach restoration" and "beach renourishment" connote different philosophies of beach management. True beach *restoration* involves the removal of seawalls, groins and other structures in order to re-establish a natural dynamic equilibrium. Beach *renourishment* (or simply beach nourishment) replaces the sand lost by erosion with sand from another (preferably remote) source. If beach nourishment resulted in a self-maintaining beach, the beach could then be said to have been restored. In most cases, beach renourishment needs to be repeated periodically, resulting in a beach that is artificially maintained but not restored.

The result of a good renourishment program is a more natural beach than that provided by structural techniques. The beach is suitable for recreational purposes, and can function quite similarly to a natural beach, even being used by nesting sea turtles and shorebirds if the replacement sand is truly beach-compatible. Such projects may be abandoned at any time without leaving an array of permanent structures littering the beach, and may be re-initiated from time to time if needed.

The costs of renourishment are directly related to the distance the replacement sand must be moved—the closer the source, the lower the price. From a design standpoint, the replacement sand should come from an area that will not eventually starve the beach, and environmental considerations should preclude the use of estuarine materials. Thus it is economically advantageous to use the closest sands, and strategically important to use distant sands. The most likely prospects at this point are offshore and coastal inlet sources.

The economics and need for beach renourishment at Estero Island are discussed in the Coastal Management Element of this comprehensive plan.

AIR QUALITY

Air quality is monitored by the Florida Department of Environmental Protection (DEP) which currently maintains four monitoring devices in Lee County. Two devices monitor airborne particulate matter (PM) and two monitor ozone, with one of the ozone stations now located at Fort Myers Beach near the elementary school.

Ozone is a gas that is a variety of oxygen. High concentrations occur in a layer of our atmosphere, shielding the earth against harmful ultraviolet rays from the sun. But ground-level ozone is a major component of smog, resulting from products such as solvents and from burning fuels such as gasoline. High ozone levels near the ground can cause many kinds of breathing problems and can damage vegetation.

"Particulate matter" includes dust, smoke, soot, and other tiny bits of solid material. They are produced by burning (diesel fuel, garbage incineration, and fireplaces); by construction activities; and by many agricultural and industrial operations. Particulate pollution can cause eye, nose, and throat irritation and other health problems.

Current Levels

Table 6-8 provides a summary of DEP's air quality data since 1984. Air quality is generally good, due to the predominantly residential nature of the area and absence of major sources of emissions. Lee County, including Fort Myers Beach, is listed as an "attainment area" by the U.S. Environmental Protection Agency (EPA), which means that air quality is within the limits established through the Clean Air Act.

In mid-1997, the EPA announced new standards for ozone and particulate matter. The existing ozone standard evaluated levels over 1-hour periods; the new standard will be 0.080 ppm over any 8-hour period (phased in over the next 3 years). It is not clear whether current ozone levels at Fort Myers Beach will meet the new standard.

There will now be a $PM_{2.5}$ standard to measure fine particles (smaller than 2.5 micrometers in diameter). The previous standard had grouped these fine particles with coarser particles up to 10 micrometers. Fine particles come mainly from vehicle exhaust and combustion, while coarse particles are mainly windblown dust.

Future Impacts

DEP does not routinely monitor or inspect facilities for which it has issued air quality permits (though it does require monitoring reports and will respond to complaints from neighboring property owners). If the town ever approves any facilities that may harm air quality, it may wish to establish local monitoring procedures to supplement those provided by the state.

Table 6-8 — Concentration of Ozone and Airborne Particulate Matter, 1984-1996

	Ozone*	***PM*****	***PM_{10}*****
	(ground-level hourly maximums, measured at Fort Myers Beach)	*(annual averages, measured at the Fort Myers Water Treatment Plant on Princeton St.)*	
1996	0.089	N/A	17
1995	0.089	22	16
1994	0.093	24	13
1993	0.082	26	N/A
1992	0.083	28	N/A
1991	0.083	28	N/A
1990	0.085	31	N/A
1989	0.104***	31	N/A
1988	0.102***	31	N/A
1987	0.101****	31	N/A
1986	0.101****	33	N/A
1985	0.080****	30	N/A
1984	0.081****	32	N/A

Sources: FDEP, 1997.

** The ozone standard has been 0.120 ppm (235 $\mu g/m^3$)*

*** The standard for inhalable particulate matter is an annual average of 50 $\mu G/m3$ (and a maximum of 150 $\mu G/m^3$ averaged over any single day). PM levels can be measured for different size particles; "PM" measures all particles, and "PM_{10}" is the measurement of all particles smaller than 10 micrometers (microns).*

**** Measured at Cape Coral*

***** Measured at Fort Myers*

Air quality in the town may also be affected by activities in adjacent communities, such as the urbanized areas of Lee or Collier Counties. The town may wish to involve itself in the site selection and permitting processes for any point-source pollutant generators, as there are no specific procedures that guarantee that the town's concerns would be addressed.

NATURAL HISTORY AND GEOLOGY

Estero Island is a barrier island, essentially a linear island of sand that parallels the coastline. In general, barrier islands form through growth of spits from headlands and subsequent breaching by inlets, emergence of underwater shoals, or drowning and isolation of mainland dunelines caused by rising sea levels. Florida's peninsular Gulf of Mexico barrier islands, including Estero Island, occur on elevated portions of the underlying surface (Johnson and Barbour, 1991).

The islands bounding Estero Bay originated from sediments deposited at the mouths of rivers and creeks, including the Caloosahatchee River, when rising sea levels flooded this area approximately 5,000 years ago. The islands here appear to have been at their present positions since the rate of sea level rise decreased approximately 3,500 years before present (Johnson and Barbour, 1991).

SOILS

The *Soil Survey of Lee County* was issued in 1984 by the U.S. Soil Conservation Service (now known as the Natural Resource Conservation Service). It mapped 9 distinct soil types on Estero Island. The general soils of Estero Island are considered "soils of the swamps and sloughs" and occur as the map unit pattern of Isles-Boca-Pompano. These are nearly level, poorly drained, deep and moderately deep, sandy soils; some have a loamy subsoil and some are sandy throughout. Under non-urban conditions, these soils would generally be suitable for wildlife habitat and rangeland (SCS, 1984).

Table 6-9 provides the percentage of each soil type on the island. Note that most soils have been classified as "urban lands" to reflect severe alterations from their natural state (even in 1984).

Table 6-9 — Soil Types Found on Estero Island

Soil Name	*Percent*	*Soil Name*	*Percent*
Canaveral fine sand	0.04%	Kesson fine sand	5.97%
Canaveral -Urban land complex	56.17%	St. Augustine sand, organic substratum-Urban land	0.04%
Captiva fine sand	1.59%	Urban land	17.13%
Beaches	6.77%	Matlacha gravelly fine sand	3.19%
Wulfert muck	8.37%	ALL SOIL TYPES:	100%

Source: Soil Survey of Lee County, Florida, Soil Conservation Service, 1984. (A description of each soil type as provided by the Soil Conservation Service is included in an appendix to this document.)

Soil erosion is a natural process by which rocks and soils are weathered by water and wind. Rain and wind carry soil particles away. Natural processes and human activities can hasten this process. Clearing large areas of land for urban development exposes the soil to wind and water and thus accelerates erosion. Soil erosion represents the loss of an important natural resource and threatens the quality of surface waters.

Severe localized erosion occurs as a result of poor land development practices such as clearing an area during pre-development site preparation, then leaving the site exposed to wind and water erosion over a period of months. Fill slopes of development sites and side slopes of excavations and ditches, if not stabilized, can cause sedimentation in swales and receiving waters. This problem is especially critical when fill material is placed next to waterways or wetlands in which sedimentation can result in destruction of aquatic habitats, displacement of dependent fauna, obstruction of navigation channels, and possible release of pollutants (nutrients, metals, or pesticides).

To counter these problems, typical land development codes regulate the clearing of property until permits have been issued for development projects. Throughout all construction activities,

staked haybales or filter cloth should be placed between the development site and any adjacent swales, surface waters, or wetlands. All slopes, including those associated with single-family residential development, should be sodded or planted immediately after final grading. When preparing the new land development code, the town will determine what kind of stronger measures should be included to minimize erosion during the construction process.

Soil erosion also occurs when sand is lost from the beachfront. Although human activities can worsen erosion, much beach erosion is a result of natural causes because barrier island beaches and dunes naturally dissipate wave energy and act as a repository for shifting sands as well as serving as an upland buffer from erosion and flooding. Beach erosion is addressed further in the Coastal Management Element.

Estero Island has no commercially valuable mineral deposits. The land's value as coastal real estate far surpasses the value of the underlying sand or shell and extraction activities would be incompatible with current levels of urban development.

GROUNDWATER

Groundwater resources (underground water) are limited due to saltwater intrusion that moves down from tidal waters and up from deeper aquifers. The town relies on Florida Cities Water Company for its potable water, which is pumped from wellfields on the mainland. Florida Cities operates two wellfields and treatment plants south of the Caloosahatchee River on the mainland; its Green Meadows plant in east Lee County has the capacity to expand to serve all anticipated customers in its service area. The Utilities Element of this plan analyze the capacity of these sources to serve additional customers.

Lee County has been designated as part of the SFWMD's "Critical Water Supply Problem Area." This designation is made where water resource problems are critical or are expected to become critical over the next 20 years. Lee County is considered a "Reduced Threshold Area" where there is a history of substandard water quality, potential for movement of saline water into groundwater, or lack of water to serve future needs. More stringent permitting requirements are applied in such areas. In an effort to address these water supply concerns, SFWMD developed a *Lower West Coast Water Supply Plan* (LWCWSP) in 1994. The planning area included 4,300 square miles in southwest Florida, including all of Lee County.

Aquifers

The Surficial Aquifer System of underground water-bearing rocks can be divided into two aquifers, the water table and lower Tamiami aquifers, separated by leaky confining beds. Water quality is generally good, except that it is susceptible to saltwater intrusion (where seawater moves in from the coast to replace freshwater that is being pumped out of the ground). The Green Meadows plant of Florida Cities Water draws from the surficial aquifer. In many barrier islands, a thin lens of fresh water rests near the surface above more saline water, making some fresh water available for domestic use, but this source cannot support intense urbanization and is susceptible to contamination and saltwater intrusion.

The mid-Hawthorne aquifer lies below the surficial system throughout most of Lee County, but is not extensively used due to poor productivity. The aquifer also experiences a degradation of water quality further south and east. In addition, isolated areas of high salinity occur along the coast, and generally the barrier islands have poor quality water in this aquifer. This aquifer once provided all of the water for the City of Cape Coral and Pine Island. Elsewhere, the aquifer is only used occasionally for agricultural irrigation and remote homesites.

The Floridan aquifer system is deeper yet and is capable of high yields, but it produces only non-potable water in Lee County. High salinity and hardness increase with depth, making desalinization necessary for acceptable potable uses. Florida Cities, among other utilities, does treat and utilize this aquifer for some potable use.

Aquifer Recharge

Estero Island is not a significant recharge area for any of the major aquifers that are used for public water supply. The only aquifer directly below the island where water moves fairly freely is the lower Hawthorn, part of the deep Florida aquifer system which is recharged to the north of Lee County.

The only discrete areas of groundwater recharge where land uses are directly regulated are wetlands. Many agencies regulate uses in wetlands: the U.S. Army Corps of Engineers, DEP, and SFWMD. Through the new Environmental Resource Permitting program, the permitting criteria of the DEP and water management districts have become standardized, with the lead authority typically falling to the districts. Destruction or alteration of wetlands is contingent upon demonstrating compliance with minimum standards and compensating for wetland loss. Compensation typically consists of the creation of new wetlands or restoration of previously damaged wetlands. The Corps derives its authority to regulate wetland impacts through Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act.

Though the permitting processes described above are fairly effective in protecting wetlands, their effectiveness at protecting recharge areas is compromised by a number of weaknesses, including exemptions for wetlands below one half acre in size, minimal upland buffer requirements, exemptions for mining proposals, and the fact that aquifer recharge, though acknowledged as one of the functions of wetlands, is not addressed through specific permitting criteria.

Mineral Content

One of the basic measures of groundwater quality is mineral content, which largely determines its suitability for domestic, agricultural, or industrial use. The mineral content of groundwater is determined primarily by the composition and solubility of soil and rock that come into contact with the water, and the length of time the water is in contact with these materials.

Because mineral content can be defined as the sum of all of the dissolved inorganic ions and compounds, a measure of the mineral content of groundwater can be obtained by measuring the concentration of major inorganic constituents in the water, such as total dissolved solids (TDS), chloride, sulfate, and hardness (calcium and magnesium). Chapter 62-520 of the *Florida Administrative Code* establishes standards for the quality of drinking water distributed by public water systems (standards for private wells have not been developed on a statewide basis). Florida's secondary drinking water regulations include standards for TDS, chloride, and sulfate in public water supplies (500, 250, and 250 milligrams per liter (mg/l) respectively). These are identical to the EPA-recommended levels for drinking water. A standard is not provided for hardness, but water having a hardness concentration greater than 180 mg/l is considered very hard and can cause excessive soap consumption and scale build-up in water heaters.

Ground Water Contamination

Potential point sources of groundwater contamination in the town include leakage from sewer lines, effluent from any remaining septic tanks, and quasi-industrial sites such as boatyards. Flowing artesian wells also can contaminate other layers of groundwater, because lower quality water flowing under

artesian pressure from deeper aquifers can mix with the generally better quality water of the shallower systems. The use of fertilizers and pesticides, and saltwater intrusion along the coastal shoreline, are both considered potential "nonpoint" or indirect sources of contamination.

Point source dischargers to groundwater are required to perform water quality testing on samples collected from monitoring wells and to submit groundwater quality data to DEP. There are no permitted point source discharges in the Town of Fort Myers Beach at the time this plan was prepared.

Current and Projected Water Needs and Sources

In 1996 there were 7,710 dwelling units within the town. The Future Land Use Element forecasts total housing units to increase to 8,738 at build-out at some time before the year 2020. From 2008 through build-out, an additional 175 dwelling units will require an additional 45,500 gallons per day of potable water. These additional demands are a minute portion (0.1%) of the supply increases being planned by Lee County Utilities by 2030 (source: Lee County's Water Supply Facilities Work Plan, as updated in July 2008). For full details, see the Utilities Element.

GOALS - OBJECTIVES - POLICIES

Based on the analysis of the conservation issues in this element, the following goals, objectives, and policies are adopted into the Fort Myers Beach Comprehensive Plan:

GOAL 6: To protect the natural resources in and around the town from further damage and improve their future health and sustainability through regulations, education, enforcement, timely management, public improvements, and cooperation with other entities with similar goals.

OBJECTIVE 6-A ESTUARIES AND BAYS – Improve the condition and function of estuaries and bays surrounding Estero Island, including their components such as seagrass meadows, tidal flats, soft bottoms, oyster bars, tidal creeks, and open water.

POLICY 6-A-1 Estuaries are the ecological transition between fresh and saltwater systems. They provide extensive habitat for fish and wildlife including the feeding, breeding, and nursery ground for most of the commercially important fish and shellfish and many species of local and migratory birds, while offering a broad array of recreational opportunities. The Town of Fort Myers Beach will take all feasible steps to protect its marine and estuarine habitats and finfish/shellfish resources to ensure their long-term viability and productivity for scientific, commercial, sport, and recreational purposes. The town shall take a leadership role in enacting ordinances and facilitating resolution of jurisdictional problems.

POLICY 6-A-2 The town will cooperate closely with other governmental agencies in formulating, monitoring, and enforcing regulations to protect the healthy functioning of the estuary, including but not limited to:

i. controlling point and non-point sources of pollution including drainage, sewage pollution, and stormwater runoff;
ii. avoiding hardened shoreline stabilization such as seawalls;
iii. maintaining proper quality and timing of freshwater inputs;
iv. protecting habitats from dredge-and-fill activities;
v. protecting sea grasses from “prop scarring” and excessive shading from docks; and
vi. protecting important uplands adjacent to wetlands.

POLICY 6-A-3 In cooperation with other jurisdictions, evaluate the effectiveness of existing regulations and enforcement techniques in preserving the bay and estuary system. Recommend and support such additional measures as necessary to ensure their sustainability, such:

i. Marking existing channels crossing through seagrass beds to help boaters avoid damaging them (and their boats);
ii. Establishing permitting criteria for activities within the town’s 1000-foot jurisdiction beyond Estero Island to protect seagrass beds, oyster bars, soft bottoms, and other benthic communities

from damage from docks, boat ramps, navigation channels, etc. These criteria would be coordinated with other regulatory agencies to ensure that every effort is made to locate these facilities away from valuable environmental resources. If permits are issued without concurrence from the town, the town may choose to withhold local building permits if a better location or technique could avoid damage to seagrass beds, oyster bars, or other sensitive benthic communities.

POLICY 6-A-4 Encourage the organization of a local task force to coordinate and reconcile efforts of various organizations, governments, and businesses to promote long-term sustainability of the estuary. Potential perspectives include eco-tourism, water quality, habitat protection, commercial and recreational uses, and economic development. The task force would promote cooperative activities, assess needs, and recommend methods of coordinating reporting and enforcement of violations. The task force would make recommendations to the town regarding issues such as:

i. Establishing restricted areas and other methods of controlling boat traffic in Estero Bay, particularly around rookery islands and seagrass beds.
ii. Locating a suitable launching point on the Gulf for use by personal water craft to reduce traffic on the bay side.
iii. Adopting a ban on the commercial collection of live shells.
iv. Recommending capital projects to improve water quality.
v. Recommending regulations to protect local waters.

POLICY 6-A-5 Maintain or improve estuarine water quality in accordance with policies under Objective 8 below.

POLICY 6-A-6 Regularly examine activities that may be within the town's jurisdiction to determine whether more stringent regulations or other actions are needed to ensure the functioning and long-term viability of natural systems.

POLICY 6-A-7 Participate actively in the Agency on Bay Management, the Charlotte Harbor National Estuary Program, and other entities attempting to improve the environmental health of Estero Bay.

POLICY 6-A-8 Actively encourage the purchase of the full 16,000 mainland acres adjoining Estero Bay to become an expanded Estero Bay State Buffer Preserve.

OBJECTIVE 6-B WILDLIFE AND NATIVE HABITATS – Improve the viability of existing native coastal and upland habitats and establish additional areas for nature preserve and conservation uses.

POLICY 6-B-1 **CONSERVATION PROGRAMS GENERALLY** – The town will cooperate with local, state, and federal regulatory agencies in establishing and managing natural reserves, preserves, and critical wildlife areas. This cooperation will include increasing public awareness, allowing appropriate access, properly protecting natural resources, and documenting and reporting violations of laws and regulations.

POLICY 6-B-2 **LITTLE ESTERO ISLAND CRITICAL WILDLIFE AREA** – In cooperation with state agencies, the town will aid in the stewardship

of the Little Estero Island Critical Wildlife Area through activities such as:

i. Prohibit commercial activities within the defined boundaries of Little Estero Island.
ii. Support legislative measures as necessary to protect the long-term future of the preserve.
iii. Inform residents and visitors of the uniqueness and fragility of the island's habitats, and identify funding for measures such as designating pedestrian trails and dune walkovers, adding information and interpretive signs, producing educational brochures, and conducting seminars to encourage proper use.
iv. Sponsor a volunteer task force to work with the Florida Game and Fish Water Fish Commission to oversee the daily stewardship of Little Estero Island through activities such as:
    - Identify potentially destructive practices (such as mowing or raking on the shoreline, litter, boat traffic, low-flying airplanes, disturbances from vehicles and dogs, etc.) and determine appropriate methods to address them.
    - Inform residents and visitors of the uniqueness and fragility of the island's habitats; plant shoreline vegetation to replace vegetation damaged by visitors or other unnatural causes; place and maintain interpretive signs; produce educational brochures; and conduct seminars to encourage proper use.
    - Promote voluntary enforcement and possible citizen "volunteer patrols" to educate residents and visitors of the rules of the island and why they are needed.
    - Develop guidelines to protect the fragile environment of the preserve and, where appropriate, urge their adoption as land development regulations or part of the town's code of ordinances.

POLICY 6-B-3 **MATANZAS PASS PRESERVE** – Prepare for the transition of the long-term maintenance responsibility of the Matanzas Pass Preserve from Lee County to a partnership among the county, the town, and a local non-profit organization such as the Friends of the Matanzas Pass Preserve:

i. Reinforce and support the efforts of the non-profit organization to expand the voluntary community-based portion of the operation and maintenance of the preserve. Assist their efforts to implement the restoration plan (which includes site preparation, revegetation, and long-term management) and future improvements including new foot trails, repairing and extending boardwalks, providing a canoe/kayak access point, and adding a fishing pier/observation deck. This assistance may take the form of seeking grant funds, lending technical assistance, providing equipment (either directly or through leases with the county), or partial funding.
ii. Negotiate an agreement with the county that assigns responsibilities for the long-term maintenance, restoration, and improvement of the preserve, that reflects its status as both a county-wide and local

amenity and its importance as natural habitat.

POLICY 6-B-4 **UPLAND HABITATS** – Preserve all remaining coastal strand and hammocks, and improve the existing habitat through removal infestations of exotic plants and replanting with native species. When these habitats are in private ownership:

i. Land uses must not result in the degradation of the values and functions of adjoining and nearby wetlands.
ii. Beaches seaward of the 1978 Coastal Construction Control Line are designated on the Future Land Use Map as "Recreation" to preclude their use for further urban development.
iii. Known remaining coastal hammocks are designated on the Future Land Use Map as "Recreation" to preclude their use for further urban development.

POLICY 6-B-5 **ADJACENT DEVELOPMENT** – Development adjacent to aquatic and other nature preserves, wildlife refuges, and recreation areas shall protect the natural character and public benefit of these areas including, but not limited to, scenic values for the benefit of future generations.

POLICY 6-B-6 **RESOURCE MANAGEMENT PLANS** – The town will participate with other agencies in preparing and implementing water management plans such as the Charlotte Harbor Management Plan, Surface Water Improvement and Management (SWIM) plans, Estero Bay Aquatic Preserve Management Plans, and similar efforts. The town will reevaluate its policies for protecting and enhancing natural resources upon a review of newly adopted or revised plan by other agencies.

POLICY 6-B-7 **INVASIVE EXOTIC PLANTS** – Invasive exotic plants may not be used to meet landscaping requirements for new development. Prohibited species shall be identified in the land development regulations.

POLICY 6-B-8 **SEAWALLS** – The town shall encourage planting of mangroves or placement of rip-rap in artificial and natural canal systems to replace existing seawalls in need of repair. Buildback of vertical seawalls will not be permitted along natural waterbodies if one or more of the following conditions exist:

i. Buildback would cause excessive shoreline erosion or endanger shorelines of surrounding properties.
ii. Buildback would threaten wetlands.
iii. Buildback would be a threat to public safety or block access to state-owned land or beaches.
iv. Buildback would be waterward of the existing seawall alignment on adjacent shorelines.

POLICY 6-B-9 **ACQUISITION OF ADDITIONAL SITES** – The town will strive to expand the opportunities for conservation and public appreciation of natural resources through acquisition of additional areas with rare or unique ecological or botanical features, or which provide access to such areas, through activities such as the following:

i. Identify specific sites that would be desirable for public acquisition;
ii. Support the efforts of other entities acquiring land that will contribute to the

conservation effort (for example, aquatic preserve buffer areas, Bunche Beach, etc.)

iii. Consider alternative means of land acquisition, such as supporting the efforts of non-profit conservation land trust or acquiring development rights in lieu of full acquisition.

iv. Accept donations of land for nature preserves or other resource conservation areas with the following general conditions: if such lands contain ecologically valuable habitat and/or if public ownership of such lands would expand existing or provide increased preservation or resource conservation areas.

v. When acquiring property, determine the best entity to be responsible to implement a long-range management plan.

POLICY 6-B-10 **INFORMATION SHARING** – Share information, data, and maps with other entities involved with conservation land acquisition and management through measures such as:

i. Cooperating with Lee County in the following activities:
   - Maintaining a central clearinghouse for environmental studies and recommendations from public and private information sources;
   - Compiling, maintaining, and regularly updating vegetation mapping, sitings of listed species, data regarding their habitat, and water resources data.
   - Updating the Lee County Habitat Inventory Map using the county's Geographic Information System.

ii. Cooperate with Lee County and FGFWFC in maintaining an inventory of all native communities and natural habitats to aid in land-use decision-making, development approvals, and ranking of potential acquisitions.

OBJECTIVE 6-C PROTECTED SPECIES – Increase cooperation with local, state, and federal agencies in protecting wildlife species listed as endangered, threatened, or of special concern, and conserve the habitats upon which they depend in order to maintain balanced, biologically productive ecosystems.

POLICY 6-C-1 **PROTECTIVE MEASURES GENERALLY** – The town shall assist in the application of state and federal regulations regarding listed species through activities such as:

i. Provide information regarding listed species on properties undergoing development review.

ii. Withhold development approval until such time as all applicable state and federal permits pertaining to such species have been obtained and copies provided to the town.

iii. Cooperate with local, state, and federal agencies in developing species-specific Habitat Conservation Plans as authorized by the Endangered Species Act. Until such plans are developed, the town's criteria for approval of development proposals shall be consistent with the provisions of the listed species guidelines promulgated by the FGFWFC.

iv. Cooperate with Lee County and other agencies in the establishment of

mitigation parks and banks to allow this form of mitigation for local impacts to listed wildlife species and native communities.

v. Support public education on the value of wildlife, native communities, and other natural resources through such means as brochures, newspaper articles, public presentations and workshops, and the placement of interpretive displays and development of observation trails at appropriate park sites.

vi. Encourage and provide technical assistance to volunteer and non-profit organizations such as Turtle Time, Ostego Bay Foundation, Estero Bay Buddies, and the Friends of the Matanzas Pass Preserve in their conservation efforts.

POLICY 6-C-2 **BALD EAGLES** – Maintain Lee County's ordinance protecting bald eagle nesting habitat in case bald eagles begin nesting on Estero Island, and urge adherence during development activities to "Habitat Management Guidelines for the Bald Eagle in the Southern Region" prepared by the U.S. Fish and Wildlife Service which recommends a primary protection zone with a radius of 750 to 1500 feet around active nests in which no development should occur, and a secondary zone an additional 750 feet to a mile from the outer edge of the primary zone to remain undisturbed during the nesting seasons. Nest trees should not be touched in any way by development activities unless the nest site has been de-classified by the FGFWFC.

POLICY 6-C-3 **MANATEES** – Recognizing that the waters of the town provide important habitat for the endangered West Indian manatee, the town will cooperate with local, state, and federal agencies in the establishment of manatee protection programs, including restriction of activities known to adversely affect manatees. The town shall cooperate in the designation, marking, and enforcement of slow-speed manatee protection areas. The town shall cooperate with Lee County in preparing and implementing a manatee protection plan, particularly in providing educational materials and programs to inform the town's boating population of the presence of manatees and of how to avoid destruction of manatee habitat and avoid manatee/boat collisions. The town supports the incorporation of the SWFRPC's 1995 marina siting study into Lee County's Manatee Protection Plan.

POLICY 6-C-4 **GOPHER TORTOISES** – The town's policy is to protect gopher tortoise burrows wherever they are found. If unavoidable conflicts make on-site protection infeasible, then off-site mitigation may be provided in accordance with FGFWFC requirements.

POLICY 6-C-5 **SEA TURTLES** – The town shall prepare and adopt a new sea turtle ordinance by the end of 1998 to supersede Lee County's existing Sea Turtle Protection Ordinance. The new ordinance shall provide standards for coastal uses and development and shall prohibit, during sea turtle nesting season, any point source of light or any reflective surface of a light fixture being visible from the beach; also, areas seaward of a frontal dune must not be directly, indirectly, or cumulatively

illuminated. Other beach activities to be regulated include:

i. Beach raking, scraping, and other activities that unnecessarily compact the sand and/or damage dunes or prevent the re-creation of dunes;
ii. Unauthorized vehicular traffic on the beach;
iii. Storage of beach furniture, cabanas, jet skis, sailboats, and other equipment on the beach that may interfere with sea turtle nesting;
iv. Drainage of swimming pools, parking lots, and building roofs into point discharges directly onto the beach.

OBJECTIVE 6-D WETLANDS – Preserve all remaining wetlands; protect them from further degradation; and improve their condition and natural functions.

POLICY 6-D-1 Wetlands include tidal marshes, salt flats, and mangrove swamps that provide valuable habitat, buffering from storms, shoreline stabilization, and production of food for estuarine and coastal waters. The town will cooperate with state and federal agencies in the formulation, monitoring, and enforcement of regulations restricting activities that contribute to the destruction of wetlands and/or of the adjacent upland communities that cleanse stormwater inflows. Such potentially destructive activities include: construction fill that encroaches on edges of canals and bay waters, dredging of boat basins and channels, use of seawalls, rip rap, and other similar forms of shoreline stabilization, ditching for mosquito control, and any filling or removal of mangrove systems.

POLICY 6-D-2 The Future Land Use Map provides a close approximation of wetland boundaries. Wetland regulations in this plan and in the land development regulations include all wetlands, even in not specifically shown on the Future Land Use Map, that are identified as wetlands in accordance with F.S. 373.019 (17) through the use of the unified state delineation methodology described in FAC Chapter 62-340, as ratified and amended by F.S. 373 4211. If the Future Land Use Map is incorrect due to a clear factual error, an administrative process is contained in Chapter 15 to establish the precise boundary of any wetland.

POLICY 6-D-3 In accordance with F.S. 163.3184(6)(c), the town will not undertake an independent review of the impacts to wetlands resulting from development in wetlands that is specifically authorized by a state Environmental Resource Permit or exemption. However, no development approval shall be issued by the town for any project which impacts wetland resources until all requisite permits from other agencies have been obtained and provided to the town. All conditions placed on such permits shall be incorporated into the final development approval issues by the town. Violations of such conditions shall be prosecuted through the town's code enforcement procedures.

POLICY 6-D-4 The following activities in and near wetlands may be desirable and are not forbidden by this comprehensive plan:

i. Activities necessary to prevent or eliminate a public hazard, such as elimination of a dangerous curve in a road, dredging in order to clean up a spill of hazardous waste, or removal of underwater obstructions to boat traffic.
ii. Activities which provide a direct benefit to the public at large which would exceed any public loss as a result of the activity, such as removal of exotic species, restoration of natural hydroperiods, impacts associated with the maintenance of existing drainage works, or providing water access that is open to the public.
iii. Resource-oriented activities such as passive recreation, outdoor education, or other uses where protection of wetland functions and values is the primary attraction.
iv. Structures or facilities that will improve the functional value of wetlands or provide "no-impact" use for observation, education, research, or passage (walking or non-motorized boats); these could include such structures as public board-walks, observation decks, or launching areas for non-motorized watercraft.

OBJECTIVE 6-E DUNES AND BEACHES – Protect and improve dunes and beaches as recreation areas, valuable habitat, protection from storms, and areas of high scenic and aesthetic value. The effect of the town's efforts may be a noticeable transition from today's manicured and compacted beach towards a naturally appearing and functioning beach. This transition will be accomplished through education, regulation, and assistance in physical restoration activities.

POLICY 6-E-1 For any beachfront development approved after the adoption of this plan and for all public beach areas within the town, state-approved dune walk-over structures shall be required at appropriate crossing points. These same structures are also encouraged wherever pedestrians will be crossing dune areas.

POLICY 6-E-2 All coastal construction projects, including beach restoration and renourishment, shall protect sea turtle nesting areas by limiting construction in dune and beach areas to non-nesting periods (except under emergency conditions). In historic shorebird nesting areas, construction must be completed prior to shorebird nesting. Protection zones shall be marked around sea turtle nests and shore-bird nesting areas to ensure that construction activities landward of the dune and beach system are limited to the actual construction site.

POLICY 6-E-3 The town will implement the following measures to promote the restoration of beach and dune systems:

i. Initiate a program to recreate a dune line and plant appropriate vegetation such as sea oats wherever sand dunes have been destroyed.
ii. Require the use of indigenous plant species for public and private dune restoration or renourishment projects.
iii. Require that lots and parcels created after the adoption of this plan shall be of

sufficient size and dimension to ensure a 50-foot buffer between any structures (except dune cross-overs) and the landward edge of the primary dune. This buffer shall remain in its natural state except for the minimum disturbance necessary to accommodate dune cross-overs.

iv. Undertake a management and maintenance program to control invasive exotic vegetation as a cooperative effort of the town and its citizenry.

v. Consider erosion control taxing/benefit units, grants, and other cost-sharing funding mechanisms to provide funds for beach renourishment and management projects (see Coastal Management Element for strategies on beach renourishment).

POLICY 6-E-4 The following activities are prohibited to protect dunes and beaches:

i. Removal of dune vegetation and stabilization of submerged and exposed beach by artificial means other than replenishment with compatible sand.

ii. Excavation or destructive alteration of beach and dune systems. (Minimal disturbance necessary to accomplish approved beach restoration or renourishment activities or construct dune cross-overs is allowable under this policy.)

iii. Operation of motor vehicles on beaches and dunes (except in association with law enforcement activities, emergency medical services, public land/resources management, state-licensed sea turtle monitoring, once-daily delivery and pickup of beach equipment, minimal cleaning of litter and of excessive accumulations of natural debris, or as necessitated by an approved restoration, renourishment, or emergency project).

iv. Any construction activity seaward of the Coastal Construction Control Line not specifically approved by the DEP.

v. Construction of artificial shoreline hardening structures except the emergency use of such structures constructed in compliance with Chapter 161, *F.S.* If a hardened structure is absolutely necessary along the beach, rip-rap revetments are preferred. New seawalls are not permitted.

OBJECTIVE 6-F AIR QUALITY – Continue to meet or exceed federal air quality standards based on monitoring results from state agencies.

POLICY 6-F-1 Ensure that the town's land development regulations do not include any disincentives to the use of clean alternative energy sources such as active and passive solar technology.

POLICY 6-F-2 Reduce automobile emissions through programs developed in the Transportation Element to reduce single-occupant automobile trips. Mobility alternatives include increased ridership on the trolley system; introduction of an electric tram system throughout the Island, incentives for visitors to park off-island or park once on-island; a water taxi or water shuttle system; and an interconnected system of bicycle and pedestrian paths.

POLICY 6-F-3 Establish criteria for any new facility that would require an air quality permit including monitoring procedures to supplement those provided by the state, and enter into

agreements with Lee County and other relevant agencies to ensure that the town's concerns are addressed during the permitting stages of potential point source pollution generators.

OBJECTIVE 6-G SOIL EROSION – Conserve and protect soils to reduce water and air pollution from wind and water erosion.

POLICY 6-G-1 The town shall implement the following measures to ensure conservation of native soils and prevention of erosion and its polluting impacts:

i. To reduce airborne pollutants and protect tidal waters from dust caused by wind erosion, adopt requirements for protecting cleared land during construction.

ii. Land clearing prior to issuance of a building permit or development order.....

iii. An erosion control plan shall be submitted and approved by the town prior to the issuance of a development order. Such plan shall reference the property's topography, vegetation, and hydrology and utilize the best management practices such as the use of staked hay bales or filter cloth between the development site and adjacent swales, surface waters, or wetlands; sodding, seeding, or mulching immediately after final grading; and maintenance of vegetation following development activities in order to reduce the erosion by wind or water.

OBJECTIVE 6-H WATER QUALITY – Improve the water quality and economic value of the water bodies surrounding the Town of Fort Myers Beach beyond the levels existing in 1997.

POLICY 6-H-1 As an integral part of the Estero Bay estuary system, the town shall take all feasible measures in an intergovernmental effort to protect, maintain, and improve water quality in Estero Bay.

POLICY 6-H-2 No garbage or untreated sewage shall be discharged into tidal waters.

POLICY 6-H-3 Maintain or improve estuarine water quality by requiring new development or redevelopment to meet the following standards:

i. Development shall not degrade the estuarine quality of Estero Bay below those standards established by the state for Class II Outstanding Florida Waters.

ii. Development shall not degrade surface or ground water quality below state standards established in Chapter 62-302 *FAC* for surface water; Chapter 52-520, for ground water; and Chapter 10D-6 for bathing places.

POLICY 6-H-4 In cooperation with Lee County and other agencies, encourage continued water quality monitoring and identify sources of non-point water pollution, especially those found to be occurring from within the town. Develop a program to reduce or eliminate those pollution sources that may include education, regulation, and incentives, and follow-up enforcement.

POLICY 6-H-5 The town will implement the measures adopted in the Stormwater Management Element to reduce the polluting impacts of stormwater runoff.

POLICY 6-H-6 The town shall comply the requirements of the National Pollutant Discharge Elimination System by prohibiting the discharge of runoff, wastewater, or other potential sources of contamination into surface waters which results in the degradation of the quality of the receiving water body below the applicable standards.

OBJECTIVE 6-I WATER SUPPLY – Insure continued supplies of drinking water of sufficient quantity and quality to meet the projected demands of all consumers and the environment.

POLICY 6-I-1 Incorporate into the land development code measures applicable to new development and redevelopment to encourage water and wastewater management such as low-volume irrigation systems, xeriscape landscaping techniques, potential hook-ups to re-use water systems, and use of other conservation and recycling techniques.

POLICY 6-I-2 The town will cooperate with emergency water conservation measures of the South Florida Water Management District.

POLICY 6-I-3 The town will continue to purchase bulk water from Lee County Utilities in lieu of providing an independent supply of potable water. Lee County Utilities considers the Town of Fort Myers Beach to be part of its potable water service area and has demonstrated its ability to expand raw water supply and treatment facilities to meet anticipated growth consistent with the 2005–2006 Lower West Coast Water Supply Plan Update (prepared by the South Florida Water Management District).

OBJECTIVE 6-J GROUNDWATER – Maintain the quality of groundwater resources and improve as necessary to meet state or federal standards.

POLICY 6-J-1 Commercial excavation and mining activities are prohibited in the Town of Fort Myers Beach due to potentially detrimental effects to groundwater, surface water, wildlife habitats, and surrounding land uses and values.

POLICY 6-J-2 The Town of Fort Myers Beach opposes offshore gas and oil exploration and excavation activities which may be reasonably expected to threaten the quality of coastal beaches and estuarine ecosystems; or would place oil- or gas-related facilities on coastal beaches, islands, or wetlands; or would require the placement of oil or gas storage facilities on the island.

POLICY 6-J-3 The dredging of additional tidal canals is prohibited.

POLICY 6-J-4 The town shall support Lee County's programs to property dispose of hazardous wastes.

POLICY 6-J-5 The town shall require connection to central water and sewer systems to eliminate demands on groundwater and reduce the potential for contamination from septic tanks.

POLICY 6-J-6 Identify any remaining septic tanks and require their use be discontinued.

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Appendix B — Estero Island Soil Types

Canaveral fine sand soils are nearly level and moderately well-drained and somewhat poorly drained on ridges. Under natural conditions, depth to water table is eighteen to forty inches for two to six months and recedes to greater than forty inches from February to July. Available water capacity is very low, permeability is very rapid and natural fertility is low. Vegetation includes cabbage palm (Sabal palmetto), Brazilian pepper (Schinus terebinthifolius), seagrape (Cocoloba uvifera), wild coffee (Psychotria nervosa), and an understory of vines and herbaceous plants. For recreational uses, this soil is rated as severely limited (soil properties are unfavorable, and limitations can be offset only by combination of costly soil reclamation, special design, intensive maintenance and limited use). It is also rated as having only fair potential for wild herbaceous plants (this element can be established, improved or maintained in most places and requires moderately intensive management for satisfactory results).

Canaveral urban land complex soils have generally been modified by grading and the construction of impervious surfaces. These soils accommodate buildings, roads, parking lots, and drainage facilities. Like Canaveral fine sand, this soil complex is rated as severely limited for recreational uses and as having only fair potential for wild herbaceous plants.

Captiva fine sand includes 5 to 10 percent of Canaveral and Kesson soils and scattered areas of ponded Captiva fine sand and is described as nearly level, poorly drained soil. Slopes are smooth to concave and range from zero to one percent. Under natural conditions, depth to water table is about ten inches for one to two months and ten to forty inches for ten to eleven months. This soil may be under standing water for several days in some years. Available water capacity is low and permeability is very rapid. Natural vegetation includes cabbage palm, Brazilian pepper, sand cordgrass (Spartina bakeri), leather fern (Acrostichum danaeifolium) and wax myrtle (Myrica cerifera). For recreational uses, this soil is also rated as severely limited. However, it has fair potential for the wildlife elements of grasses and legumes, wild

herbaceous plants, and hardwood trees; good potential for the wildlife elements of wetland plants and shallow water areas; fair potential as habitat for woodland wildlife; and good potential as habitat for wetland wildlife.

Beaches are narrow strips of nearly level, mixed sand and shell fragments along the Gulf of Mexico. These areas are covered with daily saltwater tides and are subject to movement by wind and tides. Salt-tolerant plants are the only vegetation. Beaches are suitable for recreation.

Muck soils are nearly level, very poorly drained, and located in marsh areas. Slopes range from 0 to 1 percent. These soils are generally not suitable for cultivated crops or citrus, but Gator muck is well suited for vegetable crops or sugar cane if drained. These soils are vulnerable to flooding and have severe limitations for urban development.

Kesson fine sand includes ten to fifteen percent areas of Captiva and Wulfert soils, soils with organic surface layers and soils disturbed with loamy material. This soil is described as nearly level, very poorly drained soil in broad tidal swamps which is subject to tidal flooding. Slopes are smooth and range from zero to one percent. Depth to water table fluctuates with the tide, available water capacity is low, permeability is moderately rapid to rapid and natural fertility is low. Natural vegetation includes black mangrove (Avicennia germinans), red mangrove (Rhizophora mangle), sea-oxeye daisy (Borrichia arborescens) and saltwort (Batis maritima). For recreational uses, this soil is also rated as severely limited. It has fair potential for the wildlife habitat elements of wetland plants and shallow water areas and fair potential as habitat for wetland wildlife (USDA/SCS, 1984).

St. Augustine sand, organic substratum-Urban land complex are areas of St. Augustine sand, organic substratum, and areas of Urban land. The areas of the St. Augustine soil and of Urban land are so intermingled that is was not practical to map them separately at the scale used for mapping (USDA/SCS, 1984). About 50 to 65 percent of each mapped area is St. Augustine sand, organic substratum, and about 20 to 35 percent is Urban land that is covered by houses and other buildings and streets and other forms of pavement. The St. Augustine soil is in marshes and mangrove swamps. It consists of gray to pale brown sand, with about 25 percent multicolored shell fragments, overlying organic layers. Slopes are smooth to slightly convex and range from 0 to 2 percent. The depth of the water table varies with the amount of fill material and the extent of artificial drainage within any mapped area. However, in most years, the water table 24 to 48 inches below the surface of the fill material for 2 to 4 months. It is below a depth of 48 inches during extended dry periods. The available water capacity is low in the fill material and high in the underlying organic material. Permeability is estimated to be rapid. Natural fertility is low. Most of the natural vegetation has been removed. There are scattered weeds in vacant lots. The soil is poorly suited to most plants unless topsoil is used. The soil is severely limited for most kinds of community development and related uses.

Urban land soils consist of areas that are more than 85 percent covered by buildings, parking lots, roads, and other man-made structures. Unoccupied areas are mostly lawns, vacant lots, and playgrounds.

Matlacha gravelly fine sand, is nearly level, somewhat poorly drained, and was formed by fill and earthmoving operations. Permeability is estimated to be rapid in the fill and underlying surfaces. The water table varies with the amount of fill material and the extent of artificial drainage. The available water capacity is variable, but it is estimated to be low. It is poorly suited for plants unless topsoil is spread over the area to provide a suitable root zone. Most of the natural vegetation has been removed. The existing vegetation consists of the South Florida slash pine and various scattered weeds. The soil has severe limitations for septic tanks and recreational uses and moderate limitations for building sites.

Appendix C — Federal Legislation

The following is an assessment of existing federal regulations that affect the natural environment at Fort Myers Beach.

The **Endangered Species Act** (ESA) was adopted by Congress in 1973. The act establishes criteria for the listing of plants and animals as threatened or endangered. The ESA also provides a permitting program which helps ensure that ecosystems upon which listed species rely are conserved during development activities. The Act also provides the impetus for the creation of species-specific Habitat Conservation Plans intended to address the long-term viability of populations of endangered or threatened species.

The **Marine Mammal Protection Act of 1972** gives the U.S. Department of the Interior the responsibility for the management and protection of marine mammals found within the territorial boundaries of the United States, including the West Indian Manatee.

The **Coastal Zone Management Act (CZMA) of 1972** establishes a cooperative state and federal program to manage coastal zones in the United States. Implementation of the CZMA may be delegated to individual states which adopt their own programs which meet the criteria of the federal program. The Florida Coastal Management Program, which was approved in 1982, is administered by the Florida Department of Community Affairs.

The **Clean Water Act** establishes a permitting program and criteria for the discharge of pollutants into the country's waters, including minimum water quality standards. The Act focuses primarily on surface waters, and provides the greatest protection for wetlands of any federal legislation.

The **Rivers and Harbors Act (1899)** regulates all activities affecting the navigable waters of the United States, including the approval of dredging and filling activities in wetlands. This regulation affects the construction of bridges, roads, wharves, and just about every activity which could be interpreted as affecting navigable waters. The primary enforcement agency is the U.S. Army Corps of Engineers which may solicit comments from other agencies during its review of activities which fall under this Act.

The **Clean Air Act (1970, 1990)** establishes emission standards for point source emitters of airborne pollutants as well as motor vehicles, It also sets pollution controls which require communities and industry to meet ambient air quality standards for a number of air pollutants.

The **National Flood Insurance Act of 1968** establishes the National Flood Insurance Program (NFIP) which makes federally-subsidized flood insurance available in communities which adopt and adequately enforce floodplain management ordinances that meet NFIP requirements. The Act also required that the Federal Emergency Management Agency establish flood risk zones in all flood prone areas.

The **Coastal Barrier Resources Act (1982)** prohibits new federal expenditures for new or expanded development on undeveloped coastal barriers which are included within the Coastal Barrier Resources System.

The **Marine Turtle Protection Act (1991)** strengthened marine turtle protection measures by requiring states to consider turtle protection in all permit applications for coastal construction and excavation.

The **Safe Drinking Water Act of 1974** charges the U.S. Environmental Protection Agency with ensuring that drinking water meets established criteria.

Appendix D — State Legislation & Policies

The **Florida Endangered and Threatened Species Act** and the **Preservation of Native Flora of Florida Act** establishes criteria for the listing, protection, and management of plant and animal species considered to be endangered, threatened, or of special concern.

The **Florida Wildlife Code**, also known as Chapter 39, *FAC*, restricts the pursuit, molestation, harm, harassment, capture, or possession of a listed species. The Code establishes a permitting program for such activities, including permits for the "incidental take" (lawful killing "incidental to" otherwise allowable activities) of individual animals.

The **Florida Manatee Sanctuary Act** establishes protective measures for the endangered West Indian manatees and establishes manatee sanctuary areas throughout the State.

The **Water Resources Act** establishes state water policy and implementation measures, which include the creation of the five regional water management districts. This act also mandates the formulation of a state water use plan.

The **Florida Water Quality Assurance Act** requires the Florida Department of Environmental Protection to maintain a statewide groundwater quality monitoring network and database.

The **Florida Safe Drinking Water Act** establishes a statewide framework for regulating drinking water quality.

The **1984 Groundwater Protection Rule** establishes guidelines for the restoration, conservation, and management of the state's groundwater resources. Florida was the first state in the nation to adopt such a rule.

The **Florida Solid Waste Management Act (1988)** requires each county and city to include recycling programs in their comprehensive plans and to develop and initiate recycling programs with the goal of reducing the waste stream by 30% by the end of 1994.

Chapter 161, *FS*, and Chapter 62B-33, *FAC,* establish the state's beach and shore preservation regulations including structural requirements, Coastal Construction Control Line (CCCL) guidelines, and sea turtle protection regulations.

Chapter 163, *FS* (Local Government Comprehensive Planning and Land Redevelopment Act) requires that each city and county prepare and adopt a comprehensive plan containing mandatory elements that address growth management issues including conservation and coastal zone management.

Chapter 253, *FS*, regulates aquatic preserves.

Chapter 258, *FS*, regulates state-owned lands.

Chapter 370, *FS*, and Chapter 16N-35, *FAC,* established the state's salt water fishing license requirements.

Chapter 373, *FS*, regulates wetlands**.**

Chapter 403, *FS*, establishes water quality standards.

Chapter 40E, Florida Administrative Code (FAC) provides for Environmental Resource permits and exemptions.

Rule 9J-5, *FAC* establishes the minimum criteria for local government comprehensive plans, and is used by the Florida Department of Community Affairs to determine whether such plans fulfill the requirements of the state's Growth Management Act. This rule prescribes the minimum requirements for each element of the comprehensive plan.

The **Surface Water Improvement and Management (SWIM) Act of 1987** requires each of the state's five water management districts to identify those surface waters most in need of restoration or preservation. The act mandates the development of management plans ("SWIM plans") for each water body so identified, including detailed schedules of implementation.

The **Mangrove Trimming and Preservation Act** was enacted during the 1995 legislative session and amended during the 1996 session. This act provides standards for the selective trimming of mangrove trees and establishes a permitting program to allow such activities. The 1995 version allowed trimming of mangroves by private persons on publicly owned lands, preempted local permitting programs, and prohibited the adoption of local standards more stringent those provided within the act. The 1996 amendments restored protection of publicly owned mangroves, relaxed the preemptions of local authority, and provided clarification regarding the trimming standards.

Appendix E — Local Programs and Agencies

The following is a summary of local organizations involved in the protecting the coastal environment of Fort Myers Beach.

Turtle Time

Turtle Time, Inc. was established in 1989 as a non-profit organization dedicated to the continued survival of the loggerhead sea turtles. Turtle Time is licensed by the state and the U.S. Fish and Wildlife Service to monitor sea turtle nesting activities on the beaches of Bowditch Point south to the Collier County line. During nesting season, volunteers patrol this area daily looking for signs that turtles have crawled onto the beaches. When they spot signs of a crawling turtle, they investigate and see if a nest was dug and eggs laid. Nests are marked with the yellow "Sea Turtle Nest" sign and their locations recorded. If necessary, the nests will be fenced off to keep out natural predators such as raccoons. Nests can be moved to better locations if necessary to save them but only as a last resort. Volunteers also aid turtles in distress and assist the hatchlings when necessary.

Ostego Bay Foundation

The Ostego Bay Foundation is actively involved with local environmental protection. The foundation participates in Estero Bay water quality sampling, monitoring of seagrasses and sediments, tidal flow studies (mapping), POD (dolphin research), setting up manatee programs, support for Florida Marine Institute, all done by volunteers. This includes a FEMA-certified oil spill co-op first responder team. The foundation is housed in the Ostego Bay Foundation Marine Science Center on San Carlos Island. Public education exhibits including aquariums, near shore tank, fossils, endangered species, mangroves, and shells.

Friends of Matanzas Pass Preserve

Friends of Matanzas Pass Preserve is an outgrowth of the citizens' movement that resulted in the acquisition of this preserve, its ultimate transfer to Lee County, and the ongoing restoration activities there. The non-profit group stresses the many reasons why the preserve is important to our ecological system and organizes the opportunities for educational use and for "hands-on" involvement in managing and caring for the preserve.

Estero Island Historic Society

The Estero Island Historic Society is actively preserving the heritage of Fort Myers Beach. The society presents a slide show of the history of Fort Myers Beach and is responsible for the restoration of the historic San Castle cottage. The cottage was saved from destruction and moved to its current location at the entrance to the Matanzas Pass Preserve. It has been refurbished and now serves as the society's Historic Cottage and Nature Center, a free museum and interpretive center for the preserve.

Caloosahatchee River Citizen's Association

The SFWMD has begun work on watershed plans for the Caloosahatchee River watershed and Estero Bay watershed. The Caloosahatchee River Citizen's Association, a not-for-profit public organization, meets monthly to help create the Caloosahatchee River watershed plan.

Coastal Advisory Council

The Coastal Advisory Council was created in 1995 by Lee County Resolution #95-12-02. The council was created to advise the Lee County Board of County Commissioners, staff, and the various advisory boards about projects affecting beach and shore preservation. The advisory council informs the Board of County Commissioners about the best roles they can play in conserving the beaches of Lee County.

Randell Research Center

The Randell Research Center is being created by the Florida Museum of Natural History at Pineland on northern Pine Island. The site is a 200-acre internationally significant archaeological site where enormous shell mounds overlook the waters of Pine Island Sound. The site was once occupied by the Calusa Indians and is now listed on the National Register of Historic Places. The domain of the Calusa Indians included all of Estero Bay including Mound Key, also the site of a significant ceremonial site. The center will house ongoing research programs in archaeology, history, and ecology, and programs in environmental and heritage education.

TRANSPORTATION ELEMENT

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TRANSPORTATION ELEMENT

INTRODUCTION

This element addresses many transportation issues, with particular attention to the traffic congestion that occurs every winter at Fort Myers Beach. Traffic congestion has proven intractable, not due to a lack of attention but because many of the potential solutions would have such major impacts on the community. Many piecemeal improvements have been made through the years, but despite these efforts, congestion is a major inconvenience every winter.

Options to improve the flow of traffic are very limited due to the density of existing development; the single road that traverses the island; and limited right-of-way for road expansion and intersection improvements. And as time has demonstrated, increased traffic flow doesn't necessarily reduce congestion; there is so much pent-up demand for travel to the beaches that the number of trips tends to increase to meet whatever road capacity can be provided.

This element attempts to demystify the subject of traffic congestion so that the public can understand the available alternatives and their potential side-effects. It gives fair consideration to the widest array of possibilities, including some that haven't been previously considered. This element identifies the approaches most likely to benefit the community, and suggests specific actions that the Town of Fort Myers Beach can take to further these approaches. This element also meets new state requirements for a transportation element, combining material often found in separate elements (such as traffic, mass transit, and ports).

This document should outlast its immediate purpose as a component of the town's first comprehensive plan. Through this element, visitors and new residents who take an interest in the island's transportation problems will be able to better understand the commonly suggested "solutions to the traffic problem." Future planning and engineering studies can also use this element as a thorough summary of data and analysis on transportation problems at Fort Myers Beach.

Because of this element's length and the many alternatives that were examined (including many not selected for action at this time), this document is organized as follows:

- **Summary of transportation issues**, including this plan's approach for the Town of Fort Myers Beach
- **Goals, objectives, and policies** to be formally adopted
- **Transportation Alternatives** (APPENDIX A)
- **Additional Transportation Data** (APPENDIX B)

***Figure 1**, Times Square pedestrian mall (photo courtesy Mohsen Salehi)*

DEFINING THE PROBLEMS

Transportation problems are easy to find at Fort Myers Beach; they are the subject of daily conversation of residents, especially in the crowded winter months. The alternatives selected for action in this element are those that might mitigate one or more of three main areas of concern:

- ✘ **CONGESTION:** Every winter, Estero Boulevard becomes so crowded that traffic backs up, sometimes for miles in both directions. Although tourists are often unfazed by this congestion, local residents sometimes find it impossible to carry out their daily routines, especially if they involve trips off the island between mid-morning and early evening.

- ✘ **PARKING:** The shortage of beach parking in the downtown area has achieved legendary status, even though existing parking lots are not used to capacity. When visitors cannot find a parking space, they tend to wander around in their cars, worsening congestion. The welcome rebirth of commercial activity near Times Square will increase the demand for parking. Yet the problem is more complex than just a shortage of parking. A parking *surplus* can cause its own problems by inducing more people to try driving to Fort Myers Beach, offsetting the relief now being provided by public transportation and bicycling or walking.

- ✘ **SPEEDING:** Despite the virtual crawl of traffic on parts of Estero Boulevard, speeding is also a problem. The same motorists who crawl during the day near Times Square may speed at the south end of the island, or whenever traffic lightens. This is not merely an annoyance; it often results in the deadly combination of carelessness (often alcohol-induced) and vulnerable pedestrians and bicyclists. If motorists didn't speed on

***Figure 2**, Estero Boulevard in the peak season*

Estero Boulevard, many more people would get out of their own cars and discover the pleasure of moving around a beautiful beach community on foot. A recent engineering publication describes the problem this way:

> "*To design for the continuous opportunities for free-flowing vehicles (as is the case with 10-foot-wide and greater travel lanes) is to create situations where most of the time passenger cars — far and away the predominate vehicle — will travel at speeds greater than are desirable for nearby pedestrians. This becomes a self-worsening situation of degradation of the pedestrian environment: faster vehicles are noisier and more dangerous to pedestrians; faster vehicles generally mean fewer pedestrians; and fewer pedestrians generally mean even faster vehicles.*" (Institute of Transportation Engineers, 1997, *Traditional Neighborhood Development: Street Design Guidelines*, Proposed Recommended Practice prepared by ITE Transportation Planning Council Committee 5P-8: Washington D.C.)

Why Conventional Solutions Haven't Worked at Fort Myers Beach

Traffic congestion can be relieved with conventional engineering solutions, given enough money. Roads can be widened to handle higher volumes of traffic, as when U.S. 41 through Fort Myers was converted from a two-lane rural highway to a seven-lane urban thoroughfare in the 1970s. When widening is no longer practical, alternate routes can be built for the extra traffic (as when Interstate 75 was extended through Lee County in the same decade to relieve further congestion on U.S. 41). This cycle of extra lanes plus a network of alternate routes has managed to keep up with strong population growth in Lee County, plus the pronounced pattern of increasing automobile usage per person (the rate of vehicles per person in Lee County has grown from 0.47 vehicles per person in 1950 to 1.35 vehicles per person in 1995).

Neither of these methods would work well to ease traffic congestion at Fort Myers Beach. Estero Island has a configuration that is not conducive to developing a road network, with its long narrow shape, frequent navigable canals, and sensitive environmental resources that interfere with all routes that could provide additional access. And it would be very difficult to add lanes on Estero Boulevard, since the portions experiencing the most congestion are only 50 feet wide and also serve as one of the premier public spaces that give Fort Myers Beach its memorable character.

Many of the conventional solutions that would allow more traffic to flow along Estero Boulevard might actually be more harmful than helpful. Conventional solutions sensibly try to *reduce delay* and *improve safety*. Unfortunately, reduced delay for cars often increases delays for pedestrians and bicyclists.

In the same way, improving safety for the occupants of vehicles often degrades safety for those outside vehicles. To move cars faster, lanes are often widened, and roadside obstructions such as trees are forbidden or removed. But when cars are traveling faster, it is more difficult to avoid collisions with pedestrians, since drivers and pedestrians both have less time to react. Up to about 25 MPH, vehicles can easily stop for pedestrians. Above 25 MPH, the danger to pedestrians increases dramatically with speed, and the difficulty in safe crossing increases correspondingly. Pedestrians hit by a car are much more likely to be killed or severely injured when the car is traveling fast.

Pedestrians and bicyclists are the lifeblood of the resort and retiree economy of Fort Myers Beach. Each car requires an enormous amount of space for movement and parking compared to a person on foot, who may be walking for recreation, to reach a specific destination, or to reach a trolley stop. Given the current congested conditions, space dedicated to cars is lost for other modes of travel. Transportation improvements that hinder mobility on foot may ultimately be no improvement at all.

With these difficulties in mind, a wide range of alternatives have been examined in search of promising means of increasing mobility and making Fort Myers Beach a better place to live and visit. These alternatives are described in detail in Appendix A, in three categories:

- Improvements that could be made within the confines of existing public rights-of-way (or with relatively modest expenditures).
- Improvements that would require major public expenditures for acquiring additional land and building roads.
- Improvements that aren't practical with today's technology, but which may hold promise for the future.

Estero Boulevard as an Evacuation Route

Besides providing access to property and serving daily traffic, Estero Boulevard is the sole evacuation route when a hurricane threatens Fort Myers Beach. Fort Myers Beach is extremely vulnerable to quickly rising waters, especially if a hurricane (or strong tropical storm) strikes land to the north of Fort Myers Beach from the Gulf of Mexico. If residents are not able to evacuate in a fairly short period of time, they will be trapped on Estero Island by rising waters.

Several ideas for reducing excessive speeding on Estero Boulevard have been dismissed by Lee County transportation officials who fear that these measures would reduce the ability of Estero Boulevard to serve as an evacuation route. Needless to say, Fort Myers Beach residents are equally concerned that their chances for safe evacuation are not reduced by any actions of government or their fellow citizens.

This subject requires an understanding of the relation between traffic volume and traffic speed. It is easy, but wrong, to assume that roads with higher speeds will automatically be able to carry more cars. In an evacuation, the critical factor is the total number of cars that can evacuate, not the speed at which individual cars are traveling. In fact, under certain conditions there is an inverse relation between the number of cars passing a given point and their speed, such as on an arterial road like Estero Boulevard under normal operating conditions.

An important factor is the space needed between cars for drivers to stop safely if the car in front brakes suddenly. The standard rule for a safe following distance is to leave two seconds between vehicles. The two-second rule translates into varying distances, depending on the speed being traveled. At 60 MPH, 176 feet of space is required, but at 20 MPH, only 59 feet are required (see Table 7-1). Figure 3 illustrates this spacing, showing the higher density of cars (cars per mile at a given instant) at lower speeds. This higher density allows more cars to pass, up until the point where more cars try to use a road than its capacity allows. At that point the density of cars continues to go up, but speeds (and traffic volumes) drop dramatically because when any one car slows, the cars immediately behind must do the same, causing "waves" of very slow travel speeds.

Table 7-1 — Safe Spacing Between Vehicles

Speed in MPH	*Speed in feet/second*	*Two-second spacing*
60 MPH	88	176 feet
50 MPH	73	147 feet
40 MPH	59	117 feet
30 MPH	44	88 feet
20 MPH	29	59 feet
10 MPH	15	29 feet

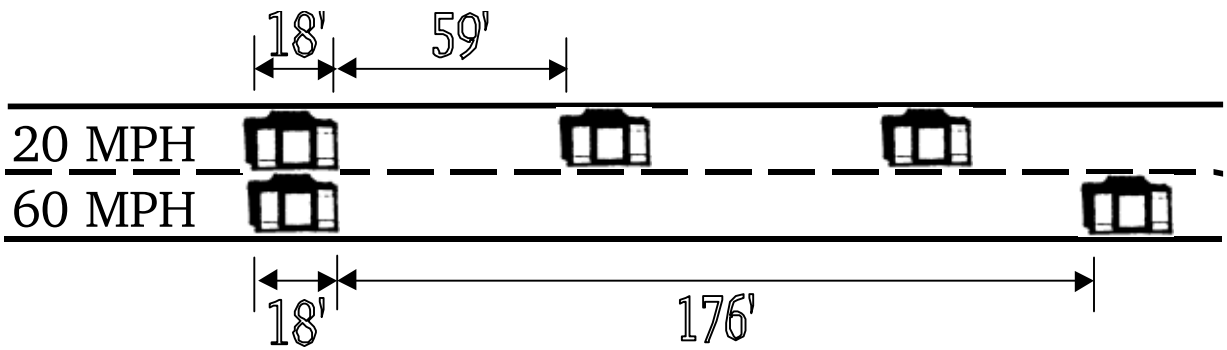

***Figure 3**, Safe vehicle spacing at 20 MPH & 60 MPH (w/o interference by driveways/intersections/parking)*

This complex relationship is illustrated in Figure 4 which shows the classical parabolic speed-to-volume curve. High speeds are at the upper left and low speeds are at the lower left. The curve begins in the upper left corner, where high speeds of 70 MPH result in quick movement for light traffic volumes. As the curve moves down and to the right, lower speeds require less space between cars, resulting in higher traffic densities. Note, however, that the curve reverses suddenly around 30 MPH. At just above this speed, a road like Estero Boulevard can carry its highest volume of traffic (although at a poor level of service).

As more drivers attempt to use a road than it can carry, speeds quickly drop below 30 MPH. The number of cars able to traverse a road goes *down* instead of up once the road's capacity is exceeded because of the stop-and-go pattern. Under full bumper-to-bumper conditions, the density of cars is very high, but speed and volume approach zero. This is true even behind the point of the actual bottleneck, where long lines of traffic quickly develop. These lines cannot dissipate until the number of motorists wishing to use the road drops below the number that can pass through the bottleneck.

This digression into the theory of traffic flow is important because it demonstrates that efforts to reduce speeding on Estero Boulevard do not inherently conflict with its role as an evacuation route. It also helps in understanding how various proposed road improvements might affect travel flow and safety at Fort Myers Beach.

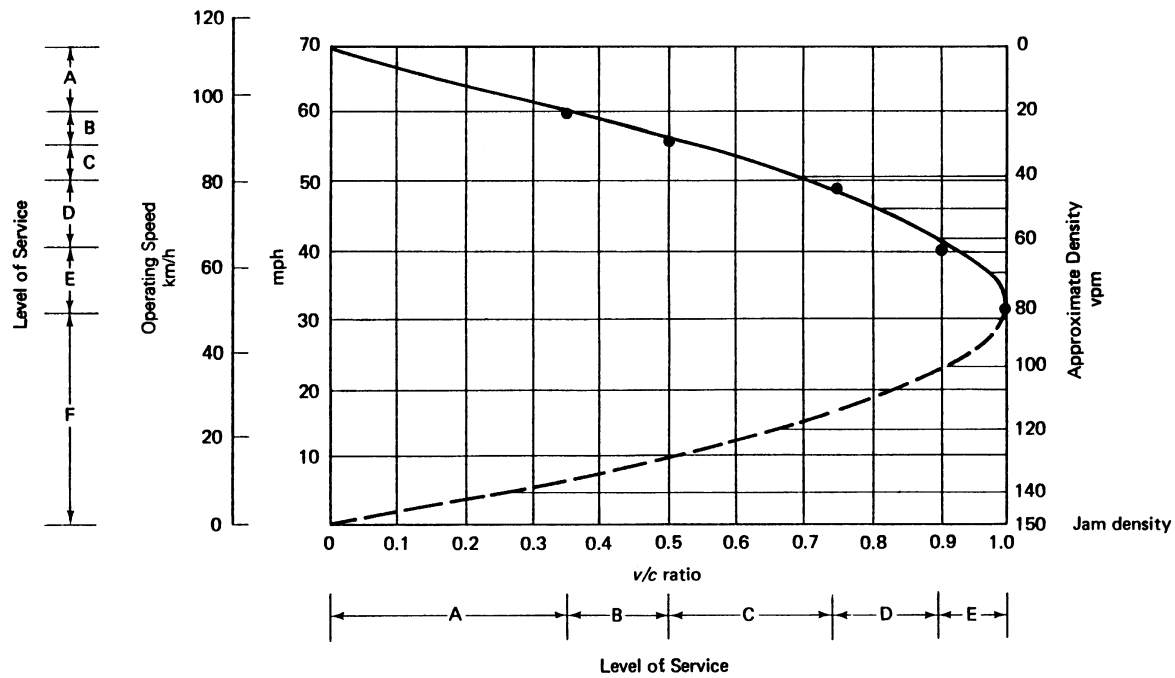

***Figure 4**, Conceptual relationship of levels of service to some measures of quality of flow under ideal uninterrupted flow conditions (SOURCE: Transportation and Traffic Engineering Handbook, Institute of Transportation Engineers, 1982, Figure 16.1b)*

SELECTED SOLUTIONS

Transportation problems are usually solved by finding ways to move more cars faster; new roads are designed for this sole purpose. If sidewalks are provided at all, they often become dangerous places at the curbs' edge. Public involvement is minimal; who is able to argue effectively about the technicalities of traffic flow or the dictates of traffic engineering manuals?

One observer notes:

> *"The mentality of "freeway" (with all its misleading implications of freedom of action and for free) has come to so dominate the building of roads that sections of city streets have been seen as compromised extensions of the free, unencumbered movement. They have been measured first by the capacity to move traffic and only very secondarily by their capacity to sustain the life of the city around them."*
> (Donlyn Lyndon in *Places*, Summer 1997)

This element avoids the "freeway approach" to transportation planning in two ways. Mobility *outside of cars* is taken very seriously; and the streets are emphasized for their urban design value as well as mobility needs.

This approach has important implications for a community that relies heavily on tourism. Many great tourist destinations are overrun by cars during peak periods; yet visitors persist as long they remain great tourist destinations. Fort Myers Beach has a combination of beautiful beaches and a relaxed, outdoor-oriented public life that is the envy of many resort locations. Rather than apologizing that *"the traffic problem still hasn't been solved,"* the town's message needs to become *"we welcome you, but you may be better off leaving your car at home."* To make this approach realistic, the town needs to make it easier for people to move around Estero Island without having to drive a car for every trip.

1. Mobility Using a Variety of Travel Modes

A mobility-oriented strategy requires a balanced transportation system, with several improvements beyond what is available today. The most important components will be described briefly in this section:

- **Make it easier for visitors to arrive without a car** (such as convenient airport limousine service that is integrated with trolley and taxi stops).
- **Improve trolley service** to make it more attractive to visitors and residents.
- **Use impact fees and gas taxes to support alternate travel modes** such as walking, trolleys, and water transportation.
- **Encourage a reliable system of water taxis** and scheduled water shuttle service.
- **Create a hidden-path system** parallel to Estero Boulevard.

(A more thorough discussion of alternate travel modes can be found on pages 7-A-5 to 7-A-18 of Appendix A.)

Make it easier for visitors to arrive without a car

Tourists headed to Fort Myers Beach nearly always arrive by car, despite the pedestrian-friendly nature of the community. Out-of-state visitors to Lee County stay an average of seven nights, while Florida visitors average less than four nights. Many of the short-term visitors arriving by air would happily avoid the expense of renting a car if they had economical transportation to Fort Myers Beach and reliable means of moving around upon arrival.

The majority of tourists arrive in Lee County by airplane (68% in 1996). Slightly fewer continue their visit to Lee County with a rental car (60% in 1996); the remainder are met by friends or relatives, or use a taxi or shuttle bus to reach their destination.

In spite of the large number of visitors to Fort Myers Beach, there is no regularly scheduled airport shuttle service. On-request service is available to patrons of larger motels and resorts, and three taxi companies operate on the island. If scheduled limousines or shuttle buses were available, fewer vehicles would be driven to Fort Myers Beach.

Tourist lodgings at Fort Myers Beach are spread out across the island, and many are very small operations. It would be difficult for a scheduled service to drop passengers at all of their destinations. The Town of Fort Myers Beach should encourage scheduled airport service and the designation of a central drop-off point that would include a trolley stop and taxi stand. These services at a single location would create a small transit terminal. Business locations near a terminal would also provide good opportunities for coffee shops, news stands, and rentals of bikes, motorbikes, roller blades, and even cars for off-island trips.

Improve trolley service

Fort Myers Beach has been served by Lee Tran trolley buses for a decade with varying success. The trolleys have proven more popular than conventional buses, but have not achieved their potential as a reliable travel mode for visitors. The trolley system has received varying subsidies from grants, the Estero Island CRA, and the town itself, with ridership increasing when service is more frequent and when fares were eliminated. However, the subsidies have been an ad-hoc response to a perennial congestion problem, and no long-term funding or operational plan has been developed.

Figure 5*, Trolley bus*

There is some public distaste for subsidizing visitors' trolley trips by eliminating fares, but even when fares are charged, public transportation still requires a subsidy. When compared to the various costs of building more road capacity to accommodate tourists, improved transit service can be an inexpensive alternative.

Practical measures to improve trolley usage include:

- Recurring subsidies from tourism sources so that service can be enhanced and congestion minimized during heavy seasonal traffic;
- Pull-offs at important stops along Estero Boulevard so that passengers can safely board and to keep trolleys from blocking the flow of traffic. Pull-offs could be built during other improvements to Estero Boulevard, or could be Land Development Code requirements during the redevelopment process.
- Clear signs at every stop with full route and fare information;
- Bus shelters at key locations, with roofs, benches, and transparent (or open) sides; and
- Replacement of the existing trolleys with clean-fuel vehicles so that businesses won't object to having trolleys stop at their front doors.

Tram-style vehicles have also been considered; passenger can board quickly through their multiple gates. The slow travel speeds of most trams (and the difficulty in collecting fares with multiple gates) makes them unsuitable for use on busy streets, but they may be useful for shuttle service to Bowditch Point.

Use impact fees and gas taxes to support alternate travel modes

The Town of Fort Myers Beach collects impact fees from new development and receives a share of county and state gasoline taxes. These funds have various limitations but must be used for transportation purposes. Although road maintenance must not be compromised, some of these funds can be used to support alternate modes rather than being spent solely on more roads.

The town has inherited Lee County's road impact fee ordinance, and can amend it to suit the town's needs (within legal limits for impact fees). There is no reason to dedicate these funds solely to road improvements when other travel modes are available to supplement the road system. This program may be expandable to pay for capital improvements such as improved mass transit, better sidewalks, elevating roads to prevent flooding, and providing off-island parking areas.

Any major success in getting visitors to leave their cars on the mainland will depend on the creation of a balanced transportation system. For instance, airport limousines and interceptor parking lots only work with a reliable system of public transportation. In the same way, a bus or trolley trip usually involves some walking at each end. If that walk is of reasonable length and is a pleasant experience, people will use public transportation much more often. (Fortunately, walkways that are safe,

beautiful, and interesting are just as desirable to permanent residents as they are to visitors.)

Encourage a reliable system of water taxis

Few resort communities have as much potential for water transportation as Fort Myers Beach. Water transportation is a classic example of making the trip part of the experience, because of its novelty plus the potential for seeing wildlife along the way. Matanzas Pass and its adjoining canals could provide an ideal water transportation network for recreational trips. This network could use a mix of on-call water taxis plus regularly scheduled water shuttles, stopping at landing sites such as those shown in Figure 6. For the 13 sites shown that are at restaurants, motels, and marinas, the owners would have to agree to provide dockage. The agreement would ensure public access to the system while providing positive exposure to the business, enabling them to expand their patronage.

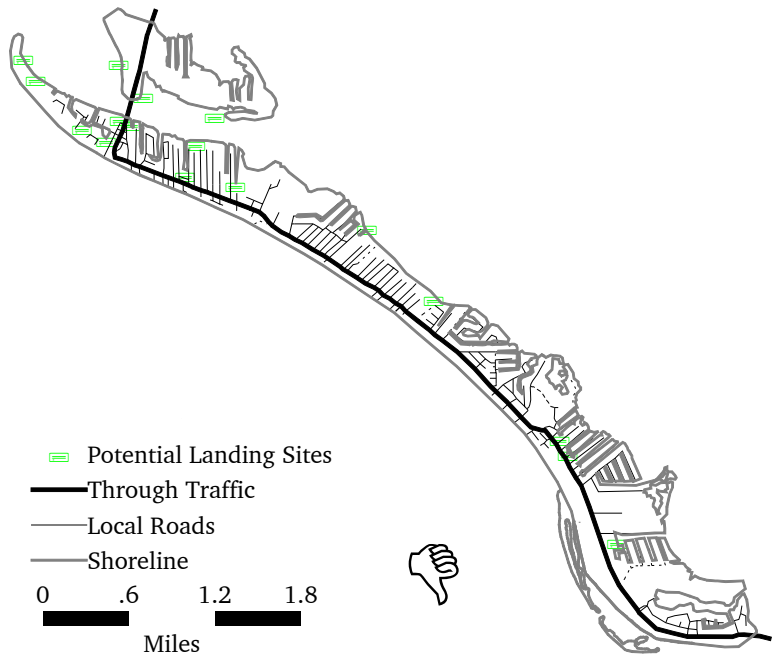

Figure 6*, Some potential landing sites for water transportation*

Water transportation is hindered by logistical problems including limited dockage; manatee slow-speed zones; potential for foul weather; and existing regulations that require dedicated parking spaces at each stop. Although boat service would be a private-sector activity, there are some steps that the town can take to encourage water transportation, including formal policies in this comprehensive plan supporting water transportation to lay the groundwork for repealing regulations that work against water shuttles (such as parking requirements that consider a water shuttle or taxi to be a business requiring a separate pool of parking spaces at each stopping point).

Water taxis are operating successfully as private businesses in Miami and Fort Lauderdale. In downtown Miami, a water shuttle runs continuously for a one-way fare of only $3.50. Water taxi service is available to and from Miami Beach for $7.00 each way; this is an on-call shared-ride service. Identical water taxi service is available in Fort Lauderdale. These boats load and unload from the front, allowing them to dock in tight locations without special facilities (see Figure 7).

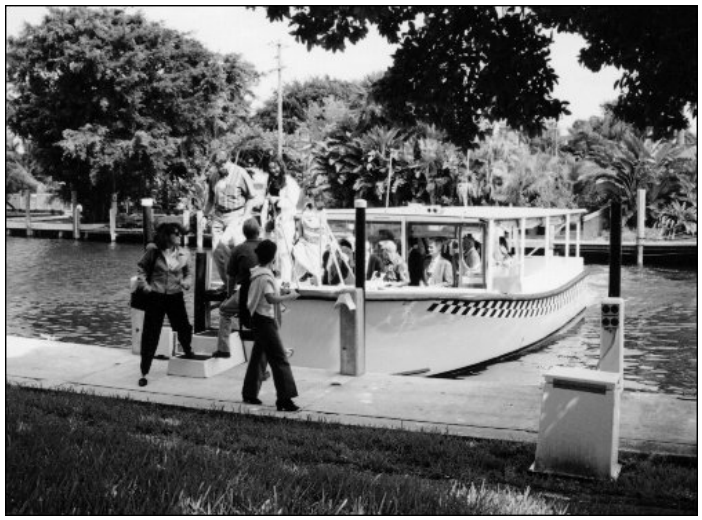

Figure 7*, Water taxi unloading at a Fort Lauderdale hotel*

Create a hidden-path system

A new pedestrian concept emerged from public workshops during the preparation of this comprehensive plan, a quiet network of "hidden paths" to run parallel to Estero Boulevard on the Bay side to provide an alternative to walking and cycling along Estero Boulevard. This network is described further in the Community Design Element of this plan, and is shown conceptually in Figure 8.

The "hidden path" network would expand the use of cycling and walking to school as an alternative to walking along busy Estero Boulevard (many students live close to the elementary school but now take the bus or are driven to school). The "hidden paths" would also provide an alternative walking and bicycling environment that could replace some single-occupant-vehicle trips. This would be particularly true where parts of the path system link important centers of activity. These paths could also alleviate a gap in the future transportation network by connecting water- and land-based transportation.

The successful implementation of such an idea would require extensive community involvement and a close working relationship between residential neighborhoods and law enforcement agencies to ensure a safe and secure path. A good first step may be working with the Lee County School District to encourage parents nearest the school to participate materially (through donation of easements) and financially (where their property is not involved). School trips are the most effective way of ensuring steady foot and cycling traffic, which would ensure safety and immediate community involvement. Presence of law enforcement, particularly Sheriff's department bike patrols and VOICE volunteers, would help ensure the successful implementation of the hidden path concept. The facility must be designed with adequate visibility to ensure the safety of users and adjoining property owners.

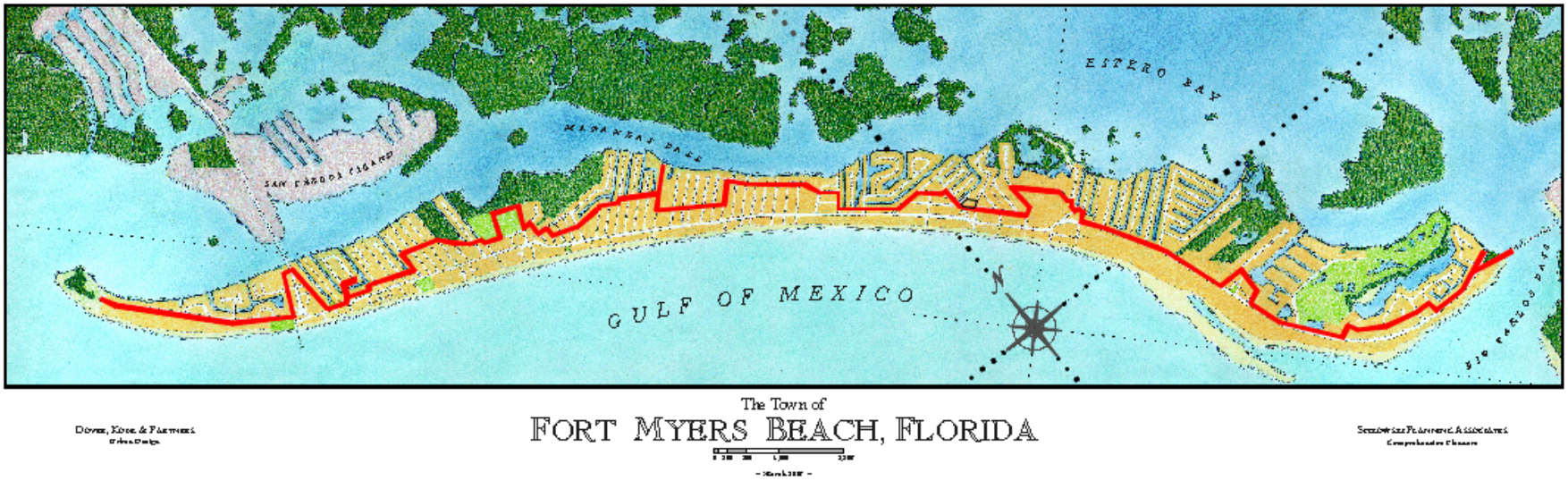

Figure 8*, Conceptual plan for a network of "hidden paths"*

2. Upgrade Estero Boulevard

Improvements to Estero Boulevard must balance travel needs with the many other functions of this premier public space. A foremost objective must be to enhance Estero Boulevard's role as the spine of the community and avoid any changes that would make into a barrier between the beachfront and the rest of Estero Island. If it were to become a barrier, the easy movement between these two portions of the island, a kind of social and physical porosity, would end.

The most important components of the town's strategy toward Estero Boulevard will be described briefly in this section:

- **Expand the Times Square streetscape project**, beginning with the Bay-side sidewalk from Times Square, and continuing southward.
- **Institute traffic calming measures**, especially passive measures along Estero Boulevard.
- **Put buildings closer to the street** in pedestrian zones
- **Improve sidewalks and bikeways** along Estero Boulevard across the entire island
- **Require traffic impact analyses for new development**

(A more thorough discussion of Estero Boulevard issues can be found on throughout Appendices A and B.)

Expand the Times Square streetscape project

Fort Myers Beach has outstanding opportunities to increase pedestrian and bicycle activity, and is undertaking many specific improvements to this end. In 1996 the Estero Island CRA completed its first construction phase, including a pedestrian mall at Times Square and wide new sidewalks on the beach side of Estero Boulevard from Times Square to the Lani Kai.

These improved sidewalks have already made walking even more popular; the sidewalks are raised above a curb and are surfaced with colorful pavers that match the new look of the Times Square pedestrian mall. Similar sidewalks should be extended as far south as the public library, linking the elementary school and Bay Oaks to the Times Square area.

If even a few feet of additional right-of-way can be obtained, these sidewalks could be wider, or the coconuts could be planted in a grass strip between the curb and the sidewalk. If necessary, costs could be reduced somewhat by using the decorative pavers only at intervals between sections of standard concrete sidewalk. For capital planning purposes, cost should be budgeted at $1,000,000 per mile for improvements similar to those now in place, or double that for full sidewalks on both sides of Estero Boulevard.

During the design phase of these improvements, many related matters can be considered, such as stormwater improvements and trolley shelters and pull-offs at key locations.

A similar pattern of urban sidewalks should be built in the future around the Villa Santini Plaza. The shopping plaza and its high-rise neighbors provide the basis for another high-quality pedestrian zone at the south end of the island.

Institute traffic calming measures

"Traffic calming" refers to a variety of practices that make streets more hospitable to pedestrians and bicyclists, most often on side streets where cars have begun to speed through residential neighborhoods. In these situations, undesirable though traffic is "calmed" with physical techniques such as speed humps, narrowed lanes, landscaping, traffic diverters, jogs, or traffic circles at intersections. These can be considered "active" traffic calming techniques, which are intended to reduce speeding, or even reduce the capacity of the road, to discourage its use as a shortcut. Active traffic calming is rarely suitable for arterial roads like Estero Boulevard. Local roads are seldom used as shortcuts because of Estero Island's long and narrow shape, so active traffic calming will have only limited application at Fort Myers Beach.

There are also "passive" measures that calm speeding traffic. These measures can play a major role in controlling speed without diminishing the number of vehicles that can use the road. As discussed earlier in this element, Fort Myers Beach suffers from excessive speeding along Estero Boulevard. With the number of bicycles and pedestrian sharing Estero Boulevard, this speeding is extremely dangerous, especially with the nightlife and bars that are patronized by Lee County residents who then drive themselves home.

"Passive" traffic calming measures do not interfere with the number or continuity of travel lanes in a road (although they sometimes reduce lane widths slightly). Typical techniques include providing curbs and street trees; allowing buildings nearer the road; and creating interesting vistas for drivers. These measure make the road more attractive and usable for pedestrians, and also discourage speeding by ending the resemblance of the road to a rural highway whose wide travel lanes, minimum curvature, and wide breakdown lanes are designed for high-speed vehicles.

Passive traffic calming along Estero Boulevard would help reduce speeding and maintain the "Main Street" feel that will otherwise be diminished. A new FDOT standard would allow most passive (and even some active) traffic calming measure on state-maintained arterial roads in residential corridors or areas of high pedestrian activity.

The precise design of intersections also has great impacts on travel behavior and pedestrian safety. Sharp corners (with a short radius) require drivers to slow down before turning. When the corner has a larger radius, vehicles can turn at faster speeds and crosswalks must be longer, making crossing much more dangerous. Some corners are designed with a channelized turn lane with a very large radius; these are extremely dangerous to pedestrians, although a raised island can be provided as a refuge for pedestrians. Figure 9 illustrates these types of intersections.

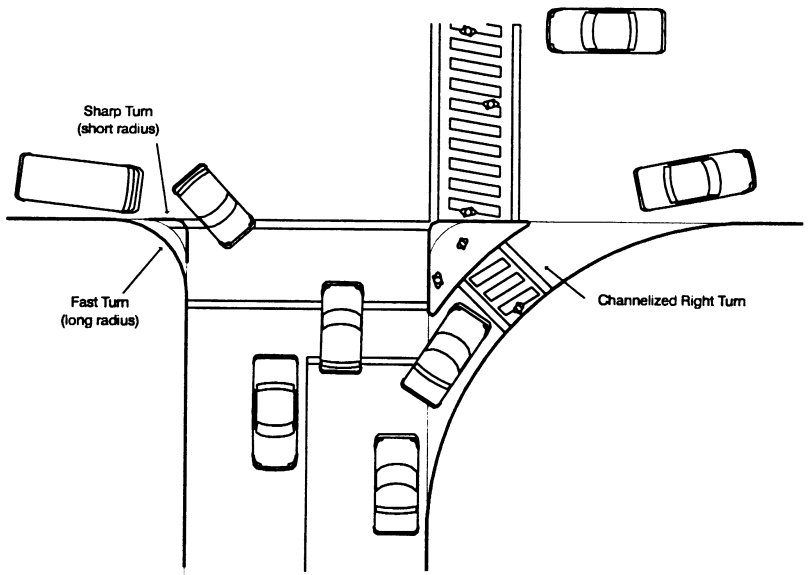

Figure 9*, Examples of pedestrian-vehicle conflicts*

Landscaping and street trees provide a hospitable environment for pedestrians and thus pedestrian-oriented commercial activities. The presence of pedestrians passively calms traffic. Motorists understand the nature of a more urban street and tend to slow down, not just for fear of being cited for speeding, but because there are inherent uncertainties about what lies ahead. As a bonus, these roads are more interesting to drive along, even when congestion slows traffic to a crawl.

Parts of Estero Boulevard, especially from Times Square to the library, already have many passive traffic calming measures including sidewalks, heavy pedestrian usage, power poles and buildings near the road, and even the jogs in the right-of-way (at Times Square and the library). Extending the Times Square streetscape south of the Lani Kai will further calm traffic while better protecting pedestrians from reckless drivers (through the curbs and street trees).

These sidewalks should be made safer for pedestrians by placing the rows of coconut palms in the traditional location between the curb and the sidewalk (the current design places the trees at the outer edge of the right-of-way, where they provide no protection whatever to pedestrians). The existing design is shown in Figure 10, and a computer-enhanced view of the proposed plan is shown in Figure 11. With this change, pedestrians will be better protected from reckless drivers than at present. The beautiful palm trees will have a pleasant calming effect on motorists. Since full curbs are being provided, motorists are reasonably separated from the trees. (According to design standards of the American Association of State Highway and Transportation Officials, the edge of tree trunks must be at least 1½ feet beyond a full curb.)

The potential effects of specific traffic calming measures need to be carefully considered. Travel speeds and accident patterns should be studied and various traffic-calming techniques evaluated to avoid alternatives that will cause traffic hazards or interfere with emergency vehicles.

***Figure 10**, Existing design*

***Figure 11**, Alternate plan*

Put buildings closer to the street

The three most im portant activity centers along Estero Boulevard are shown in Figure 12. Each has reasonable access (or potential for access) by trolleys, by sidewalks, and by dockage for boats.

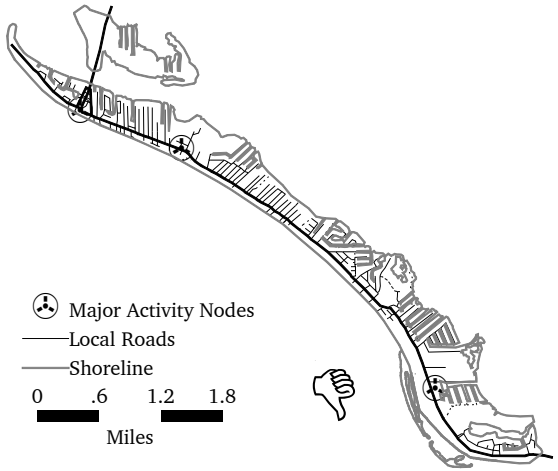

Figure 12*, Major activity nodes*

The complex of civic buildings around the public library and the Times Square/Old San Carlos are close enough together (just over a mile) that can anchor the ends of the most important pedestrian zone at Fort Myers Beach. The aging Villa Santini Plaza at the south end of the island is ripe for redevelopment and can become a second high-quality pedestrian zone to serve residents in that area.

The commercial centers of both pedestrian zones should have their buildings and display windows placed directly adjoining wide sidewalks. Locating the buildings this way is critical to sustaining a pedestrian atmosphere. If stores are separated from the sidewalk by a large parking lot, even nearby residents are less likely to walk across the inhospitable expanse of hot asphalt (see Figure 13).

When existing stores are separated from the street, extensions can be added so that at least part of the building reaches the public sidewalk. Rearranged parking is still available, but is less visible from the street, and pedestrians now have a path to the main store without crossing the parking lot. Over time, pedestrian usage increases and less parking is required. Ultimately, frontage on the public sidewalk can become the most valuable space, with the parking lot and water retention areas increasingly moved *behind* the stores, or under elevated commercial space.

Detailed building facades also make walking more enjoyable because they provide unique visual sequences. When the walk is interesting, its distance is noticed less. And when sidewalks are covered by awnings or canopies, pedestrians are protected from sun and rain, further improving the experience and encouraging walking. Building or zoning codes that discourage or prohibit these arrangements, or which require excessive front setbacks, need to be quickly updated.

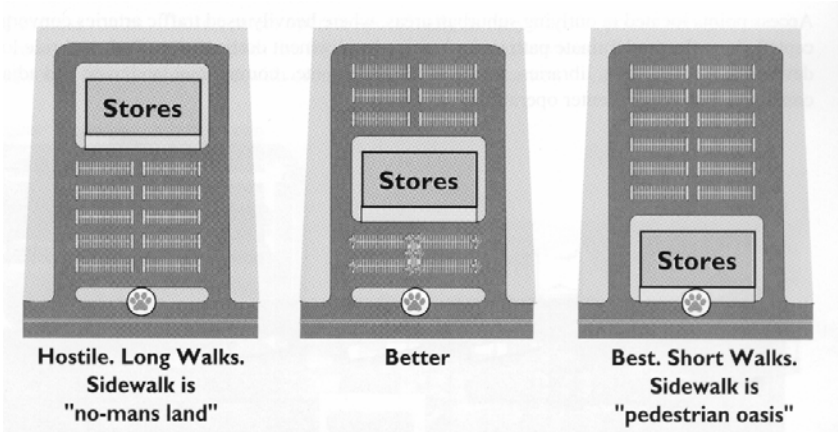

Figure 13*, Relation of stores to parking lots*

Improve sidewalks and bikeways

Fort Myers Beach has outstanding opportunities to increase pedestrian and bicycle activity. The physical layout of the community encourages walking and biking, with all homes within just a short distance from the beach and active commercial areas. Currently there are sidewalks on one side of most of Estero Boulevard, and Lee County has imminent plans to fill one gap from Buccaneer to Estrellita Drive using federal funds. The town should make every effort to have this project expanded to fill the other gap from the Villa Santini Plaza to Bay Beach Lane. Future sidewalk projects would include sidewalks on the opposite side of Estero Boulevard, which would also improve safety and congestion by reducing the number of pedestrian crossings. In some areas, wide rights-of-way allow many design choices; in others, deep drainage ditches could be put underground and covered with new sidewalks.

Bicycles and pedestrians often share sidewalks, but that situation is not ideal, especially where the number of pedestrians is high and the sidewalks are narrow. Where the right-of-way is wide, separate bike paths and sidewalks can be built. In areas with limited right-of-way, bicyclists could be provided with extra-wide travel lanes (14 feet wide); bicyclists would then be able to ride with the flow of traffic, leaving the sidewalk to pedestrians. The ultimate result would be a resort environment that truly supports walking, bicycling, and public transportation.

There are several funding sources for sidewalks and bikeways, including federal "transportation enhancement" funds, gasoline tax proceeds, and (potentially) road impact fees. Another option would be the establishment of a special taxing or assessment districts (MST/BUs), which could be used in conjunction with lighting or other special districts.

Require traffic impact analyses for new development

Under current regulations, the traffic impacts of new development play almost no role in the approval or denial of development orders. The Diamondhead convention center, for instance, is being built between two of the most important nodes of activity on Fort Myers Beach, and will have great impacts on both. Under current rules, however, no traffic circulation analysis was required except for a determination of whether to build a single turn lane. (Further analysis wasn't required because no rezoning was needed and the number of trips generated in the peak hour fell below a fixed county-wide threshold.)

The town needs to ensure that its development regulations do not allow this situation to continue, and which consider the cumulative impacts of existing and potential development. The Land Development Code needs to be amended to lower the thresholds for requiring traffic impact analyses and to establish the type of analysis that will aid the town's decision-making process. Proper technical analyses must be required, with the results used to determine whether impacts are acceptable and whether an improved design could offset some of the impacts (as in the previous example in Figure 13 where stores separated from the sidewalk will reduce usage by pedestrians and increase traffic impacts). Another example might be parking limitation criteria whereby new trips generated as a result of new or expanded land uses could not trigger a demand for additional parking. The town will need to hire a specialized transportation consultant to create the specifications that developers would be required to follow in preparing traffic impact analyses for their proposed developments.

3. Optimize the Parking Supply

Fort Myers Beach needs a comprehensive approach to its parking problems. Although this is widely understood, most responses to the "parking problem" are still short-sighted. The two most recent examples are Lee County's current plan to go from no parking whatever at Bowditch Point to a very large lot there, and local merchants' towing of illegally parked vehicles (rather than charging a fee for using surplus parking spaces).

The demand for parking varies greatly depending on the season. In all likelihood, any additional parking spaces that can be provided will be consumed during the peak season if they are close enough to popular beaches. But each extra vehicle that is driven to Fort Myers Beach during the peak season adds to the existing congestion. Parking spaces quite a distance from the beaches, especially if on the mainland and served by trolleys, are less likely to be used, but are far better from the standpoint of congestion and improving the pedestrian environment; the difficulty is in making them convenient or appealing enough to attract more than occasional users.

The *location* of public parking must be balanced with actual demand and connected to popular destinations with comfortable sidewalks or public transportation. Likewise, the total *supply* of parking spaces must be balanced with overall road capacity. It does visitors little good to have enough parking spaces if they cannot be reached without an interminable wait in traffic. A surplus of on-island beach parking can work directly against the success of off-island parking and public transportation. In fact, many communities find that a moderate parking shortage reduces unnecessary car trips and encourages walking and the use of public transportation.

A net increase in public parking is needed, but some existing lots are not being used to capacity. Public or private efforts to meet the full theoretical "peak season demand" for parking would be as counter-productive as widening Estero Boulevard as much as needed to eliminate traffic congestion.

As with road improvements, parking improvements must serve the community without overwhelming it. The most important components of the town's parking strategy will be described briefly in this section:

- **Encourage shared parking lots**
- **Big may not be better when sizing parking lots**
- **Visitors need to be directed to available parking**
- **Planning for parking**

(A more thorough discussion of parking problems and various solutions can be found on pages 7-A-19 to 7-A-30 of Appendix A.)

Encourage shared parking lots

It has been widely demonstrated that parking lots serving a variety of land uses require much less space than separate on-site lots for each business. Fort Myers Beach can make walking more pleasant by wasting as little land as possible on parking lots. Shared parking lots are ideal when businesses are relatively small, clustered together, and have different busy periods (as at Times Square). An excellent example is the paid parking lots along Las Olas Boulevard in Fort Lauderdale (see Figure 14), which are located behind a thriving business district that faces a tree-lined boulevard.

Another example is the joint lots which provide free parking behind stores in the main business district of the new town of Celebration near Orlando (see Figure 15).

The most thorough analysis of parking at Fort Myers Beach was conducted by the Estero Island CRA in 1993. Their study recommended 165 more on-street parking spaces near Times Square, some diagonal and some parallel. These spaces would serve beachgoers and area shops (although some of these spaces would merely replace spaces lost to new recreational facilities at Lynn Hall Park).

In addition to the new on-street spaces, the CRA study suggested creating a reservoir of shared parking behind businesses along Old San Carlos Boulevard. Storefronts would be built up to the right-of-way line of Old San Carlos, improving the pedestrian character of the street by replacing individual front parking lots with continuous storefronts. The result would be a high-quality urban streetscape similar to Los Olas Boulevard and Celebration as described above.

This concept has not been implemented to date. The Town of Fort Myers Beach needs to undertake the planning and engineering studies to determine if this concept is feasible and acceptable to the many property owners involved. If it is not, then parking will have to be provided in other ways, most likely in one or more parking garages that will cost considerably more and be less compatible with the pedestrian environment envisioned by the Estero Island CRA. The adopted redevelopment plan for Times Square depends on a suitable parking solution; if one cannot be found, the plan itself is not feasible

If the shared parking plan is feasible, the town needs to move forward with a phased implementation plan. This plan would have a regulatory component, with landowners required to conform their building plans to the concept, and a construction component for at least the on-street parking spaces. Landowners benefitting from the additional parking will be expected to pay proportionally to their benefit. This payment could take the form of assessments against their land, or possibly fee-in-lieu payments for each parking space that they no longer have to provide on their own site. TDC grant funds should be sought for the portion of these spaces used by beachgoers. Parking revenues would help repay part of the costs.

Figure 14*, Sign advertising shared parking behind stores along Los Olas Boulevard in Fort Lauderdale*

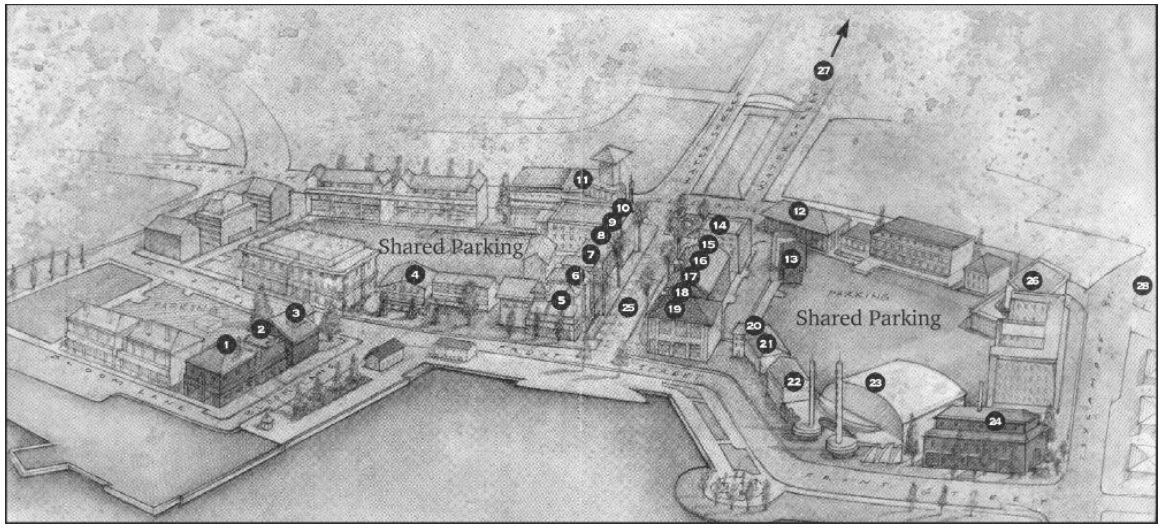

Figure 15*, Shared parking behind Celebration storefronts (indicated by numbered dots)*

walls or hedges, yet because of their size drivers can quickly see if any spaces are available. Small lots can also be added incrementally, avoiding the possibility of building too many parking spaces.

Regardless of size, public parking needs to be fairly convenient for users yet not placed in the center of pedestrian activity. This is one of the reasons that the Estero Island CRA plan recommended shared parking behind new shopfronts along Old San Carlos; those heading for the beaches would walk along Old San Carlos, rejuvenating it as a public place. For the same reason, if a parking garage were to be built, an ideal location would be on the existing cruise ship parking lot next to Snug Harbor, rather than at the foot of the bridge. The Snug Harbor location would also have the advantage of interfering less with the majestic view of the Gulf of Mexico that now greets motorists as they cross the Matanzas Pass Sky Bridge.

If a parking garage were to built by the Town of Fort Myers Beach, the town could select the best location based on community needs and its long-range planning. If the private sector builds a garage, the town is limited to approving or denying whatever site is selected and placing appropriate conditions on the zoning approval. However, the CRA study concluded that only those parking facilities located closest to the beach are highly utilized, and that any deficits exist only during a relatively short 3-4 month peak season. They questioned whether parking utilization during a 3-4 month season was sufficient to justify a publicly financed parking garage.

An on-island parking garage is often promoted as a way to reduce traffic congestion by getting drivers in search of parking off of the road. Countering this benefit, however, are the *addi-*

Big may not be better when sizing parking lots

The need for a parking garage near Times Square has been debated almost continuously for a decade. Lee County seriously considered building a garage as an alternative to building an on-site parking lot at Bowditch Point Park. In recent years, several groups of investors have considered a parking garage as a business venture. A parking garage seems like an ideal solution because a single construction project, no matter how difficult to initiate, would provide the abundance of parking that promises to relieve a chronic problem at Fort Myers Beach.

By contrast, smaller parking lots would be more acceptable to many residents of Fort Myers Beach who fear either the bulk of a parking garage at a highly visible Times Square location or the extra traffic that a parking garage might attract. Despite some obvious disadvantages of small parking lots (including a higher cost per space and extra traffic caused by those searching for a parking space), a number of small public lots is probably a more desirable parking solution than one large lot. Large lots are inherently hostile to pedestrians (although good design can make them less so). Small lots can be surrounded by garden

tional drivers who had been dissuaded from driving to Fort Myers Beach by the legendary parking shortages. Whether the additional drivers would more than offset those previously circling the island in search of parking cannot be assessed through any simple analytical technique. The possibility, however, suggests caution in advocating a parking garage, especially if it adds additional parking rather than replacing existing spaces.

A critical point is that traffic circulation must be considered together with the location and design of a parking garage. For instance, an extra incoming lane on the Matanzas Pass Sky Bridge would help accommodate the additional traffic that would be drawn to a parking garage along Old San Carlos.

Visitors need to be directed to available parking

A brief 1993 survey of beach parking lots showed the two most convenient lots were nearly full from 11:00 A.M. to 3:00 P.M., but the metered lot under the sky bridge never had more than 37% of its 62 spaces occupied. This under-utilization is attributed to inadequate signage advising visitors of its location, as well as its relative distance from the beach.

The surplus space in these lots, in the midst of an apparent parking shortage, emphasizes the importance of disseminating information about *where* parking is available. A positive step is Lee County's plan to install "variable message signs" across San Carlos Boulevard to advise drivers whether spaces remain available in the proposed parking lot at Bowditch Point.

This technology could also be linked to other public parking lots as well, through telephone lines or radio signals. This technology has the potential for widespread use in promoting the use of park-and-ride lots and reducing unnecessary trips onto the island when no parking is available (see an example in ?). It could also provide an estimate of delays due to traffic congestion.

The town needs to urge Lee County and the Florida DOT to use this type of technology to advise motorists of traffic and parking congestion, thus allowing drivers to avoid contributing to the congestion when they have an acceptable alternative. This knowledge, added to the alternatives suggested elsewhere in this element, provides great promising in managing the inevitable peak season congestion.

***Figure 16**, Variable message sign for parking management*

Planning for parking

The "parking problem" cannot be addressed in isolation from other community objectives such as relieving congestion, encouraging walking and public transit, pleasing visitors, and strengthening local businesses. Fort Myers Beach needs a comprehensive approach to parking and transportation rather than piecemeal efforts that may conflict with each other.

Many aspects of such a strategy have already been discussed here, and others are suggested in Appendix A of this element. For instance, parking rates can be used as a congestion management technique. There is no reason to discourage parking in the off-season or in off-hours, so parking during those hours would be at the current low rates. But rates could be increased during peak periods. This would discourage some people from parking (and driving) during those periods, and help pay for the cost of providing peak-season parking spaces that will sit unused during most of the year. Graduated rates could also favor short-term parking; or lower rates can be charged for the less convenient parking lots; or higher rates could be charged for arrivals or departures that coincide with peak traffic congestion.

When the private sector controls the supply of public parking, parking rates are effectively set by the market, allowing parking operators to sense emerging shortages of parking that they can turn into business opportunities. But at Fort Myers Beach, the availability of parking is closely related to road congestion because the difficulty in parking discourages some people from driving. The town should play a direct role in managing parking in publicly owned lots, and its equally important role in setting parking requirements for new or expanding businesses, and guiding private-sector parking ventures through incentives and regulations.

In addition, many existing parking spaces are located partially or wholly within public rights-of-way. Most of these spaces are currently used by adjoining businesses, and are often marked as if they are private spaces, complete with signs threatening the public with towing if they park there. Where these spaces are located fully on the public right-or-way, they are actually public parking that has been appropriated for private use.

The Town of Fort Myers Beach needs to take several specific steps in developing a comprehensive approach to parking:

- Parking occupancy study: The single-day survey in 1993 is not an adequate basis for parking planning. A more detailed survey is needed, covering weekdays *and* weekends throughout the peak season.

- Detailed parking plan for Times Square: The shared parking plan along Old San Carlos needs to be fully designed and implemented, or rejected in favor of some other alternative. This plan should be part of the larger streetscape design for Old San Carlos (and perhaps Crescent Street).

- In-depth exploration of "variable message signs" to report parking availability and congestion to motorists before they reach Fort Myers Beach: Ideally this study should be undertaken by Lee County or the Metropolitan Planning Organization, and would evaluate various approaches, determine approximate costs, and verify the feasibility of the overall concept.

4. The Future of the Bridges

Motorists approach Fort Myers Beach from either end by crossing bridges with dramatic views of the Gulf of Mexico. At the north end, the Matanzas Pass Sky Bridge is also the point where four traffic lanes narrow to two, leading some drivers to conclude that a wider bridge, or another bridge, would solve the congestion.

Since toll bridges to barrier islands are common, other drivers suggest that a toll booth here would reduce the number of people using the bridge, thus relieving congestion. Still others suggest that re-striping the existing bridge to three lanes would improve the flow of traffic. Further complicating these alternatives, the existing bridge, although built only 20 years ago, will need to be replaced in the not-to-distant future, making it reasonable to consider how access might be improved at that time. (Appendix A contains a brief analysis of four other bridge alignments.)

The Town of Fort Myers Beach is sure to learn much more about these very complex issues in the future. At present, the most important components of the town's policy will be described briefly in this section under these headings:

- **The Sky Bridge is the scene but not the cause of traffic congestion**
- **Additional bridge capacity should not be directed toward Times Square**

(A more thorough discussion of these issues can be found throughout Appendix A.)

<u>The Sky Bridge is the scene but not the cause of traffic congestion</u>

During the winter tourist season, traffic is often at a standstill on the sky bridge. However, there is little evidence that those conditions result from any inadequacy of the bridge itself. In fact, the "capacity" of the bridge is much higher than the capacity of Estero Boulevard, even though both have the same number of lanes. Traffic engineers have calculated the capacity of the sky bridge at 2,610 vehicles per hour in each direction, compared to 1,316 for Estero Boulevard just south of Crescent Street (see pages 7-B-15 to 7-B-20 of Appendix B). The capacity of the sky bridge is high because there is no interference from intersecting streets, parking spaces, or pedestrians crossing the street. It is the congested conditions *south* of the bridge that cause traffic to back up on the bridge.

Figure 17*, Sky bridge over Matanzas Pass (photo courtesy Mohsen Salehi)*

Since some traffic flowing onto the island from the sky bridge travels north to Lynn Hall Park or Bowditch Point, a third lane on the bridge could be used for this northbound traffic only. This would provide quicker access to the north end of the island, and would be especially suited to providing better access to the new parking lot at Bowditch Point or parking lots or a future garage along Old San Carlos. These benefits would have to be weighed against the following drawbacks:

- some drivers would attempt to circumvent this lane's purpose by merging into the center lane on the bridge, (or circling under the bridge and re-entering Estero Boulevard southbound from Crescent Street);
- this plan would also attract more cars to Estero Island without creating any more road capacity for vehicles

that may decide to travel further south; and
- the breakdown lane on the bridge, which is also used by bicyclists, would be reduced to 2–3 feet.

The previous section of this element stressed the need to balance parking capacity with road capacity. Equally important is a balance between road capacity *to the island* and road capacity *on the island*. There is little reason to widen the sky bridge unless Estero Boulevard were widened south of Times Square.

It may be possible for the Town of Fort Myers Beach to take responsibility for the sky bridge from Florida DOT (as discussed on pages 7-A-44 to 7-A-46 of Appendix A). There are many liabilities associated with this approach, especially rebuilding the bridge after its useful life is over or if damaged by a hurricane. The main advantage would be if this were the only way to integrate the bridge with peak-period tolls, off-island parking lots, and mass transit into a complete congestion management system. If drivers were aware of congestion levels and were able to save money (if not time) by using convenient mass transportation, a shift in the current car-dominated travel picture could take place. This concept would require bridge tolls (at least in the winter); variable message signs; adequate off-island parking lots just after the signs but before the toll booth; and much-improved trolley or water shuttle service to Fort Myers Beach.

Do not direct additional bridge capacity toward Times Square

The strategies suggested in this element tries to make the best of living with congestion. Congestion levels are acceptable during most of the year, and many residents find them unpleasant but acceptable even during the tourist season. If congestion levels increase to clearly intolerable levels, the Town of Fort Myers Beach may be faced with a decision as to the best (or least harmful) method of increasing road capacity.

Many methods of increasing capacity have been reviewed (see full descriptions in Appendix A). Some hold some promise and deserve further analysis, but none are clearly superior to the others (or to the strategies recommended in this element). A combination of two particular approaches, however, would be the least damaging to Fort Myers Beach if an increase in road capacity were deemed necessary. A new bridge from the easterly end of Main Street on San Carlos Island to just north of Bay Oaks Park (see Figure 29 in Appendix A) could be combined with major boulevard-type improvements to a portion of Estero Boulevard, thus allowing through traffic to bypass the most congested portions of Estero Boulevard south of Times Square.

Because a new bridge would allow more traffic to reach Fort Myers Beach, improvements to Estero Boulevard would be needed from Bay Oaks southward for some distance. The least damaging improvement would be a European-style boulevard with an extended pedestrian realm that includes a pair of tree-lined medians and a one-way access road on each side (see pages 7-A-55 to 7-A-57 of Appendix A for a fuller discussion of this concept).

5. Experiment Widely

Although many resort communities have severe traffic problems, the exact nature of the problems can differ greatly. Although Lee County and Florida DOT have tried to address traffic problems at Fort Myers Beach, their attention is inevitably divided across their entire jurisdiction. The Town of Fort Myers Beach needs to constantly search for innovative solutions to long-standing problems and to new problems as they develop.

Many traffic engineering solutions can be tried as closely monitored experiments. The town can be a catalyst for those experiments, and may wish to retain a creative traffic engineer to provide advice on a continuing basis. This would be especially helpful if the town experiments with complex changes such as reversible lanes (see pages 7-A-35 to 7-A-39 of Appendix A).

An official spirit of experimentation will allow creative ideas to be tested without any stigma of failure if they prove unpopular or unproductive. The following list of experiments and data needs has been compiled from citizen comments during the preparation of this plan:

- Signalized pedestrian crossing at Times Square: This important pedestrian crossing was recently provided with a full traffic signal, actuated by pedestrian push-buttons. Since Estero Boulevard has only two lanes here, and traffic often moves slowly around the bend, pedestrians often tire of waiting for the light to change and cross when they see a gap in traffic. Motorists are then forced to stop for no apparent purpose. This signal might operate better as a continuously flashing yellow, especially if pedestrians had a more protected refuge between the lanes. If such an experiment failed to allow pedestrian crossings at an acceptable level of safety, a pedestrian overpass may be able to reduce the number of pedestrians in the crosswalk without discouraging foot traffic in this highly congested area.

- San Carlos Boulevard approach to the Matanzas Pass Sky Bridge: The widening of San Carlos Boulevard from the mainland has created severe problems on the approach to the sky bridge where its five lanes are reduced to two lanes. Initial experiments have already been tried to discourage drivers from using side streets on San Carlos Island to get ahead of the line of cars waiting to enter the bridge. Another problem is cars that pass the waiting line and then take advantage of polite tourists by slipping in at the front of the line, greatly lengthening the wait for all other drivers. Creative experimentation is certainly called for here.

- Variable message signs: These signs were discussed earlier as an ideal way to advise motorists of congestion delays and available parking. The signs themselves and their data-collection devices will require creative planning and engineering to fulfill their promise.

- Origin/destination data: The December 1993 origin/destination survey was a good source of data but needs to be repeated at different times of the year to provide truly meaningful information for transportation and tourism planning. This may be accomplished through the Metropolitan Planning Organization's proposed "Barrier Island Travel Survey." This 1999 survey will include roadside origin/destination and on-board transit surveys on Estero Boulevard and may be co-sponsored by the Sanibel and Fort Myers Beach councils.

- Transportation demand management (TDM): This concept attempts to reduce the number of single-occupant vehicles during peak traffic periods, either by eliminating some trips completely, or by accommodating existing trips in fewer vehicles, or by moving some trips before or after the most congested periods. TDM techniques are often implemented by employers; at Fort Myers Beach, tourist-related employers have many low-paid employees who could benefit from employer-sponsored transportation between the workplace and off-island locations (such as interceptor parking lots, or major bus transfer points). Ideally such transportation would be combined with shift changes that avoid peak periods on the roads.

  The Lee County MPO has adopted its own TDM plan with similar goals. As a result, Lee Tran has begun a commuter assistance program who works with employers to establish carpool and vanpool program and to market other Lee Tran services.

  The development of effective TDM programs at Fort Myers Beach could be approached as a public/private partnership, with pilot programs to test potential TDM strategies. Fort Myers Beach has the dubious advantage of so much peak season congestion that TDM strategies wouldn't seem unrealistic or more of a constraint on freedom than sitting in traffic.

- Delivery vehicles: Large delivery vehicles often block roads and sidewalks while unloading goods for area stores and restaurants. This situation has reached intolerable levels, especially near Times Square and the Villa Santini Plaza. Sometimes emergency vehicles are blocked by these trucks. Other older communities have been forced to limit the hours of these deliveries, since it is difficult to retrofit older buildings with off-street loading areas. To avoid interference with traffic and pedestrian flow, the town needs to work with local businesses to develop a strategy to limit commercial deliveries during peak traffic periods.

- Flooding of roadways: During periods of minor flooding, the town has a unique opportunity to monitor the performance of roadside drainage systems to detect problems that could prematurely halt evacuations. These problems could be inadequate drainage for rainfall, or low-lying areas subject to tidal flooding. This monitoring should extend beyond Estero Island, since there are low points off the island both directions that could block an evacuation prematurely.

LEVEL-OF-SERVICE STANDARD

This comprehensive plan must establish a minimum "level of service" standard for roads. This standard is required by the concurrency provisions of Florida law; no development or building permits can be issued if it will be exceeded.

Fort Myers Beach faces an unusual problem in establishing such a standard. Its major road, Estero Boulevard, already operates at what is considered an unacceptable level of service in the winter. This congestion is caused by a combination of high tourism demand for its beaches and past over-building relative

to road capacity. Concurrency standards cannot have much of an influence in managing growth at Fort Myers Beach because nearly all remaining land has been platted or otherwise vested for development rights.

Despite this lack of control, the town has responsibility for managing the resulting peak-season congestion. This comprehensive plan seeks to manage congestion levels and encourage alternate means of mobility including walking, bicycling, and trolleys.

Fortunately for residents, the peak period of congestion lasts only about three months of each year. However, the shortness of this period could change. This plan contains many efforts to improve the vibrancy and livability of Fort Myers Beach. These changes might attract so many more visitors that the period of extreme congestion lengthens to an intolerable portion of each year. Therefore the level-of-service standards adopted into this plan (see Policy 7-I-2) is based on capping the number of months each year that traffic congestion will be tolerated.

Before setting this standard, traffic counts from Lee County's permanent count station on Estero Boulevard near Donora were examined (see details on pages 7-B-15 through 7-B-20 of Transportation Appendix B). Table 7-2 shows a summary of this count data, organized to show the average hourly traffic levels during the busiest time of day (10:00 A.M. to 5:00 P.M.) averaged for each month. Note the relation of these numbers to the theoretical capacity of Estero Boulevard of about 1,300 vehicles per hour (which is between the capacities of 1,240 and 1,316 vehicles, as reported in Tables 7-B-12 and 7-B-13).

The minimum standard selected for this comprehensive plan is that average traffic flows on Estero Boulevard from 10:00 A.M. to 5:00 P.M. do not exceed this capacity for more than four calendar months in any continuous twelve-month period, using counts from the permanent count station at Donora Boulevard.

Table 7-2 — Traffic Counts on Estero Boulevard at Donora, 1995-1998

Month & year	*Average hourly counts from 10:00 A.M. to 5:00 P.M.*	*Above peak capacity?*
October 1995	1,100	
November	1,260	(close)
December	1,176	
January 1996	1,283	(close)
February	1,310	YES
March	1,288	(close)
April	1,266	(close)
May	1,098	
June	1,014	
July	1,022	
August	1,018	
September	937	
October	1,065	
November	1,262	(close)
December	1,176	
January 1997	1,269	(close)
February	1,016	
March	1,207	
April	1,225	
May	1,075	
June	1,020	
July	1,056	
August	1,035	
September	781	
October	1,091	
November	1,248	(close)
December	1,168	
January 1998	1,269	(close)
February	1,287	(close)
March	1,177	

Source: Summary of raw counts provided by the Lee County Department of Transportation, averaged by month (both directions)

FUTURE TRANSPORTATION MAP

A future transportation map is required in all transportation elements by Florida law. Figure 18 shows the future transportation map for the Town of Fort Myers Beach. This map includes arterial, collector, and local roads; sidewalks; mass transit routes; and waterways.

Many facilities usually shown on these maps are not present at Fort Myers Beach, and therefore are not shown:

- limited and controlled access roads;
- public transit rights--of-way and exclusive corridors;
- transportation concurrency areas;
- airports, water ports, and rail lines; and
- intermodal terminals.

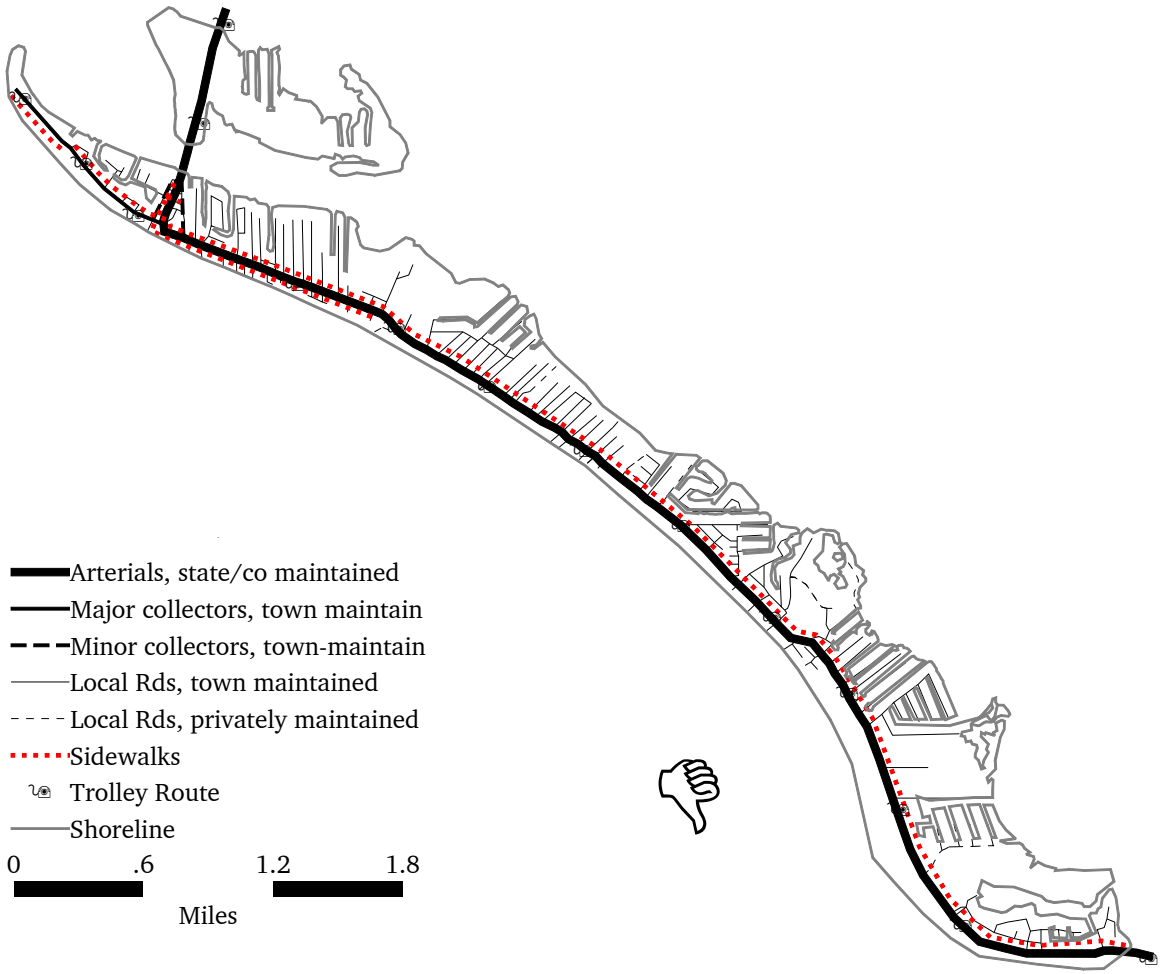

***Figure 18**, Future transportation map*

GOALS - OBJECTIVES - POLICIES

Based on the analysis of transportation issues in this element, the following goals, objectives, and policies are adopted into the Fort Myers Beach Comprehensive Plan:

GOAL 7: To improve peak-season mobility without reducing the permeability of Estero Boulevard to foot traffic or damaging the small-town character of Fort Myers Beach. The town seeks to reduce speeding, improve evacuation capabilities, and improve mobility through balanced transportation improvements such as a continuous system of sidewalks and bikeways, a network of trolleys and water taxis linked to off-island systems, and parking options matched to road capacity.

OBJECTIVE 7-A DEFINING THE PROBLEMS — Through this plan, the Town of Fort Myers Beach will address its three major transportation problems: congestion (by supporting public transit and pedestrian improvements), parking (by improving public parking near Times Square), and speeding (through passive traffic calming on Estero Boulevard).

POLICY 7-A-1 **CONGESTION:** Every winter, Estero Boulevard becomes so crowded that traffic backs up, sometimes for miles in both directions. Much of this congestion is caused by visitors, who will continue to frequent the beaches regardless of development levels on Estero Island. Despite the road congestion, the town welcomes visitors and intends to provide mobility alternatives as described in this plan.

POLICY 7-A-2 **PARKING:** Even though existing parking lots are not used to capacity, parking is not abundant at Fort Myers Beach. The welcome rebirth of commercial activity near Times Square will increase the demand for parking. The Town of Fort Myers Beach will address parking shortages through the methods outlined in this plan.

POLICY 7-A-3 **SPEEDING:** Despite the virtual crawl of traffic on parts of Estero Boulevard, speeding is also a problem. If motorists didn't speed on Estero Boulevard, many more people would get out of their own cars. The town will protect the pedestrian environment along Estero Boulevard and will not widen travel lanes or discourage safe pedestrian movement across the boulevard.

OBJECTIVE 7-B CONVENTIONAL SOLUTIONS — The usual response to traffic congestion is widening roads or building alternate routes. Estero Island's long narrow shape, frequent navigable canals, sensitive environmental, and highly urbanized character preclude these solutions. Congestion management at Fort Myers Beach must aim to *reduce delay* and *improve safety*, not just for motorists but for pedestrians and bicyclists as well.

POLICY 7-B-1 **DELAY AND SAFETY:** The town recognizes that many efforts to reduce delay and improve safety for motorists have the opposite effect on pedestrians. Creative solutions will be required to address both concerns.

POLICY 7-B-2 **WIDENING:** Under no circumstances shall conventional four-laning of Estero Boulevard be considered as a desirable means of improving traffic circulation on Estero Island.

POLICY 7-B-3 **IMPROVEMENTS TO ESTERO BOULEVARD:** The Town of Fort Myers Beach shall initiate additional pedestrian and streetscape improvements along Estero Boulevard beginning in 1999, and shall negotiate with Lee County for the turnover of responsibility for its maintenance if necessary to carry out these improvements or to further other town policies.

OBJECTIVE 7-C EVACUATION ROUTE — Estero Boulevard's critical function as the sole evacuation route for Fort Myers Beach shall be considered in all planning and development activities.

POLICY 7-C-1 **EVACUATION CAPACITY:** Evacuation routes do not need to be designed as high-speed roadways. The critical factor is the total number of cars that can evacuate in a given period of time. The town shall evaluate all efforts by Lee County or by the town to reduce speeding on Estero Boulevard during the design phase to ensure that these efforts will not hinder an effective evacuation.

POLICY 7-C-2 **FLOODING:** The town shall analyze actual flooding of evacuation routes that occurs due to tropical storms or hurricanes, and shall initiate physical improvements that can avoid future flooding at those locations.

OBJECTIVE 7-D VARIETY OF TRAVEL MODES — The Town of Fort Myers Beach shall make efforts every year to improve mobility for its residents and visitors, striving for a balanced transportation system that allows safe movement even during peak periods of traffic congestion. These efforts may include further subsidies to improve the trolley system, the use of impact fees to improve sidewalks, and creation of critical links on the hidden-path system.

POLICY 7-D-1 **ARRIVE WITHOUT A CAR:** Fewer vehicles would be driven to Fort Myers Beach if scheduled airport shuttle service were available. The town shall encourage this service and the designation of a central drop-off point that could include a trolley stop and taxi stand.

POLICY 7-D-2 **IMPROVE TROLLEY SERVICE:** Trolley ridership increases when service is more frequent and when fares are low or free, yet no long-term funding or operational plan has been developed for providing higher service levels. Practical measures to improve trolley usage include:

i. Recurring subsidies from tourism sources so that service can be enhanced and congestion minimized during heavy seasonal traffic;

ii. Pull-offs at important stops along Estero Boulevard so that passengers can safely board and traffic is not blocked excessively; these pull-offs could be built during other improvements to Estero Boulevard or required by the Land Development Code during the redevelopment process.

iii. Clear signs at every stop with full route and fare information;
iv. Bus shelters at key locations, with roofs, benches, and transparent sides;
v. Replacement of the existing trolley buses with clean-fuel vehicles so that businesses won't object to having trolleys stop at their front doors; and
vi. Accommodation of the special needs of the transportation disadvantaged.

POLICY 7-D-3 **ALTERNATE TRAVEL MODES:** The town shall support alternatives to car travel to free up road capacity for trips that do require a car. Public funding sources shall include county/state gasoline taxes and road impact fees. The town shall modify its road impact fee ordinance by 1999 to allow these fees to be spent (within legal limits) on capital improvements that relieve road congestion, such as better sidewalks, trolley improvements, and off-island parking areas. The town seeks to at least double the usage of the trolley system by the year 2001 (from its 1996 total ridership level of 238,754).

POLICY 7-D-4 **ENCOURAGE WATER TAXIS:** Fort Myers Beach has great potential for water transportation, with its canals, natural waterways, and high levels of tourism. To encourage the private sector to provide this service, the town shall ease regulations that require a water taxi to provide dedicated parking spaces at every stop and shall encourage restaurants, motels, and marinas to provide dockage for water taxis. Where possible, water taxi drop-off sites should avoid areas of high manatee concentration, or use protective measure such as propeller guards, jet propulsion, or electric motors.

POLICY 7-D-5 **HIDDEN-PATH SYSTEM:** The town shall support the creation of a quiet network of "hidden paths" running on the Bay side parallel to Estero Boulevard. This network would provide an alternative to walking and cycling along Estero Boulevard (as described further in the Community Design Element). Initial land acquisition shall begin in 1999.

OBJECTIVE 7-E **UPGRADE ESTERO BOULEVARD — As part of its congestion avoidance strategy, the town shall methodically upgrade Estero Boulevard to reduce speeding and encourage walking, as higher traffic speeds and car-oriented businesses are antithetical to its pedestrian character. (If a suitable partnership to this end cannot be achieved with Lee County, the town may consider taking on maintenance responsibility for Estero Boulevard.)**

POLICY 7-E-1 **TIMES SQUARE STREETSCAPE:** The town shall begin work by 1999 toward extending southward the curbs, colorful sidewalks, and street trees installed by the Estero Island CRA in 1996. Similar sidewalks should be placed on both sides of Estero Boulevard as far south as the public library, including drainage, lighting, and trolley improvements. Unspent funds from the Estero Island CRA should be sought from Lee County toward this end. Generous urban sidewalks should also be built in the future around the Villa Santini Plaza as part of its redevelopment (as described in the Community Design Element).

POLICY 7-E-2 **TRAFFIC CALMING:** The town shall support two types of traffic calming to reduce speeding, which endangers lives and diminishes the quality of the pedestrian environment of Fort Myers Beach:

i. The first is "active" or traditional traffic calming along residential streets, using physical techniques such as speed humps, narrowed lanes, landscaping, traffic diverters, jogs, or traffic circles at intersections.

ii. The second is "passive" traffic calming along Estero Boulevard, to control speeding without reducing the number of vehicles that can use the road. Techniques include full curbs and sidewalks separated by street trees; buildings nearer the road; interesting vistas for drivers; and avoidance of overly wide travel lanes or intersections.

POLICY 7-E-3 **BUILDINGS CLOSE TO THE STREET:** Where pedestrian levels are high, buildings should adjoin the sidewalk rather than be separated by parking spaces. Front walls of stores, offices, and restaurants should have large windows rather than blank walls, preferably shaded by awnings or canopies. Access to parking areas shall be off side streets wherever possible. The town's Land Development Code shall implement these concepts beginning in 1999.

POLICY 7-E-4 **SIDEWALKS AND BIKEWAYS:** The town shall work toward major expansion of sidewalks and bikeways. In addition to the next phase of Estero Boulevard sidewalks (see Policy 7-E-1 above), the town shall support the following projects:

i. Support Lee County's imminent plans to fill the gaps from Buccaneer to Estrellita Drive and from the Villa Santini Plaza to Bay Beach Lane using federal funds;

ii. Initiate extensive improvements by 1999 to Old San Carlos and Crescent Street in conjunction with parking improvements (see Policy 7-F-2);

iii. Initiate engineering studies by 1999 for bikeways and additional sidewalks on the second side of Estero Boulevard and improved pedestrian crossings, including consideration of a pedestrian overpass at Times Square.

OBJECTIVE 7-F **OPTIMIZE THE PARKING SUPPLY — Off-island parking facilities served by convenient public transportation should be provided to meet peak-season demands. For year-around demand, the town shall provide additional on-island public parking spaces, based in part on a new peak-season occupancy survey of existing public parking spaces.**

POLICY 7-F-1 **ENCOURAGE SHARED PARKING LOTS:** Parking lots serving a variety of land uses require much less space than separate on-site lots for each business. Shared lots waste less land and encourage walking because businesses aren't separated by large parking lots. The town shall encourage shared parking lots when businesses are relatively small, are clustered together, and have different busy periods.

POLICY 7-F-2 **SHARED PARKING NEAR TIMES SQUARE:** The Estero Island CRA recommended a reservoir of shared parking behind businesses along Old San Carlos and adding 165 on-street parking spaces near Times Square (although some of these spaces would merely replace spaces lost to new recreational facilities at Lynn Hall Park). The town shall investigate the feasibility of this concept in 1998-1999 and proceed toward implementation, or create an alternate plan that may include a parking garages near Times Square.

POLICY 7-F-3 **BETTER PARKING LOTS:** Large parking lots or garages are usually more cost-efficient to build and maintain, but may not be the best solution for Fort Myers Beach. Disadvantages of large lots include high capital costs; the possibility of providing more parking than is needed or can be handled by the road system; and the unsightliness of most large parking lots and garages.

POLICY 7-F-4 **DIRECT VISITORS TO AVAILABLE PARKING:** Many visitors are unaware of existing parking lots; others would be dissuaded from driving if they were aware of the shortage of parking. Variable message signs can aid both situations. The town should encourage Lee County and FDOT to install these signs with information about all major parking areas, including the state park at Lovers Key.

OBJECTIVE 7-G THE FUTURE OF THE BRIDGES — Match bridge capacity to Estero Island with the capacity of Estero Boulevard.

POLICY 7-G-1 **ADEQUACY OF THE SKY BRIDGE:** There is little evidence that traffic congestion at Fort Myers Beach is caused by any inadequacy of the Matanzas Pass Sky Bridge, which unlike Estero Boulevard has no interference from intersecting streets, parking spaces, or pedestrians crossing the street.

POLICY 7-G-2 **CHANGES TO THE SKY BRIDGE:** If parking lots at Bowditch Point or Times Square greatly increase demand for northbound turns at the foot of the bridge, striping a third lane on the existing bridge might be considered, as might a reversible third lane during the peak season.

POLICY 7-G-3 **RESPONSIBILITY FOR THE SKY BRIDGE:** FDOT may be willing to turn over responsibility for the Sky Bridge to the Town of Fort Myers Beach. This would be advantageous to the town only if part of a congestion management system with peak-period tolls, off-island parking lots, and improved mass transit .

POLICY 7-G-4 **ADDITIONAL BRIDGE CAPACITY:** Additional bridge capacity should not be directed to Times Square (except for the potential restriping in Policy 7-D-2). New lanes to Old San Carlos or Crescent Street would also be undesirable, as most congestion is caused by conditions on Estero Boulevard south of Times Square. Previously proposed bridges from Winkler Road or Coconut Road are infeasible from environmental and financial standpoints and need not be considered further.

OBJECTIVE 7-H **EXPERIMENT WIDELY — The town shall constantly search for innovative solutions to long-standing traffic problems and to new problems as they develop, and shall coordinate its efforts with those of the Lee County Metropolitan Planning Organization. The town shall serve as a catalyst for traffic engineering experiments that would evaluate minor improvements that might improve traffic flow at Fort Myers Beach. Some potential improvements are described in the following policies.**

POLICY 7-H-1 **PEDESTRIAN OVERPASSES:** Although pedestrian overpasses are often ignored by pedestrians, an overpass providing a panoramic view of the Gulf might be attractive enough to reduce at-grade crossings at Times Square without discouraging foot traffic in this highly congested area. Even without an overpass, the pedestrian-actuated stop light may be replaceable with a flashing caution light to minimize effects of the crossing on traffic flow.

POLICY 7-H-2 **SAN CARLOS BOULEVARD:** The five-laning of San Carlos Boulevard has created severe problems near the approach to the Sky Bridge. Creative experiments are needed to discourage drivers from using the right-hand lane, or side streets on San Carlos Island, to bypass the line of cars waiting to enter the bridge.

POLICY 7-H-3 **RESERVED**

POLICY 7-H-4 **VARIABLE MESSAGE SIGNS:** These signs could advise motorists of congestion delays as well as available parking. The town should urge the detailed study of this concept by Lee County, FDOT, and the Metropolitan Planning Organization.

POLICY 7-H-5 **ORIGIN/DESTINATION DATA:** Better data is needed on the origins and destinations of motorists during the peak season, and the town supports the MPO's efforts to obtain this data.

POLICY 7-H-6 **TRANSPORTATION DEMAND MANAGEMENT:** This part of a congestion avoidance strategy reduces the number of single-occupant vehicles during peak traffic periods, either by eliminating some trips completely, or by accommodating existing trips in fewer vehicles, or by moving some trips before or after the most congested periods. This strategy may alleviate peak-season traffic congestion if implemented aggressively in cooperation with area businesses.

POLICY 7-H-7 **DELIVERY VEHICLES:** To avoid interference with traffic and pedestrian flow, the town shall develop a strategy to limit commercial deliveries during peak traffic periods.

POLICY 7-H-8 **FLOODING:** During periods of minor flooding, the town shall monitor the performance of roadside drainage systems on and off Estero Island to identify areas where an evacuation could be prematurely halted.

POLICY 7-H-9 **PROFESSIONAL ASSISTANCE:** The town may wish to retain a creative traffic engineer to provide advice on these experiments on a continuing basis.

POLICY 7-H-10 **CONNECTIONS TO ESTERO BOULEVARD:** An excessive number of streets and driveways have direct access to Estero Boulevard, reducing its ability to handle peak-

season traffic. The town shall take advantage of any suitable opportunities to consolidate street connections into fewer access points onto Estero Boulevard.

OBJECTIVE 7-I **LEVEL-OF-SERVICE STANDARD — Maintain minimum acceptable levels of service for the transportation system.**

POLICY 7-I-1 Traffic congestion is a serious problem at Fort Myers Beach, caused by a combination of high tourism demand for its beaches and past over-building relative to road capacity. Neither factor is within the control of the Town of Fort Myers Beach, although its residents must tolerate congestion every winter. This comprehensive plan seeks to manage congestion levels and encourage alternate means of mobility including walking, bicycling, and trolleys.

POLICY 7-I-2 The peak capacity of Estero Boulevard's congested segments is 1,300 vehicles per hour. The minimum acceptable level-of-service standard for Estero Boulevard shall be that average monthly traffic flows from 10:00 A.M. to 5:00 P.M. during each month do not exceed that level for more than four calendar months in any continuous twelve-month period. Measurements from the permanent count station at Donora Boulevard shall be used for this standard.

POLICY 7-I-3 Figure 18 of this element is hereby adopted as the future transportation map of the Town of Fort Myers Beach.

OBJECTIVE 7-J **PROTECTING PUBLIC ACCESS — Although no future right-of-way needs have been identified, some existing town and county rights-of-way are substandard and few are wider than needed. The town shall not vacate or acquiesce in the vacation of existing rights-of-way except where no public purpose would be served by retaining the right-of-way.**

POLICY 7-J-1 **RIGHTS-OF-WAY:** Town and county rights-of-way are needed for the undergrounding of utilities; for the expansion of sidewalks and bike paths; for water accesses; for on-street parking; for public transit and road improvements; and for other public purposes. The town shall strictly limit vacations of rights-of-way and easements to preserve future access for these purposes.

POLICY 7-J-2 **TRAFFIC IMPACT ANALYSES:** A thorough traffic impact analysis is currently required only for major rezonings and very large development orders. The town shall amend its Land Development Code during 2010 to:

i. decrease the thresholds for requiring traffic impact analyses;
ii. require them to study the cumulative impacts of potential development; and
iii. use the results in assessing whether impacts are acceptable, and whether an improved design could offset some of the impacts.

TRANSPORTATION APPENDIX A

TRANSPORTATION ALTERNATIVES

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TRANSPORTATION APPENDIX A

TRANSPORTATION ALTERNATIVES

INTRODUCTION TO APPENDIX A

This appendix evaluates specific measures that might reduce congestion, improve mobility, or provide a safer and more attractive Fort Myers Beach. This evaluation does not include any detailed engineering work; its purpose is to explore the widest variety of options, and then identify those with enough promise to warrant further refinement.

This evaluation formed the basis of the actions recommended in the Fort Myers Beach Comprehensive Plan. It is organized in three parts:

- **Alternatives within existing rights-of-way**, assuming no new bridges and no four-laning of Estero Boulevard (this section begins on page 7-A-2 of this appendix);
- **Capital-intensive alternatives**, including new bridges and widening of Estero Boulevard (beginning on page 7-A-48); and
- **Futuristic alternatives**, providing an overview of some technologies under development which provide some promise at Fort Myers Beach (beginning on page 7-A-58).

Appendix B (immediately following) contains additional transportation data on these subjects:

- roads and intersections;
- seasonal fluctuations in traffic;
- measurement of traffic congestion;
- adequacy of evacuation routes;
- school buses;
- how residents travel to work; and
- traffic crashes.

ALTERNATIVES WITHIN EXISTING RIGHTS-OF-WAY

All of the potential improvements discussed in this first section are alternatives to the conventional solution of four-laning Estero Boulevard, consistent with the following formal policy in the current comprehensive plan:

POLICY 16.3.6: *Under no circumstances shall the four laning of Estero Boulevard be considered as a desirable means of improving traffic circulation on Estero Boulevard.*

This unambiguous policy was adopted by the Lee County Commission in 1992 as part of a new Fort Myers Beach portion of the Lee County Comprehensive Plan (which remains in effect today). It reflected a broad consensus of beach residents at the time that, however bad congestion may be in the winter, the four-laning of Estero Boulevard (at least if designed like most other new roads) would be even worse.

This unusual position results from Estero Boulevard's key importance to Fort Myers Beach. It is simply classified as an arterial road by Lee County, reflecting its length and position between two obvious arterials, San Carlos Boulevard and Bonita Beach Road. However, to local residents and businesses, Estero Boulevard is far more than an arterial road whose main role is to move traffic from one end of the island to the other. It could equally well be considered a collector road because it collects traffic from intersecting local streets and distributes it to true arterial roads. In addition, it serves as a local road because it provides the only access to most adjacent properties.

Besides each of these roles, Estero Boulevard is the "Main Street" of Fort Myers Beach. It is the center of town, the public space that visitors see and remember (in addition to the beach). Estero Boulevard may have the highest pedestrian usage of any road in Lee County. There is no other way to traverse the island, so people cannot avoid Estero Boulevard even if they wish to.

Most beach communities have a greater distinction between being "on the beach" and "off the beach." Estero Island is so narrow, and Estero Boulevard is so easy to cross, that the entire island feels like it is "on the beach." If Estero Boulevard were turned into a modern four-lane highway, with wide travel lanes, paved shoulders, and high speeds, the fundamental character of the community would be changed.

Given these factors, multiple uses of Estero Boulevard are a fact of life, rather than factors to be reduced or eliminated. The balancing of these multiple uses is fundamental to the evaluation of alternatives below.

At present, Estero Boulevard has 34 feet of paving for most of its length south of Times Square. (North of Times Square the pavement is only 22 feet wide.) The 34-foot pavement is configured in three different ways:

- Two 12-foot travel lanes, with 5-foot paved shoulder on each side (see Figure 1).
- Two 11-foot travel lanes, with an 11-foot continuous center turn lane plus two sets of double stripes (see Figure 2).
- Two 11-foot travel lanes, with an 11-foot continuous center turn lane and a 10-foot raised sidewalk (see Figure 3).

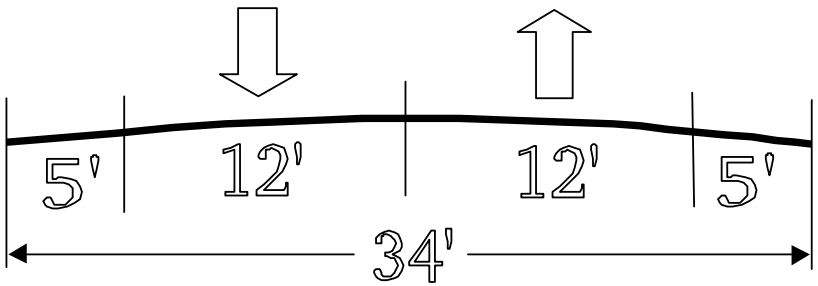


Figure 1, *Estero Boulevard cross-section with 5-foot paved shoulders*

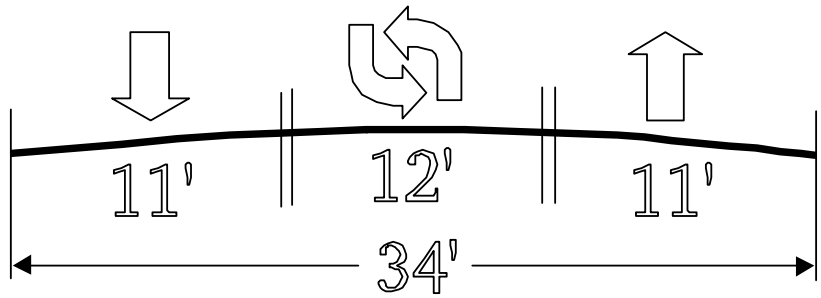


Figure 2, *Estero Boulevard cross-section with center turn lane*

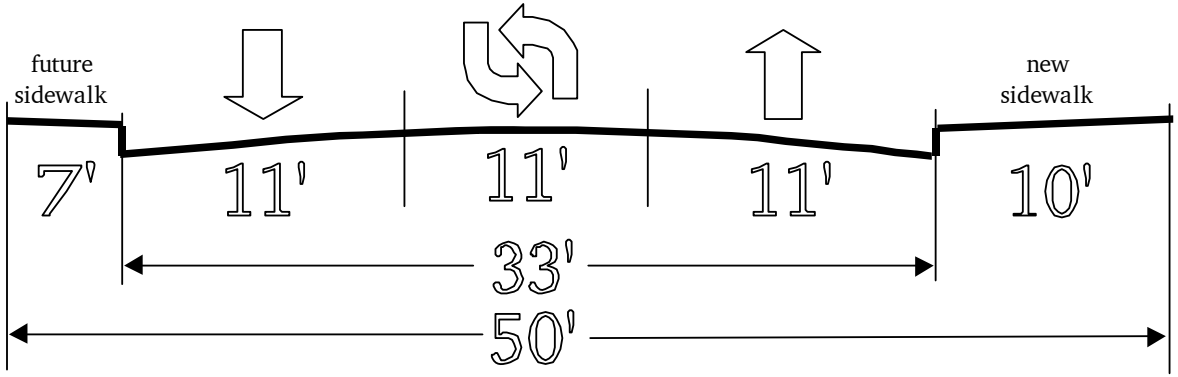


Figure 3, *Estero Boulevard cross-section as redesigned near Times Square*

For the purpose of free-flowing traffic, the right-of-way widths of Estero Boulevard are quite mismatched. Figure 4 and Figure 5 show how the highest traffic volumes coincide with the narrowest right-of-way.

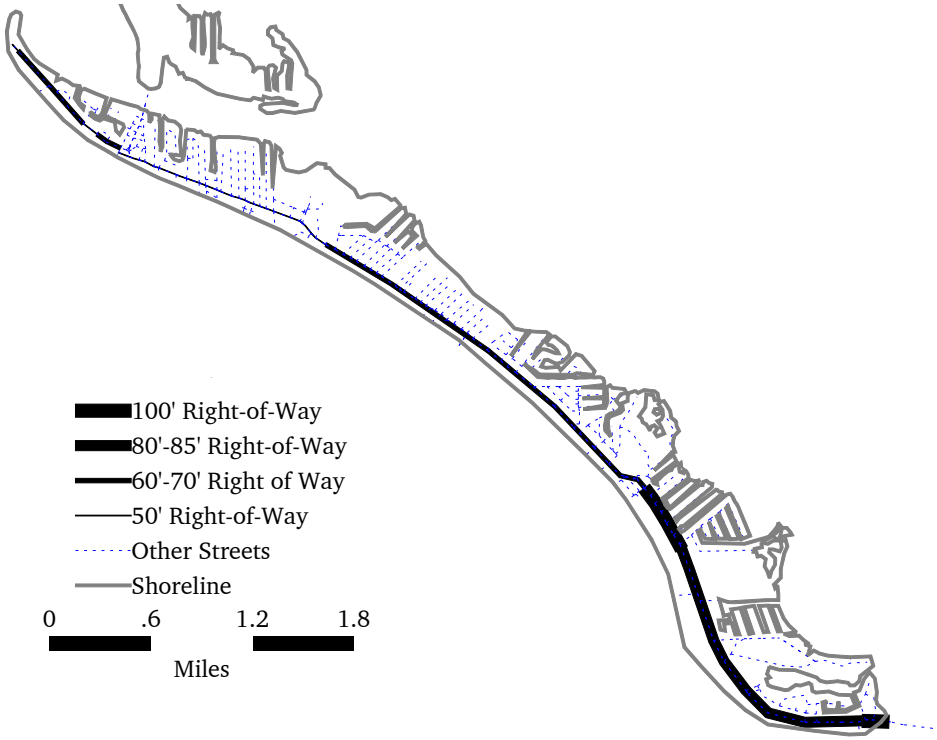


***Figure 4**, Right-of-way widths along Estero Boulevard*

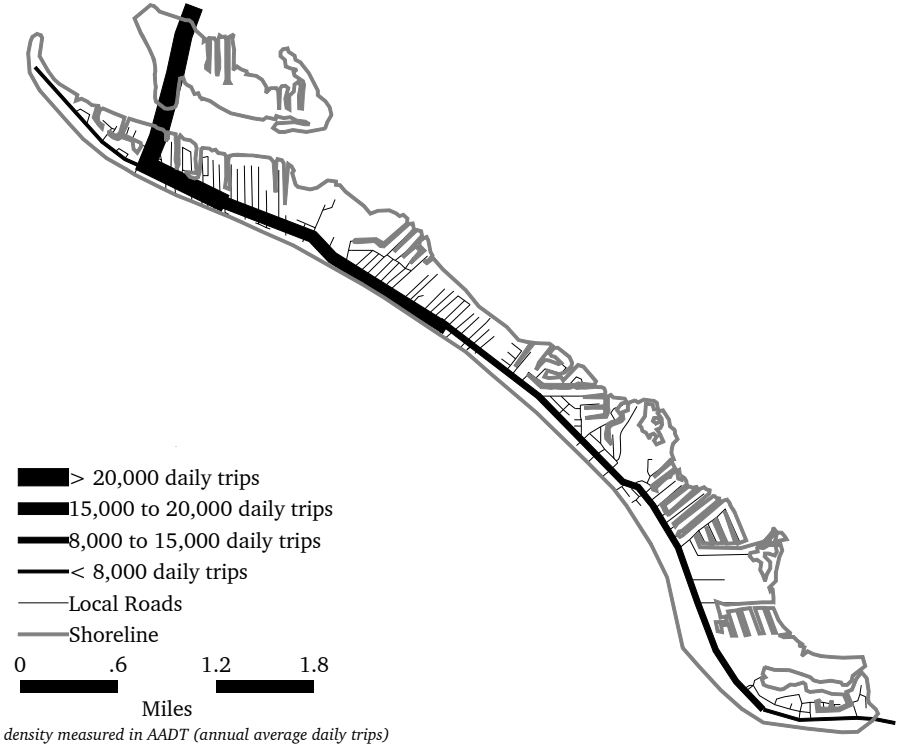


***Figure 5**, Traffic density along Estero Boulevard*

Given this mismatch, roadway options are extremely limited in the most congested area, from Times Square to the public library, where the right-of-way is only 50 feet wide. The newly designed improvements between Times Square and the Lani Kai may represent the best physical configuration that can be obtained within 50 feet, with a new 10-foot-wide sidewalk on the Gulf side and a proposed 7-foot sidewalk on the Bay side. Curbs separate the attractive sidewalks from moving cars; the new coconut palms symbolize the sandy beach and the carefree spirit of Fort Myers Beach. Drainage is placed underground, an expensive but unavoidable choice under the circumstances. Power lines are also underground, with the collateral benefit of protecting them from high winds. The main limitation of extending this configuration further towards the library is simply its high cost (about $2,000,000 per mile including raised sidewalks on both sides of Estero Boulevard).

The following sections evaluate a wide variety of additional changes to the transportation system that could be made within existing rights-of-way or with relatively minor costs. After these evaluations, the more capital-intensive options will be discussed, followed by a look into some other options that may become available in the future.

Intercepting Vehicles Before They Reach Fort Myers Beach

In a very real sense Fort Myers Beach doesn't have too many visitors, but every winter it is clear that visitors arrive in too many cars. The most obvious solution (although perhaps the most difficult to achieve) is to provide other ways for visitors to reach and move around the island. If properly designed, these alternatives can also be used by local residents to move around when a surplus of drivers inevitably turns up in mid-winter.

An important component of this system is to "intercept" as many vehicles as possible, especially those with only a single occupant, before they reach Estero Island, and provide their occupants with an alternative for the rest of the trip. The trip from the intercept point to the island is of course important, but many visitors will not take advantage of this trip unless they also can move *around* the island without a car. Visitors who are staying for more than a day or two also need the opportunity to conveniently rent a car for off-island excursions.

Initial steps in intercepting vehicles off the island have already been taken. A park-and-ride lot has been built at Main Street on San Carlos Island, and other park-and-ride lots use excess parking spaces at the Summerlin Square shopping center and the Bonita Springs K-Mart. Trolleys and buses serve these lots. Experience with these lots has been only fair, with the Main Street lot not having been used as heavily as expected. Improvements to this system are badly needed; many are suggested in this appendix, including common-sense ideas such as:

- more frequent trolley service;
- comfortable waiting areas at major trolley stops (with shade and benches);
- signs at every trolley stop with fare, route, and schedule information;
- special treatment for trolleys so they don't have to sit in the same line of traffic with all the cars;
- a water shuttle link between the Main Street lot and popular destinations on Estero Island; and
- improved airport limousine service so that visitors arriving by airplane can easily avoid renting a car for their entire visit.

Any major success in getting visitors to leave their cars on the mainland will depend on the creation of a balanced transportation system. For instance, an interceptor parking lot only works with a reliable system of public transportation. In the same way, a bus or trolley trip usually involves some walking at each end. If that walk is of reasonable length and is a pleasant experience, people will use public transportation much more often. (Fortunately, walkways that are safe, beautiful, and interesting are just as desirable to permanent residents as they are to visitors.)

A very important connection between car trips at Fort Myers Beach and other modes of travel occurs off the island, at the Southwest Florida International Airport. The majority of tourists arrive in Lee County by airplane (67.8% in 1996). Slightly fewer continue their visit to Lee County with a rental car (59.5% in 1996); the remainder are met by friends or relatives, or use a taxi or shuttle bus to reach their destination. If limousines or shuttle buses were used more, the number of vehicles arriving in tourist destinations such as Fort Myers Beach would be reduced.

In spite of the large number of visitors to the island, there is no regularly scheduled airport shuttle service. On-request service is available from Majestic Airport Taxi/Limo Service and Professional Airline Terminal Service to patrons of various motels, hotels, and resorts. There are also three taxi cab companies that operate in the island. One is based on the island (Local Motion Taxi); the other two (Royal Palm Transportation and Apple Taxi Limo Inc.) anticipate enough business in the area to have joined the Greater Fort Myers Beach Chamber of Commerce.

Bicycles are used extensively within the Town, primarily for recreation and short trips. With bike racks now mounted on all trolleys, there are improved opportunities for longer trips. There are several locations along Estero Boulevard for bicycle rentals and service, which are primarily used by tourists.

Pedestrian traffic is accommodated by the use of on-road and off-road paths and sidewalks. Times Squares is a pedestrian hub for Lee County, and the beaches generate a sizable number of trips on foot by residents and visitors.

Mopeds and motorized scooters are popular rental items at Fort Myers Beach. Many riders are unfamiliar with their operation, and with lower speeds than autos, they generally add to traffic delays and reduce road capacity more than they relieve congestion.

Public water transportation facilities such as boat ramps and marinas are primarily used for recreational purposes. There are no full-service boat ramps and only three unmarked boat ramps within the public rights-of-way. A ramp on Bayview Drive (between Ohio and Virginia Avenues) offers some maneuverability for boat launches, while the gravel ramp at Miramar Street and Coconut Drive appear to be suited only for launching small craft such as canoes. Neither provides any parking spaces. Water transportation has considerable potential to supplement other mobility opportunities at Fort Myers Beach, for instance through water taxis or scheduled water shuttle service closely linked to recreational and pedestrian activities (as discussed in some detail later in this appendix).

Methods of Encouraging Mobility Without Cars

Trolleys and Trams

Fort Myers Beach has been served by Lee Tran trolley buses over the past decade. In the off-season, two vehicles serve the entire island at 45-minute intervals. During the peak season, as many trolleys as can be afforded are used. Over the past eight years, between three and eight trolleys have been used during the peak season, running at intervals of 15–20 minutes to 30–45 minutes

The trolley system has received extra local subsidies in recent years, allowing greatly improved service and demonstrating the feasibility of alternate modes of travel. However, the subsidies have been an ad-hoc response to a perennial congestion problem; no long-term funding or operational plan has been developed.

Trolleys are available for riders seven days a week, with more frequent service during the peak season. This service experienced its largest ridership in 1994/95 with 466,018 passengers. The fare was free that year, with the service partially funded by the CRA (10.5%) and by rider donations (2.8%). When fares were reinstituted the following year, ridership dropped to its lowest level since 1991, with 238,754 passengers paying the nominal fare of $0.25 per ride (which covered 9.9% of the actual operating costs). Table 7-A-1 provides details of ridership and operating costs since 1991. Figure 7 shows the current route map for this service.

Figure 6*, Trolley bus*

Table 7-A-1 — Transit Ridership and Operating Costs Since 1991

Fiscal Year	*Park & Ride*	*Trolley Only*	*Total Riders*	*Operating Costs*	*Fares Collected*	*Donations By Riders*	*CRA Subsidy*
91/92	0	268,306	268,306	$448,104	$47,882		$50,000
92/93	0	424,643	424,643	$442,526		$3,608	$87,500
93/94	179,653	283,699	463,352	* $699,141		$6,592	$75,000
94/95	112,877	353,141	466,018	* $714,345		$19,987	$75,000
95/96	44,693	194,061	238,754	** $416,471	$41,384		none

** More Frequent Service* *** $0.25 Fare Reinstituted*

Source: Lee Tran

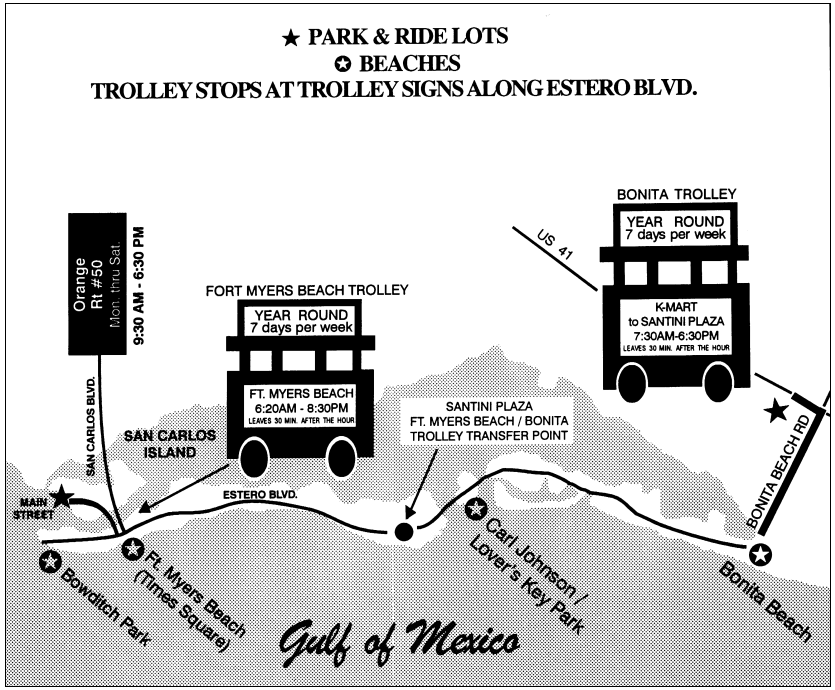


***Figure 7**, Beach Trolley Route Map*

about having correct change. In Emeryville, California, local businesses pay to operate five free shuttles that relieve congestion caused by a daily influx of 20,000 workers into their community of 7,000 residents.

There is some public distaste for subsidizing visitors' trolley trips by eliminating fares, but even when fares are charged, most public transportation still requires a subsidy. When compared to the various costs of building more road capacity, improved transit service can be an inexpensive alternative.

There are 81 trolley stops in the island and 3 trolley pull-off stations, as shown in Figure 8. The pull-off stations at Times Square and Bowditch Point currently have shelters; the station at Villa Santini Plaza does not. The trolley stops are scattered evenly along Estero Boulevard. Additionally, there are important off-island stops at Summerlin Square, San Carlos Island's Main Street, and Lover's Key/Carl Johnson State Recreation Area.

The trolley system is capable of handling many more inter-island trips. The 1990 Census indicated that no work trips were made on public transportation. Obvious options to be considered are more frequent service, and benches/shelters at key stops. Free rides also increase ridership substantially, in part due to the convenience of not worrying

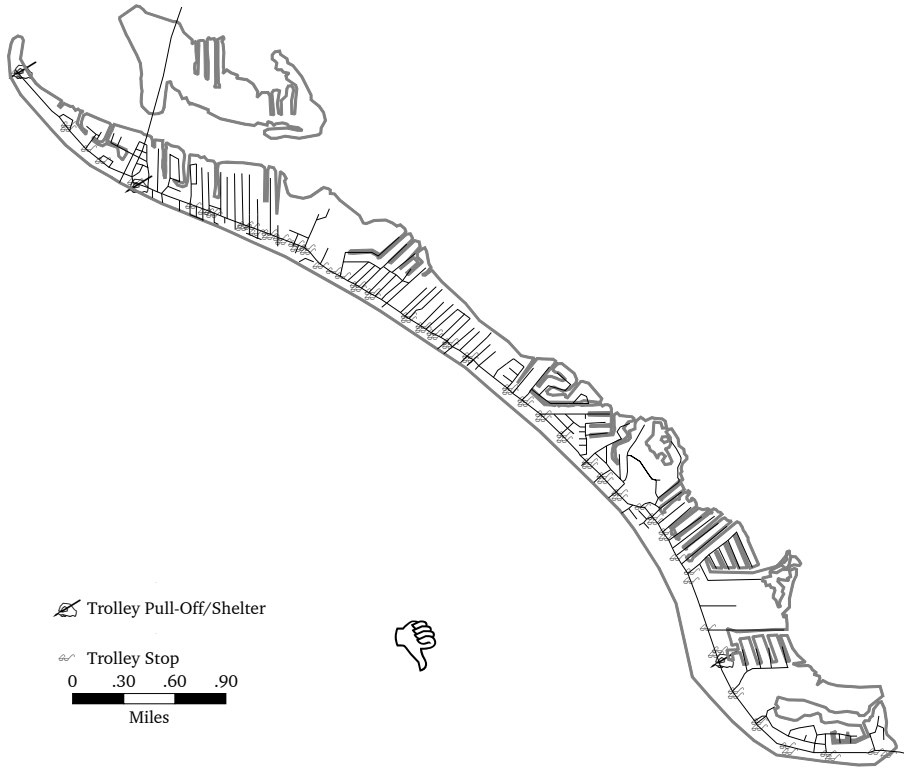


***Figure 8**, Trolley Stops*

Public transportation has negative as well as positive effects on traffic flow. The presence of a large low-performance vehicle like a trolley can reduce the capacity of a road, especially where the trolley cannot pull out of traffic to discharge passengers.

Trolleys carrying only a few passengers have little effect on traffic flow during off-peak periods, but during peak periods they should be carrying enough passengers to offset the effects of their bulk and their frequent stops. A trolley's ratio of actual passengers to seats is known as its "load factor," which is as important to traffic flow as to the bottom line of the trolley operator.

The current nostalgia-styled trolley buses have proven popular even though they can be less comfortable than modern air-conditioned buses. The unusual styling and open-air feeling seems to encourage their use.

Other alternatives are available, including tram-style vehicles such as the one shown in Figure 9. These vehicles can be powered with diesel engines like the current trolleys, or like most new buses can use a variety of cleaner fuels such as LP or compressed natural gas, electric propulsion, or even hybrids combining electric and another power source. Trams can be boarded through multiple gates, unlike trolleys that usually have only one or two doors; this is an advantage for reducing the stop-time when loading, but precludes the easy collection of fares. The slowness of most trams would be a negative effect of their use on Estero Boulevard (except perhaps on the northern segment from Times Square to Bowditch Point).

***Figure 9**, Commercially available tram*

Other novelties such as double-decker buses would also appeal to additional riders. A double-decker bus with an open top and bike racks could be introduced during the peak season by using a vehicle that is out of service in its northern home town, with service expanded if warranted by demand. There is also the possibility of students using regular Lee Tran service rather than a separate run by a school bus.

Another promising measure to improve connections between modes of travel has been the installation of bike racks on Lee Tran buses and trolleys. Despite the current limitation of two bikes per vehicle, this experiment has been popular with bicyclists. Bike racks provide commuters and visitors an opportunity to make longer trips, or trips away from bus routes, without using a car. (The United States DOT is currently testing racks that can carry three bikes, and new Florida legislation exempts buses from previous legal limitations on racks for more than two bikes.)

Bus shelters could become a focal point in any major center of activity. Ideal shelters should be roofed but with transparent or open sides, placed at convenient locations, and be equipped with benches and clearly posted schedules. Shelters at key locations might even be equipped with integral stationary bike racks and lockers.

Adjoining businesses such as coffee shops and news stands would be further enhanced if a stop for scheduled airport service were also provided at one or more key locations (even slightly off Estero Island, such as on San Carlos Island). These services at a single location would effectively create a small transit terminal, since taxi stands would be attracted to any regular shuttle or limousine stops. Locations near such a transfer point would provide good business opportunities for rentals of cars, bikes, motorbikes, and roller blades.

Off-island park-and-ride lots can allow motorists to conveniently transfer to buses or trolleys. Park-and-ride lots at each end of the trolley route have accommodated a sizable number of passengers, particularly in the first year that service was provided (1993-94). These lots are located at Summerlin Square, San Carlos Island's Main Street, Lover's Key/Carl Johnson State Recreation Area, and the Bonita Springs K-Mart. Although there is no breakdown available to gauge the effectiveness of any of these locations in intercepting car trips that would have ended up on Fort Myers Beach, observations by trolley drivers are that the Main Street lot has yielded the fewest users. Much of the K-mart ridership may have been bound for other beach access points south of Lover's Key/Carl Johnson park, leaving the latter and Summerlin Square with the presumed highest rate of capture. Data for 1996-97 is not yet available. The 25¢ fare is still in place. The Town of Fort Myers Beach, through interlocal agreements with the county-run Lee Tran, has funded an extra trolley to allow service every 15 minutes during February, March, and half of April. The cost to the town was a cap of $47,000 in 1997 and $31,600 in 1998.

Unfortunately, Table 7-A-1 shows a significant *drop* over the last two years in the number of persons boarding public transportation at the existing park-and-ride lots (located at Summerlin Square, Main Street on San Carlos Island, Villa Santini, Carl Johnson Park, and K-Mart in Bonita Springs). During 1996/96, boarding levels were at only 25% of the 1993/94 rate. Some of this decrease can be attributed to the end of free service (the fare is now 25¢). Other factors are the reduced frequency of service, and some number of passengers who may have been riding the trolley without a particular destination (especially when there was no fare).

Not all of the park-and-ride users have eliminated a single-occupant-vehicle trip in favor of public transportation. However, every trip that *is* eliminated reduces the number of cars competing for the limited space on Estero Boulevard. Methods should be sought to improve the usage of the Main Street lot on San Carlos Island and the Summerlin Square lot at the corner of Summerlin Road.

Water Transportation

With traffic congestion blocking movement along Estero Boulevard during the peak season, the potential for water transportation becomes apparent.

A December 1993 origin-and-destination study indicated that 23% of 2,500 drivers on Estero Island began and ended their trips on the island. The same survey showed that 46% of the trips were made by out-of-town visitors, making alternative modes viable especially if they were an integral part of the visiting experience. Water-based transportation is a classic

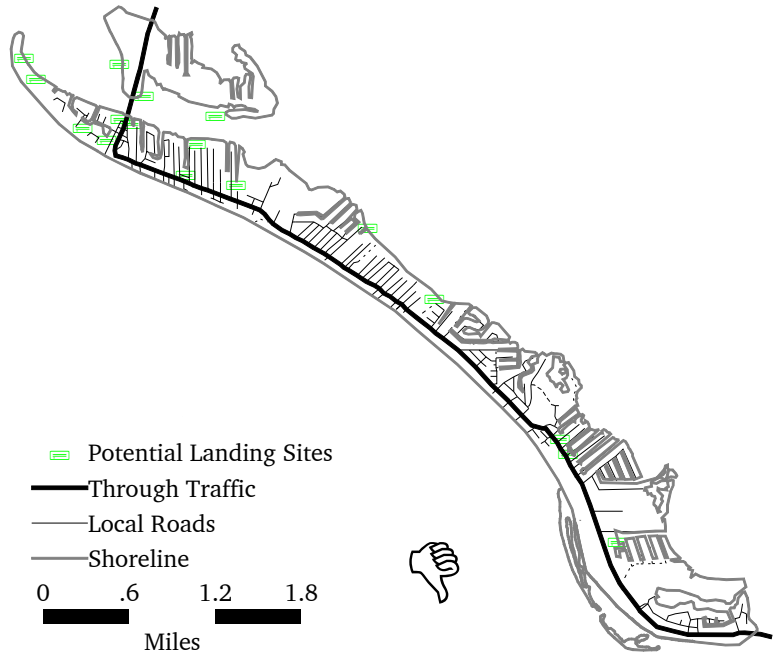


Figure 10*, Some potential landing sites for water transportation*

example of making the trip part of the experience, because of its novelty plus the potential for seeing wildlife along the way. Matanzas Pass and its adjoining canals in particular would provide an ideal water transportation network for recreational and some business or work trips. This network could use a mix of on-call water taxis plus regularly scheduled water shuttles, stopping at landing sites such as those shown in Figure 10.

Water transportation has been underutilized due to logistical problems including limited dockage; manatee slow-speed zones; potential for foul weather; and existing regulations that require dedicated parking spaces at each stop. There are several steps that can be taken to encourage more water transportation, beginning with an inventory of all navigable waterways identifying their length, navigational depths, speed restrictions, types of boats that can be accommodated, available dockage, and boat storage facilities. Next, travel times can be determined for trips between the most likely destinations. Formal policies in the new comprehensive plan supporting water transportation would lay the groundwork for repealing regulations that work against water shuttles (such as parking requirements that consider a water shuttle or taxi to be a business requiring a separate pool of parking spaces at each stopping point).

Water taxis are operating successfully as private businesses in Miami and Fort Lauderdale. In downtown Miami, a water shuttle runs continuously for a one-way fare of only $3.50. Water taxi service is available to and from Miami Beach for $7.00 each way; this is an on-call shared-ride service. Identical water taxi service is available in Fort Lauderdale. These boats load and unload from the front, allowing them to dock in tight locations without special facilities (see Figure 11).

***Figure 11**, Water taxi unloading at a Fort Lauderdale hotel*

The two public parks (Lynn Hall and Bowditch Point) and the 36 beach access points are extremely attractive to residents and visitors, but at present they cannot be conveniently reached except by motor vehicles using the Matanzas Pass Sky Bridge and Estero Boulevard. Water transportation could proceed instead through the protected waters behind Estero Island, although there would be many difficult issues to address including the effects of slow-speed zones for manatee protection and reasonable privacy concerns of nearby residents. Water transportation could include water taxis with on-call service; regularly scheduled water shuttles; and private boats.

Some local roads at Fort Myers Beach could serve as links between water transportation and the Gulf beaches and other attractions. There are 33 local roads that extend directly to Bay waters (or indirectly via a canal). Of these, 25 directly intersect Estero Boulevard, forming 14 "T" intersections and 11 four-way intersections. ("T" intersections would be preferred because of the lower number of conflict points with motorists on Estero Boulevard.)

The current ownership of Bay side access points is divided between public and private interests. Acquisition of additional easements or even full ownership might be needed to bring many of the Bay access points up to reasonable standards. Table 7-A-2 identifies the current status of all existing and potential landing sites for various forms of water transportation.

Table 7-A-2 indicates most of the potential landing sites for water transportation, with 13 existing landing sites and 20 more that might be possible. Additional study would be needed to determine the feasibility of the various sites. For the 13 commercial sites (at the restaurants, motels, and marinas listed above), the owners would have to agree to provide dockage. The agreement would ensure public access to the system while providing positive exposure to the business, enabling them to expand their patronage.

The public boat anchorage in Matanzas Pass has several potential impacts on Fort Myers Beach. Without an acceptable place on Estero Island for dinghies to tie up, visiting boaters (and those living aboard) will tend to use any number of routes to the beach and to buy groceries and other necessities. This can create unacceptable impacts to neighborhoods, and will work against the goal of integrating the boating community with other island activities. If the route isn't convenient enough, these trips will have to be made by private car or taxi, adding to the number of trips on the roads.

Table 7-A-2 — Existing and Potential Landing Sites

Site	*Location*	*Landing Available?*
Bowditch Point	Bowditch Point Park	
Pink Shell Resort	South of Bowditch	Yes
Island House Motel	Matanzas Street	Yes
Snug Harbor Restaurant	Old San Carlos	Yes
Matanzas Pass Restaurant	Crescent Street	Yes
Silver Sands parking lot	Palermo Circle	Yes
Miramar bay access	Miramar Street	
Island Bay Marina	Pearl Street	Yes
Bayview Drive canal	Bayview Drive	Yes (also ramp)
Delmar bay access	Delmar Avenue	
Mango bay access	Mango Street	
Chapel bay access	Chapel Street	
Tropical Shore canal	Tropical Shore Way	
Gulf Beach bay access	Gulf Beach Road	(discussion below)
Connecticut bay access	Connecticut Street	
Hercules bay access	Hercules Drive	
Coconut bay access	Coconut Drive	
Mid Island Marina	Strandview Avenue	Yes
Rusty Pelican	Bayland Road	Yes
Glenview Manor canal	Glenview Manor Drive	
Williams canal	Williams Drive	
Pescadora canal	Avenida Pescadora	
Sterling bay access	Sterling Avenue	
Indian Bayou canal	Indian Bayou Drive	
Mound canal	Mound Road	
Munch Box Restaurant	Driftwood Lane	Yes
Charlie Brown Restaurant	Estero at Curlew St.	Yes
Ibis canal	Ibis Street	
Fairview canal	Fairview Boulevard	
Lazy Flamingo	Villa Santini Plaza	Yes
Fish Tale Marina	Lenell Road	Yes
Bay Beach easement	Bay Beach Lane	

At present there is an informal passage via a canal that comes in from the Bay side and meets Gulf Beach Road (at the northern edge of Bay Oaks Park). Boaters dock their canoes and dinghies (see Figure 12) and walk along Gulf Beach Road south of the grocery story. This route may be the least intrusive way for boaters to purchase groceries and reach the beaches, with no negative impact on traffic flow whatever. After confirming that the passage occurs entirely on public property, the town may wish to place identifying markers and any necessary improvements, and establish regulations as needed to ensure safe use of this passage.

***Figure 12**, Informal dinghy landing at Gulf Beach Road*

Bicycles and Walking

Fort Myers Beach has outstanding opportunities to increase pedestrian and bicycle activity. The physical layout of the community encourages walking and biking, with all homes within just a short distance from the beach and active commercial areas. The traffic congestion provides additional incentives for people to avoid driving. Although there are more sidewalks at Fort Myers Beach than in most parts of Lee County, pedestrians and cyclists still encounter many difficult and unsafe conditions.

Figure 13*, CRA sidewalks during construction*

Efforts are needed to improve the existing network of sidewalks and bike paths, which will have the added benefit of "capturing" some car trips to work, shopping, and school (especially with improved connections to Lee Tran service). Currently, there are sidewalks on one side of Estero Boulevard only (except for the area from Lynn Hall Park to the Lani Kai, where there are sidewalks on both sides).

North of Times Square, the sidewalk shifts from the east to the west side of Estero Boulevard at northern end of Carlos Circle. The primary reason for this shift was the existence of "grandfathered-in" on-street parking within the public right-of-way on the east side.

Sidewalks can easily co-exist with some kinds of on-street parking. Urban areas commonly have sidewalks that are separated from arterial roads with a row of parallel parking; the parked cars protect pedestrians from moving vehicles. However, straight-in parking spaces in front of stores (as is common at Fort Myers Beach) causes some conflicts with sidewalks. A clear delineation of the sidewalk was used in the CRA improvements near Times Square to alert motorists to the sidewalk, thereby providing an alternative to force pedestrians to cross to the other side of the street.

Although traffic levels currently diminish as one approaches Bowditch Point, sidewalks on both sides of Estero Boulevard would eliminate the need for crossing Estero Boulevard at Carlos Circle. This may become important as traffic levels increase due to the proposed public parking at Bowditch Point and additional tram or trolley service there.

South of the Lani Kai, the Estero Boulevard sidewalk remains on the Bay side all the way to Lenell Road, where there is a gap in front of the Villa Santini Plaza to Bay Beach Lane. The sidewalk resumes south of Bay Beach Lane to Buccaneer Drive, where it now ends. A new sidewalk is planned from Buccaneer to Estrellita Drive (just north of Big Carlos Pass). This sidewalk would be built in 1998 or 1999 with federal funds from the ISTEA program (Intermodal Surface Transportation Efficiency Act). The estimated cost is $377,000.

Although *traffic levels* are relatively low in this area, *traffic speeds* are often high. A sidewalk on both sides once again would reduce the number of crossings. The wide right-of-way and the deep drainage ditches in this area create opportunities and challenges for completing a resort environment that encourages walking, bicycling and public transportation.

Another pedestrian concept emerged from public "community design" workshops during the preparation of this comprehensive plan. A quiet network of "hidden paths" was proposed to run parallel to Estero Boulevard on the Bay side to provide an alternative to walking and cycling along Estero Boulevard. This network is described further in the Community Design Element of this plan, and is shown conceptually in Figure 14.

The "hidden path" network would expand the use of cycling and walking to school as an alternative to walking along busy Estero Boulevard (many students live close to the elementary school but now take the bus or are driven to school). The "hidden paths" would also provide an alternative walking and bicycling environment that could replace some single-occupant-vehicle trips. This would be particularly true where parts of the path system link important centers of activity. These paths could also alleviate a gap in the future transportation network by connecting water- and land-based transportation.

The successful implementation of such an idea would require extensive community involvement and a close working relationship between residential neighborhoods and law enforcement agencies to ensure a safe and secure path. A good first step may be working with the Lee County School District to encourage parents nearest the school to participate materially (through donation of easements) and financially (where their property is not involved). School trips are the most effective way of ensuring steady foot and cycling traffic, which would ensure safety and immediate community involvement. Presence of law enforcement, particularly Sheriff's department bike patrols and VOICE volunteers, would help ensure the successful implementation of the hidden path concept. The facility must be designed with adequate visibility to ensure the safety of users and adjoining property owners.

Paved shoulders are provided on many parts of Estero Boulevard where there are no center turn lanes. These shoulders are used by bicyclists (although they are not marked as bike lanes). Bicyclists are able to ride with the flow of traffic, leaving the sidewalk to pedestrians who have no other alternative. In areas with limited right-of-way, an alternative for cyclists would be extra-wide travel lanes (14 feet wide), possibly in conjunction with closed (underground) drainage.

There are one-way bike lanes along 2nd and 3rd Streets between Crescent Street and Old San Carlos, as well as sidewalks on one side of these roads. These are adequate for current usage. However, Old San Carlos will need wider sidewalks, placed on both sides, in order to become the shopping and pedestrian street as proposed in the Community Design Element.

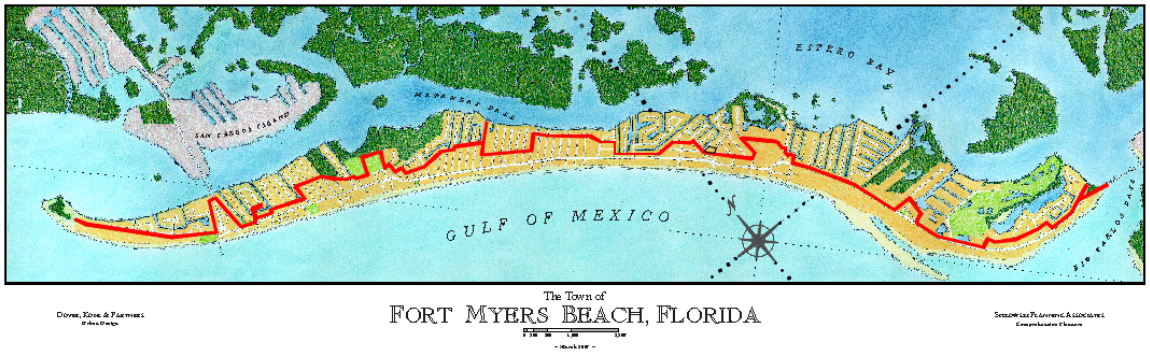


***Figure 14**, Conceptual plan for a network of "hidden paths"*

Funding for sidewalks and bike paths can come from many sources, including ad valorem taxes, gas taxes, special assessments, and grants. The Town's proposed budget for Fiscal Year 1997-98 would allot $75,000 towards the south end sidewalks, landscaping, and parking, out of a total capital budget of $555,000. Additional funding may become available if the Town Council approves concepts in the Community Design Element of this plan. In addition to the ISTEA funds programmed for the sidewalk south of Buccaneer Drive, there may be future ISTEA funds, although they may be less generous than the current program. These funds could provide a supplement or full funding for facilities that may not be built otherwise. ISTEA grant applications for the county-maintained portion of the Estero Boulevard must be initiated by Lee County, unless the Town agrees to assume responsibility for the maintenance of Estero Boulevard. Another option would be the establishment of a special taxing or assessment districts (MST/BUs), which could be in conjunction with lighting or other special districts. This would allow improvements to be made without a changeover of maintenance responsibility on Estero Boulevard.

Bicycling and walking are already popular for short trips, despite the marginal facilities now in place. The improved sidewalks near Times Square have already made walking there even more popular; the sidewalks are raised above a curb and are surfaced with colorful pavers that match the new look of the Times Square pedestrian mall. Similar sidewalks should be extended as far south as the public library, linking the elementary school and Bay Oaks to the Times Square area. These sidewalks would be safer for pedestrians (and more attractive) if the rows of coconut palms were placed in the traditional location between the curb and the sidewalk; the current design places the trees at the outer edge of the right-of-way, where they provide no protection whatever to pedestrians. When full curbs are provided, the edge of tree trunks can be as close as 1½ feet from the curb, according to the conservative design standards of AASHTO (the American Association of State Highway and Transportation Officials).

If even a few feet of additional right-of-way can be obtained, these sidewalks could be wider, or the coconuts could be planted in a grass strip between the curb and the sidewalk. If necessary, costs could be reduced somewhat by using the decorative pavers only at intervals between sections of standard concrete sidewalk. For capital planning purposes, cost should be budgeted at $1,000,000 per mile for improvements similar to those now in place, or double that for full sidewalks on both sides of Estero Boulevard.

A similar pattern of urban sidewalks should be built in the future around the Villa Santini Plaza. The shopping plaza and its high-rise neighbors provide the basis for another high-quality pedestrian zone at the south end of the island.

At other locations on Estero Island, sidewalks and/or bike paths can be improved over time in a variety of configurations. They would be used less intensively than the sidewalks at Times Square, and the wider rights-of-ways offer many more choices in design.

Sidewalks encourage people to walk parallel to roads, but crossing major roads such as Estero Boulevard remains a problem. Pedestrian overpasses are sometimes built at major crossing points, especially over freeways or wide arterial roads. However, pedestrians are not likely to use these overpasses unless it is obvious that they are easier or safer than trying to cross at ground level. As long as Estero Boulevard is no wider than three lanes, conventional pedestrian overpasses are unlikely to attract many users. More users would be attracted if the ramps were replaced by glass-faced elevators and the overpass itself provided exceptional views.

Pedestrian crossings at ground level will always be hazardous, especially near high-speed traffic. To improve pedestrian safety,

a full traffic signal has been installed at the main crossing at Times Square. This signal is actuated by a pushbutton, which changes the signal to red after a preset amount of time. In practice, many pedestrians grow tired of waiting for the signal to change, and cross when a gap appears in the traffic. The light then changes, halting traffic in the absence of any pedestrians. Experimentation with this traffic signal is warranted, for example changing it to a flashing yellow light that would warn motorists of the crossing but not automatically stop traffic.

Bicycles and pedestrians often share sidewalks, but that situation is not ideal, especially where the number of pedestrians is high and the sidewalks are narrow. Bicycle facilities are typically one of three types:

- **Bike lane:** a portion of a road which has been striped for preferential or exclusive use by bicycles.
- **Bike path:** a paved path for bicycles that is physically separated from the road (such as the bike path along most of Summerlin Road).
- **Bikeway:** any road, path, or sidewalk that is specifically designated as being open to bicycles (but which may be shared with pedestrians or even local traffic).

Where the right-of-way is wider, separate bike paths and sidewalks can be built, or on-road bike lanes can be provided for bicycles (and be shared by pedestrians, who should be walking in the opposite direction, against traffic). For non-tourist use, there is a need for secure stationary bike racks (preferably in combination with bus shelters); and shower/locker facilities at major nodes would make commuting by bike more feasible.

Many communities actively encourage bicycle usage to supplement other modes of travel. Some colleges and resort communities have experimented with providing distinctively painted older bikes as free loaners to encourage bicycling. Long Beach, California, operates a bike station at its central transit mall. Arriving bus passengers can rent bikes and use the public restrooms and changing areas; arriving bicyclists can store their bike in a guarded storage area before they board a bus.

Designing Buildings to Encourage Mobility Without Cars

The location of buildings can create (or destroy) a pedestrian atmosphere. Properly located buildings reduce walking distances, which are the most controllable obstacle to walking and public transportation. If a store is separated from the sidewalk by a large parking lot, even nearby residents are less likely to walk across the inhospitable expanse of hot asphalt (see Figure 16).

When existing stores are separated from the street, extensions can be added so that at least part of the building reaches the public sidewalk. Rearranged parking is still available, but is less visible from the street, and pedestrians now have a path to the main store without crossing the parking lot. Over time, pedestrian usage increases and less parking is required. Ultimately, frontage on the public sidewalk can become the most valuable space, with the parking lot increasingly relegated to a lot *behind* the stores, or under elevated commercial space.

Detailed building facades also make walking more enjoyable because they provide unique visual sequences. When the walk is interesting, its distance is noticed less. And when sidewalks are covered by awnings or canopies, pedestrians are protected from sun and rain, further improving the experience and encouraging walking (see examples in Figure 17 and Figure 18). Building and zoning codes that discourage or prohibit these arrangements should be quickly updated.

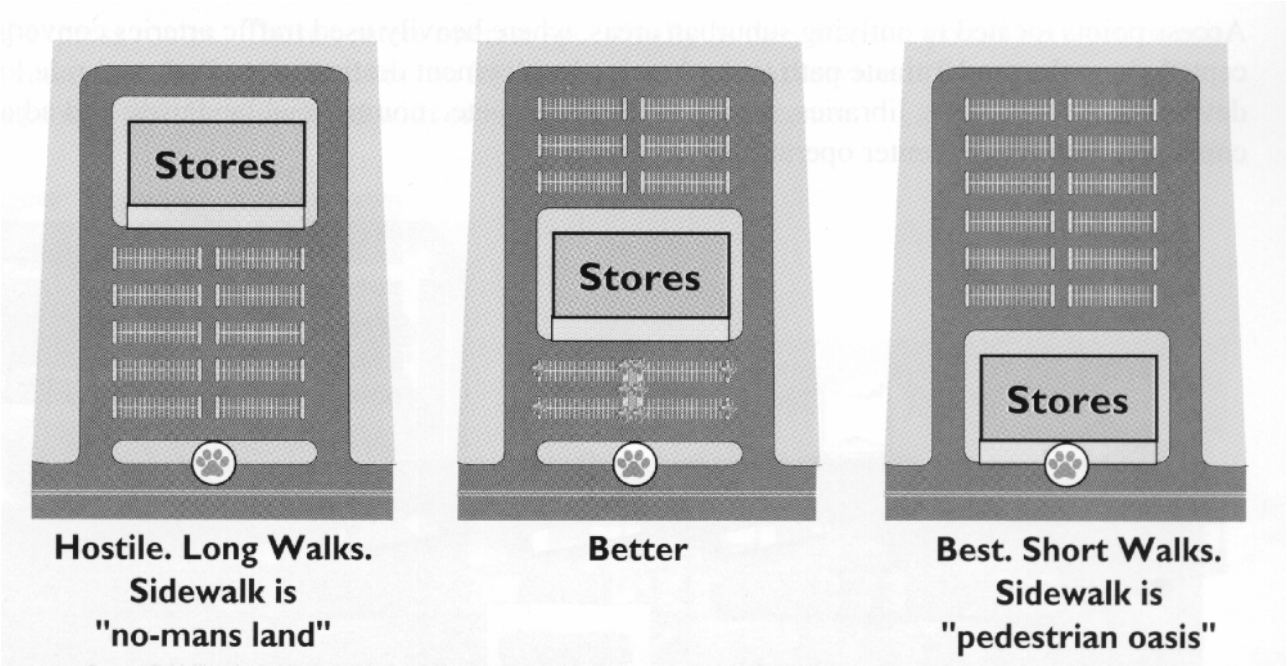
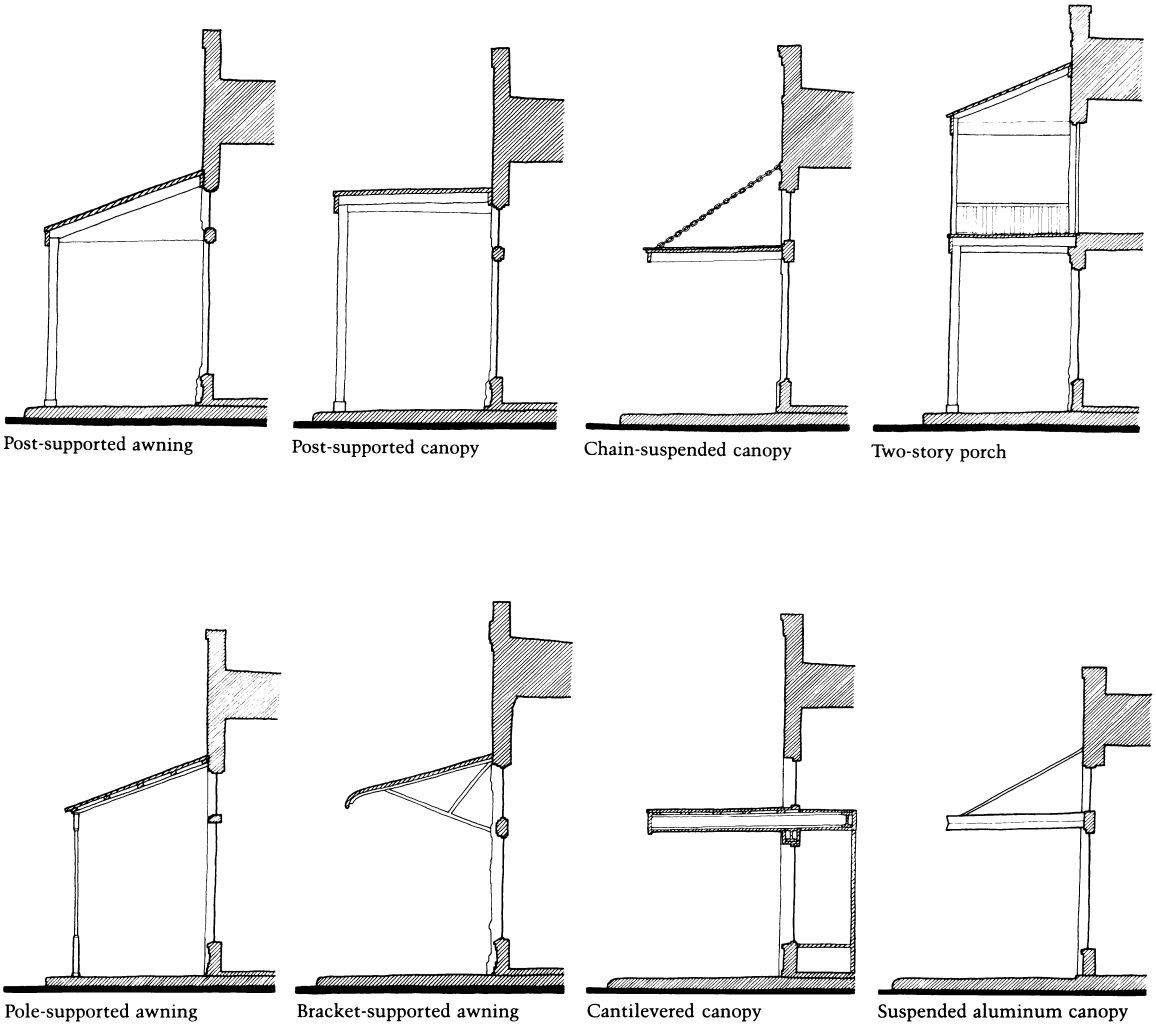


***Figure 16**, Relation of stores to parking lots (source: Guidelines for Public Transit in Small Communities, Urban Transit Authority, British Columbia, Sept. 1980)*



***Figures 17 and 18**, Wood (top) and metal (bottom) awnings and canopies (source: Awnings and Canopies on Main Street, National Main Street Center, 1987)*

Parking Options

The shortage of parking is a regular topic of conversation at Fort Myers Beach. Punitive towing policies of some area merchants are damaging the reputation of Fort Myers Beach as a friendly place to visit. The rebirth of commercial activity near Times Square may increase this problem. When parking is unavailable, visitors tend to wander around in their cars, worsening congestion.

The problem unfortunately is more complex than just a shortage of parking. A surplus of parking seems ideal, but in fact it would induce more people to drive to Fort Myers Beach, offsetting the relief now being provided by the trolley system and bicycling or walking. It is not impossible to build an aesthetically pleasing parking lot, but most parking lots and garages are very unappealing, and because of their size they can work directly against the pedestrian-oriented vacation experience that Fort Myers Beach offers.

The adequacy of parking for beachgoers is also an on-going debate. Lee County has provided additional parking at many beach access points in recent years, but did not provide any public parking in the original improvements at Bowditch Point (as discussed later). Beach parking and business parking are, however, closely related at Fort Myers Beach.

Parking Usage at Times Square

A limited parking inventory was conducted in 1993 as part of the CRA planning for Times Square improvements. Two separate surveys were included: a survey of four shared parking lots, with hourly occupancy counts; and a count of parking spaces in private lots. This project inventoried the area surrounding Times Square (Estero Boulevard from Lagoon Street to Carolina Avenue; Old San Carlos from Estero Boulevard to First Street; and Crescent Street from Estero Boulevard to First Street). It did not include the existing on-street parking or the parking in the beach access points beyond the project boundaries. The survey was conducted on a weekday in January of 1993 beginning at 8:00 A.M.

The survey of shared parking lots examined the two primary beach parking lots, the publicly owned lot at Lynn Hall Park and the privately owned La Playa lot on Old San Carlos. It also examined the auxiliary public lot at Matanzas Pass, and the parking lot of the Key Estero Shopping Center on Estero Boulevard at Carolina Avenue. It also reported additional data provided by the operators of the La Playa lot on hourly and monthly use of that lot.

The occupancy of spaces at each lot was monitored on an hourly basis, with the results shown in Table 7-A-3. The two most convenient beach parking lots were nearly full from 11:00 A.M. to 3:00 P.M., but the Matanzas Pass metered lot never even approached capacity during the same period.

Table 7-A-3 — Occupancy of Shared Parking Lots, 1993

Beginning Hour	*Lynn Hall Beach Park*	*La Playa Parking Lot*	*Matanzas Pass Lot*	*Key Estero Shopping Center*
# of spaces:	**132**	**82**	**62**	**116**
8:00 A.M.	5%	0%	0%	25%
9:00 A.M.	20%	4%	0%	48%
10:00 A.M.	56%	34%	2%	52%
11:00 A.M.	98%	70%	8%	61%
1:30 P.M.	99%	100%	37%	59%
2:00 P.M.	95%	100%	34%	52%
3:00 P.M.	75%	84%	15%	55%
4:00 P.M.	63%	44%	8%	51%
5:00 P.M.	48%	21%	3%	48%
5:30 P.M.	39%	13%	3%	44%
average:	60%	47%	11%	49%

Source: Core Area Parking and Inventory Survey, Florida Transportation Engineering, Inc., February 1993.

This study attributed the under-utilization of the Matanzas Pass lot to inadequate signage advising visitors of its location, as well as its relative distance from the beach. The Key Estero lot was well used, but still almost half empty most of the day.

The second part of the survey counted the number of parking spaces in private lots serving individual businesses and the occupancy rate when the spaces were counted (but not at hourly intervals during the day). The survey's totals have been grouped in Table 7-A-4 for all establishments in the following categories: lodging, retail stores, restaurants, beach/recreation (other than lots included in Table 7-A-3), convenience stores, and offices. The survey revealed that there are 1,349 additional parking spaces, in addition to the 392 spaces monitored in the first part of the survey. Average occupancy for the various land-use categories in Table 7-A-4 did not approach capacity during this survey, although several individual businesses were at or near capacity.

Table 7-A-4 — Additional Parking Data, 1993

Land Use Type	*Total Number of Parking Spaces*	*Average Occupancy*
Lodging	464	64%
Retail Stores	400	48%
Restaurants	251	56%
Recreation	172	46%
Convenience Stores	34	29%
Offices	28	71%

Source: Core Area Parking and Inventory Survey, Florida Transportation Engineering, Inc., February 1993.

It is difficult to assess the actual deficiency of parking without a survey of parking needs over a longer period than a single day. Certainly parking is more of a problem at Fort Myers Beach than almost anywhere else in Lee County, and the shortage of parking is repeatedly cited by residents and visitors as a major deficiency. It can also be expected to become more of a problem now the successful Times Square improvements are inducing extensive redevelopment activity.

Parking for small businesses near Times Square is available in a variety of ways, including "grandfathered" on-street parking, zero-lot-line off-street/on-site parking, some shared parking lots, commercial parking lots, and additional demand on the limited public beach parking lots. Traffic conflicts are created by most of the existing on-street parking, and the zero-lot-line facilities without adequate room for maneuvering, because traffic must back out into the flow of traffic, creating conflicting movements and reducing the capacity of roads to handle through traffic. This is particularly a problem along Estero Boulevard.

A centrally located and convenient parking garage has been discussed as a solution to parking needs of beachgoers and

***Figure 19**, Aerial view of Times Square (photo courtesy Mohsen Salehi)*

patrons of Times Square merchants who don't have on-site parking. This topic will be discussed further below.

Beach Parking

In addition to intersecting streets, driveways, and direct parking spaces, Fort Myers Beach's abundance of beach access points contribute to traffic problems along Estero Boulevard. This is particularly true near those access points that have parking spaces. Contributing to the problem is the unfamiliarity of most drivers seeking beach parking, and unclear signage that results in repeated entries into access points when searching for a parking space. Also contributing are inadequate sight distances for drivers exiting an access point. (An *adequate* sight distance would be an unobstructed view of traffic so that a driver knows when it is safe to pull into the flow of traffic.) The turns into and out of beach access points often contribute to delays in the flow of traffic, particularly when there are no center turn lanes where vehicles can await a gap in traffic

Table 7-A-5 provides a summary of the beach access points that provide public parking spaces (only 16 of the 36 access points). In addition to those shown, Lee County is planning to add 78 additional parking spaces in Bowditch Point Regional Park by the winter of 1997/98.

Table 7-A-5 — Parking Spaces at Beach Access Points

Access location	*General spaces*	*Handicap spaces*
Bowditch Point	5 (staff only)	12
Lynn Hall Park	118	5
Palm Avenue	18	2
Delmar Avenue	6 - 8 (unmarked)	-
Pompano Street	2 - 3 (unmarked)	-
Seaview Street	3	1
Connecticut Street	10	-
Hercules Drive	8	-
Coconut Drive	8 - 10 (unmarked)	-
Bayview Avenue	5	1
Gulfview Avenue	7	-
Strandview Avenue	8	-
Dakota Avenue	4	-
Aberdeen Avenue	6	-
Lanark Avenue	-	2
Gulf Drive	5	
Flamingo Street	5 - 6 (unmarked)	1
TOTAL:	218 - 224	24

Improving Accessibility of Bowditch Point Regional Park

Lee County purchased the 16-acre northern end of Estero Island in the late 1980s when development was imminent there. Following a series of public workshops, the county prepared a master plan and has developed the first phase of Bowditch Point Regional Park. This phase did not include any public parking; the only on-site lot has 12 handicapped spaces and 5 spaces for maintenance workers.

The county's priority had been to encourage peak-season visitors to Fort Myers Beach to leave their cars on the mainland, or "park once" after arriving and walk or use the trolley or other means to reach their various destinations. Several alternatives for off-site parking for Bowditch Point were explored and were to be built in later phases, with a parking garage near Times Square a distinct possibility. However, all planning for these later phases has since been dropped by the county.

Bus and trolley service is currently provided to the park, and for a time there was a single trolley that circulated between Bowditch Point and the Main Street parking lot on San Carlos Island. In part because of the lack of on-site or other convenient parking, usage of Bowditch Point has low compared to popular Lynn

Hall Park at Times Square. According to data from the Tourist Development Council, Bowditch Point received 25,000 visitors last year, while Lynn Hall Park received 500,000 visitors.

In a recent reversal of all previous plans, Lee County has decided to build a 78-space on-site public parking lot Bowditch Point Park to increase its accessibility to the general public. This lot, which may be completed for the 1998/99 winter season, will have a surface of crushed shell instead of asphalt to reduce the "paved" feel of the lot and to make it less difficult to remove if better parking or accessibility options become available. This lot will cost about $150,000 to design and build, and is expected to bring in $80,000 to $90,000 annually in parking fees. All 78 spaces will be available to the general public because the existing 12 handicapped spaces are sufficient for a 600-space public parking lot.

These 78 new spaces are far more than will be needed in the off-season, but the lot may not be large enough to meet the afternoon demands during the winter. If the lot is full, motorists will have to return to Times Square and points south in search of parking, adding to the congestion there. To minimize this effect, Lee County plans to provide "variable message sign" over San Carlos Boulevard (visible before motorists reach Estero Island) with up-to-the-minute information about the availability of parking spaces at Bowditch Point.

Before this new parking lot was planned, Lee County DOT had assessed the traffic impacts of a 60-space parking lot at Bowditch Point that had been proposed in conjunction with other private development there. The projected number of trips in and out of the parking lot was based on data collected at Lynn Hall Park and Bonita Beach Park in April 1997. DOT estimated that each parking space would generate 20 trips (1200 total trips per day). During the peak hour, this entire lot, plus the private development then proposed for Bowditch Point, would add about 230 cars to Estero Boulevard north of Times Square, an increase of 65% to the current traffic near Lynn Hall Park and a 150% increase near Bowditch Point. They concluded that this increase in traffic would be substantial, but that Estero Boulevard would still be at less than half of its capacity between Times Square and Bowditch Point.

Lee County has also revived its previous plans to build public docks at Bowditch Point. For years it has actually been illegal for boaters to land at Bowditch Point and use the park. Public docks can accommodate pleasure boats, water taxis, and regularly scheduled water shuttles. Access to Bowditch Point by water would be a novel and intriguing alternative to park-and-ride lots and trolleys. Water shuttles and taxis themselves would probably be provided by the private sector, but public docks are a prerequisite for this service to Bowditch Point.

Serious consideration should be given to using the parking pricing structure at Bowditch Point (and elsewhere at Fort Myers Beach) for congestion management as well as a revenue source for maintenance costs. There is no reason to discourage parking in the off-season or in off-hours, so parking during those hours would be at the current low rates. But rates could be increased during peak periods. This would discourage some people from driving and parking during those periods, and help pay for the cost of providing peak-season parking

***Figure 20**, Automated parking meter*

spaces that will sit unused during most of the year. Also, an "early bird" special could encourage some beach traffic to arrive earlier during the day before road congestion is a problem; fees would then increase depending on the hour of the day. Automated parking meters (see Figure 20) can provide for graduated rates without having to reprogram individual meters at each parking space.

With better transportation options, Bowditch Point can become a true regional park. Many residents north of Times Square fear the increased traffic and would prefer Bowditch Point to remain functionally almost a neighborhood park. But it was purchased and developed for much wider usage, and the challenge is to provide better access without adding to peak-season congestion on the roads. The best option would be a comprehensive approach to parking and mass transit to serve the needs of Bowditch Point and other popular tourist destinations at Fort Myers Beach.

Where is More Parking Needed?

Parking lots open to the public are run by several public and private entities. Lee County owns and manages the large lot at Lynn Hall Park. The county manages the town-owned lots beneath the Matanzas Pass Sky Bridge and just south of the private La Playa lot near Times Square. Table 7-A-6 indicates the total revenue from parking meters at these lots from October 1996 through June 30, 1997. (Under the town-county agreement that runs until the year 2006, this revenue is shared, with the town getting 85% and the county the remaining 15%.) Even during the busiest months, March and April, these lots are not operating at full capacity.

According to an occupancy survey from January 1993, only 37% of the 62 spaces beneath the sky bridge were occupied at the peak hour of 1:30 P.M. on a weekday. The 1997 revenue data is not directly comparable because it measures total revenue instead of hourly occupancy. Occupancy data should be collected on a regular basis; it is a truer measure of demand because total revenues don't evaluate hourly demand, and can be affected by turn-over rates.

Table 7-A-6 — Total Revenue From Town Parking Lots

Month	*Amount*
October 1996	*$1,303*
November 1996	*$1,654*
December 1996	*$1,724*
January 1997	*$2,566*
February 1997	*$1,732*
March 1997	*$4,584*
April 1997	*$3,562*
May 1997	*$2,616*
June 1997	*$2,651*
9-MONTH TOTAL:	***$22,395***

The surplus space in these lots, in the midst of an apparent parking shortage, emphasizes the importance of disseminating information about *where* parking is available. A positive step is the planned introduction of the "variable message signs" across San Carlos Boulevard where they can be read by drivers before they enter Estero Island. These signs will be automated so that the information is up-to-the minute. At present, Lee County is only planning to use these signs to advise motorists of parking at Bowditch Point, but if this technology is successful, it could be linked to other public parking lots with telephone lines or radio signals (see example in Figure 21). This technology has potential for widespread use in promoting the use of park-and-ride lots and reducing unnecessary trips onto the island when no parking is available. It can also provide an estimate of delays due to traffic congestion.

There is another less-apparent source of public parking: the numerous on-street parking spaces located partially or wholly within public rights-of-way. Most of these spaces are currently used by adjoining businesses, and are often marked as if they are private spaces, complete with signs threatening the public with towing if they park there. Where these spaces are located fully on the public right-or-way, they are actually public parking that has been appropriated for private use.

***Figure 21**, Variable message sign for parking management*

An accurate inventory of these spaces would be the first step towards identifying the parties with interests at stake (including Lee County for the county-maintained portion of Estero Boulevard). A dialog could then ensue, especially over the fate of jointly owned spaces. In some cases, such as along Old San Carlos, the spaces could be reconfigured to be totally on public land, allowing the spaces to be equipped with short-term meters (such as a 30-minute maximum). This arrangement would keep most of these spaces available for business use without privatizing a public resource. For those spaces that remain in joint public-private ownership, the parking revenues could be shared proportionately.

The revenue from parking meters is only a secondary benefit; the more important factor would be the town's ability to manage the complete stock of public parking spaces for maximum convenience to visitors and businesses with the minimum of additional impact on peak season road congestion. Other benefits of these negotiations may be the ability to reduce some of the conflict points caused by the current number of driveways, and more pooled parking spaces (rather than spaces reserved exclusively for individual businesses). The Chamber of Commerce or the Main Street program could play an important role in this kind of planning, for instance brokering in-kind donations such as shared or combined parking and driveways as another way to meet parking demands for expanding businesses, or arranging valet parking with expenses apportioned among participating businesses. The public would benefit by reducing the vast expanses of asphalt that make walking from place to place more difficult. Other types of shared parking can also be used, as will be discussed later in this appendix.

Parking Garages at Times Square

Parking demand at Times Square results from the high demand for beach parking plus the needs of many local businesses which have little or no parking of their own. Based on the 1993 parking inventory, the consulting firm of Wallace Roberts & Todd (WRT) concluded that only those parking facilities located closest to the beach are highly utilized, and that any deficits exist only during a relatively short 3–4 month peak season. They questioned whether parking utilization during a 3–4 month season was sufficient to justify a publicly financed parking garage. They suggested if a garage were to be built, it should be built *behind* new buildings on Old San Carlos, either near the existing La Playa lot at the foot of the bridge or across Old San Carlos next to Snug Harbor.

The demand for beach parking changes greatly depending on the season. Even unconventional spaces are used to meet short-term seasonal demands, for instance front yards, empty lots, and underutilized business lots. In all likelihood, any additional parking spaces that can be provided will be consumed during the peak season if they are close enough to popular beaches. But each extra vehicle that is driven to Fort Myers Beach during the

peak season adds to the existing congestion. Parking spaces quite a distance from the beaches, especially if on the mainland and served by trolleys, are less likely to be used, but are far better from the standpoint of congestion and improving the pedestrian environment; the difficulty is in making them convenient or appealing enough to attract more than occasional users. Extra on-island beach parking can work directly against the success of off-island parking and public transportation. In fact, many communities find that a moderate parking shortage reduces unnecessary car trips and encourages walking and the use of public transportation.

An on-island parking garage is often promoted as a way to reduce traffic congestion by getting drivers in search of parking off of the road. Countering this benefit, however, are the *additional* drivers who had been dissuaded from driving to Fort Myers Beach by the legendary parking shortages. Whether the additional drivers would more than offset those previously circling the island in search of parking cannot be assessed through any simple analytical technique. The possibility, however, suggests caution in advocating a parking garage, especially if it adds additional parking rather than replacing existing spaces.

A critical point is that a parking garage and its surrounding travel pattern must be considered together. For instance, a garage at the foot of the Matanzas Pass Sky Bridge combined with an extra incoming lane on the bridge would have different impacts than a garage at the same location with today's single incoming lane.

Shared Parking at Times Square

In place of a garage, the WRT study recommended 165 more on-street parking spaces to serve beachgoers and area shops (although some of these spaces would offset the loss of spaces at Lynn Hall Park to accommodate an expansion of the beach and a proposed amphitheater). Some of the spaces would be diagonal and some would be parallel, depending on right-of-way widths.

In addition to the new on-street spaces, WRT suggested creating a reservoir of shared interconnected parking to the rear of businesses along Old San Carlos (as shown in Figure 22). Patrons of any businesses along Old San Carlos could park in any available spaces, taking advantage of the differing hours of businesses to make better use of available parking. Each business would not need to provide for its peak parking demand on its own site.

Retail space, offices, and residential units would be built up to the right-of-way line of Old San Carlos. This would improve the pedestrian character of the street by replacing individual front parking lots with continuous storefronts, broken only by some driveways to the shared parking behind (as shown by arrows in Figure 22). This concept has not been implemented to date; it will be a difficult undertaking that requires the co-operation of area landowners. The town needs to assess the feasibility of this approach in the very near future and either make it happen through direct actions or allow it to happen by modifying the land development regulations. If this approach cannot work, or does not through inactivity, the much more risky and expensive (and in many ways less desirable) alternative of a large parking garage may become essential.

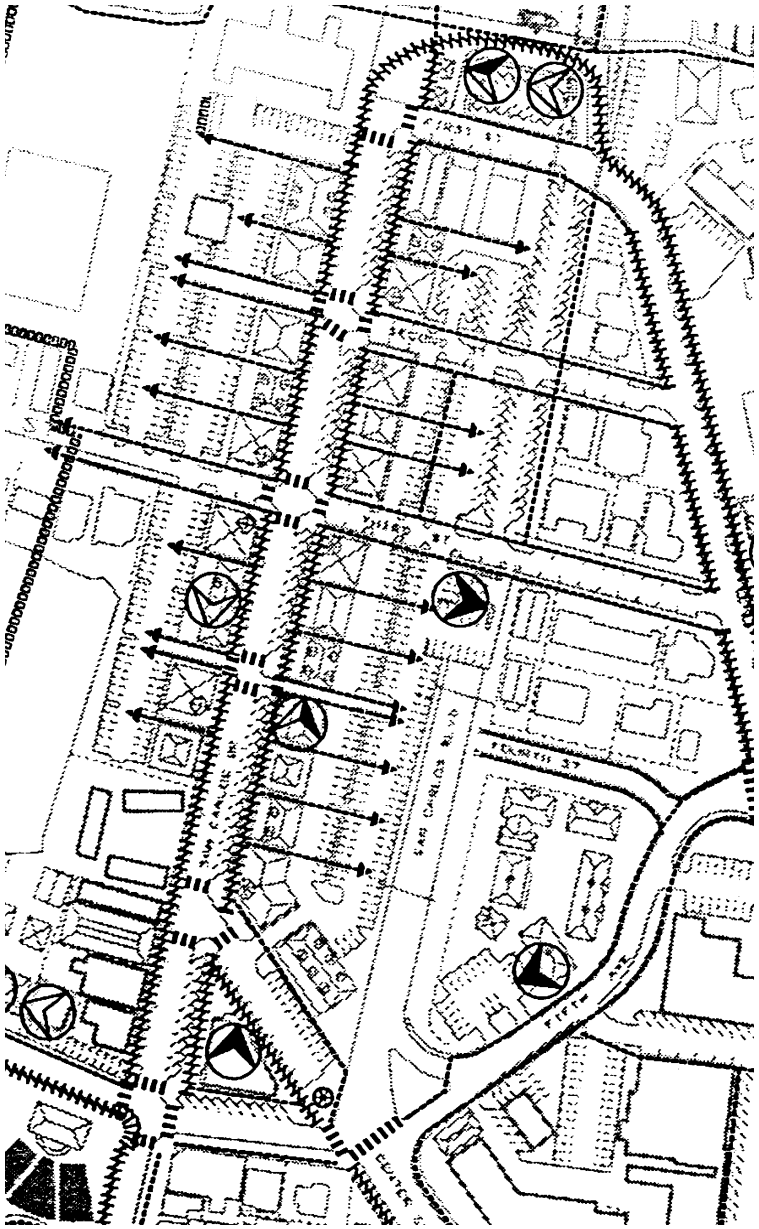


***Figure 22**, WRT master plan, with arrows showing access from Old San Carlos to shared parking lots behind buildings*

It has been widely demonstrated that combinations of land uses require less parking than the same land uses in free-standing locations. Shared parking is ideal when businesses are relatively small and are clustered closely together, as in the Times Square area. An excellent example is the paid parking lots along Las Olas Boulevard in Fort Lauderdale (see Figure 23), which are located behind a thriving business district that faces wide tree-lined sidewalks (see Figure 31). Another example is the free joint parking lots located behind stores in the main business district at Celebration (near Orlando).

***Figure 23**, Sign advertising shared parking behind stores along Los Olas Boulevard in Fort Lauderdale*

Auto use is influenced by factors such as travel distance, trip purpose, convenient parking, parking fees, and transit service. Fort Myers Beach can capitalize on its existing pedestrian environment by making walking easy and pleasant, which is rarely compatible with huge parking lots serving a single business.

The Economics of Surface Parking and Parking Garages

When assessing the economic viability of a parking garage, land cost is often a primary factor. As land costs increase, it becomes economically more feasible to expand parking vertically in a garage rather to expand horizontally by acquiring more land for surface lots.

The cost of building a parking garage varies widely depending on topography, structural requirements, architectural efforts, revenue control devices, and other uses in the building. If land costs are not included, the cost of building a parking garage is about four times the cost of a surface lot. If the land cost is included, the figures can change dramatically. In 1996, the International Parking Institute estimated that new parking garages cost between $4,500 and $15,000 per space, excluding land costs. Surface parking lots can often be built for $1,500 per space (for paving, drainage, marking, signing, and lighting). A 1988 study by McCarthy Parking Structures reported land costs of at least $15 per square foot as the lower level for considering a parking garage. (It should be noted that these land values are somewhat dated and were most likely based on a survey of moderate to large cities.) Land values reported by the Lee County Property Appraiser often don't reflect actual market values, but they do indicate that this value is often met near Times Square. But given the number of vacationing visitors and the economic upswing in progress at Fort Myers Beach, a garage may not prove to be the most economic use of property, especially if it were a single-use building rather than a mixed-used complex that can take advantage of the strong year-round economy.

A private landowner would consider many factors before deciding whether to build either a garage or surface parking. These would include zoning, financing, taxes, alternative uses for the property, the potential for mixed uses, the characteristics of parking demand, security, and operation/maintenance expenses.

Since parking garages are not attractions themselves but merely facilitate trips to other destinations, primary locational considerations must be the walking distance for the patrons (or transit connections) plus access and post-construction traffic circulation.

Another factor to be weighed is the existing surface lot under the Matanzas Pass Sky Bridge. During recent surveys, it has not been filled to capacity during peak periods, perhaps due to its distance from the beach or its lack of visibility. Given the high demand for parking at Lynn Hall Park, there is an opportunity to reduce the number of spaces at the park and make better use of these other existing parking spaces (and a parking garage if one is built). Lynn Hall Park could be used more as a real park than as a parking lot.

If a landowner wished to build a parking garage entirely at his own expense, the town would still have considerable control through the zoning process. Public parking garages are permitted only if a "special exception" is granted by the town.

Parking garages are often better served by market forces than government initiative. Given the town's financial position and the strong local economy, this is especially true at Fort Myers Beach. However, combined public/private opportunities may be worth exploring. If public-sector powers were required to assemble land, a landowner might be willing to build the garage at his own expense and operate it for a period sufficient to recover their costs. After that time, the town would own the garage and could operate it directly, sell it, or contract out its operation.

Local experience with parking garages is mainly those built by government but operated by private entities. In downtown Fort Myers, the Main Street (old) and Monroe Street (new) parking garages in downtown Fort Myers can serve as case studies of parking garage design, construction, and operation. The Monroe garage near the Harborside convention center includes 5,800 square feet of retail space abutting the sidewalks along Monroe

and First Streets. Despite the initial cost of increasing the ceiling height to 13 feet and adding mechanical ventilation to maintain air quality in the garage's ground level, the retail space is a plus for downtown Fort Myers, making the garage's frontage a part of the city rather than a place to be hurried past. The retail space may also prove to be a good business investment for the city of Fort Myers. Both garages can be expanded by two additional levels to meet the market demands. Table 7-A-7 provides size and cost data for building both garages.

Table 7-A-7 — Fort Myers Parking Garages

	Main Street (old)	*Monroe Street (new)*
Year Built	1988	1996
Square Footage (all floors)	180,000	180,000
Land Area	1.34 acre	0.88 acre
Land Cost	$9/SF	$11/SF
Number of Floors	4	5
Number of Parking Spaces	571	550
Retail Square Footage	0	5800
Number of Storefronts	0	7
Total Construction Cost	$3,400,000	$6,200,000
Retail Construction Cost	n/a	$700,000

These garages were financed with revenue bonds plus $1,500,000 in cash from the city's general fund. The equivalent debt service is nearly $800,000 per year. Operating and maintaining these garages cost an additional $135,800 last year. In contrast, revenues from parking fees last year, the highest year ever, amounted to less than $200,000. There are several reasons for this relatively poor financial performance: the new federal building will be a major tenant but hasn't opened yet; many of the city's 870 parking meters are less expensive than the garages; and garage rates are themselves quite low, averaging $40 per month per space. The garages were built to support downtown redevelopment, not as direct revenue sources. This year Fort Myers has begun to manage the on-street parking meters and the garages together; meter charges will double at many locations, which should increase usage in the garages. The main lessons for Fort Myers Beach are the enormous costs of building and operating parking garages, and the need to manage parking meters and parking garages together so that both support the municipalities' redevelopment goals.

Parking Rate Structure

When the private sector controls the supply of public parking, parking rates are effectively set by the market. Individual operators adjust their prices so that a small number of spaces are always vacant and ready to accept new customers. This strategy has great merit in big-city downtowns, where parking operators are very sensitive to emerging shortages of parking and are prepared to build more parking lots or garages as soon as merited by demand.

Traffic congestion at Fort Myers Beach adds another dimension to parking discussions. Parking rates, and even the easy availability of parking, are closely related to road congestion because the difficulty in parking discourages some people from driving (or from driving in separate cars when alternatives are available). Parking supply and rates can be manipulated for purposes far broader than maximizing revenues and the number of parking spaces. The town can play a direct role in managing parking in publicly owned lots. Equally important is its indirect role through its parking requirements for new or expanding businesses, and through the rezoning process for new privately owned parking lots that are open to the public.

Changes to the rate structure can even apply to parking lots *not* managed by the town. One such change is a special tax on parking (if legally permissible). Parking taxes are usually imposed to generate additional funds, which they often do by

causing an increase in parking rates. If this increase changes travel behavior and discourages individual car trips, the effects on road congestion may be positive, even though less revenue than anticipated might be collected. At Fort Myers Beach, road congestion and parking availability are more important than parking revenue, so a parking tax is not likely to be the best way to manage parking.

There are a number of ways that the town can *directly* control the parking rate structure, although these will only directly affect publicly owned lots. Rates could be manipulated to encourage a specific type of behavior, such as the use of van pools or car pools. Rates could also be graduated to encourage more subtle changes in behavior; for instance, graduated rates could favor short-term parking; or lower rates can be charged for the less convenient parking lots; or higher rates could be charged for arrivals or departures that coincide with the busiest periods. The rate structure does not need to be so extreme as to affect the behavior of all or even most users; it can be effective if even a small number of users arrive before or after the peak period, or select the less convenient lot, or car-pool rather than driving separate cars.

Governments sometimes have comprehensive policies to encourage the use of high-occupancy vehicles (as discussed later). A number of these jurisdictions have also adjusted prices in public parking lots to favor carpools and van pools. Car pools can also be given discounted rates in on-street metered spaces reserved for their use. Parking surcharges during peak hours or the peak season can also encourage motorists who drive alone to the beach to use public transit or to car pool, thereby freeing up scarce parking spaces.

An important benefit to experimenting with changes in the parking rate structure is that rates can be easily modified if they don't work, or if they have unintended consequences. For example, if the town were to substantially increase the short-term parking rates in public lots, several different outcomes are possible: people may continue to use the facilities as before and pay the higher rate; some may leave their cars at home and travel to the beach in a different mode of travel; some may park in park-and-ride lots and walk or ride with trolley; others may stop making trips to the beach altogether. If trips to the beach decline dramatically during the peak season, the benefit of the rate increase would probably be outweighed by the loss of public accessibility to the beaches and damage to local businesses and the tax base. The increase can simply be adjusted or rolled back.

Another idea would seek to use parking demand to minimize the effects of the many parking spaces which require drivers to back directly into the most congested portions of Estero Boulevard. Some of these spaces might be reserved for those who commute via high-occupancy vehicles. The benefit would be two-fold, rewarding those who don't commute in a single-occupant vehicle and reducing the number of parking maneuvers along critical sections of Estero Boulevard. Unfortunately, many of these parking spaces are very important to adjoining businesses who would not want their customers to lose the most convenient parking spaces.

Lee County is beginning to use "transponders," a technology that is well suited to variable pricing in parking lots. These small devices are mounted in cars and automatically deduct tolls without vehicles ever stopping at bridge toll plazas. These devices can easily be programmed to adjust the tolls based on the exact time of day; in Lee County's pilot program, tolls during off-peak hours will be reduced to encourage some people to avoid crossing the bridges during commuter rush hours.

The county does not plan to use transponders on the Sanibel Causeway because there is no commuter rush hour. Because travel patterns on Sanibel are similar to Fort Myers Beach, this technology may never be used for managing demands on beach roads. But the technology itself has promise for variable pricing

and general efficiency whenever vehicles must pay a fee. This technology is not limited to regular users, as motels and timeshare resorts could loan transponders to their guests.

The most effective parking rate changes are those that can achieve important community objectives, such as relieving congestion, encouraging walking and public transit, and strengthening local businesses. As a general rule, the Times Square area would be most affected by changes in parking prices and availability.

Implementing Shared Parking

The redevelopment plan for Times Square and Old San Carlos calls for shared parking behind buildings and new on-street parking. The shared parking will require extensive cooperation between property owners, and the on-street parking will require major public expenditures to install. Business people who wish to begin implementing the redevelopment plan now are faced with conventional on-site parking requirements that run counter to the pedestrian-oriented concept behind the redevelopment plan.

The redevelopment overlay district adopted by the town provides some relief, and some businesses have obtained variances from the conventional parking requirements. Without a clearer path during this interim period, however, the town may lose some opportunities to see its redevelopment plan move forward with private financing. Some alternatives are:

- Modifying development regulations to make it easier for businesses to substitute private arrangements they may be able to make for nearby (but not on-site) parking.
- If a parking garage is built, businesses could purchase some of its capacity (not necessarily specific parking spaces) for their customers.
- The town could act as a catalyst for the WRT shared parking concept. This could be done by *requiring* new development along Old San Carlos to design their sites to accommodate shared parking, or by actually acquiring key easements, or even building public parking lots in the suggested configuration.

Faced with similar situations, some resort communities charge a fee in lieu of on-site parking and use the proceeds to build public parking lots. Miami Beach has been charging $5,000 for each parking space *not built* along popular Ocean Drive, and then building public parking garages to meet the parking demand. (Since a parking garage cannot be built this cheaply, the city pays the remainder of the cost.) The city of Hollywood is instituting a similar approach in their more urban areas.

This concept is fairly easy to institute, and may be seen as favorable by businesses without space for on-site parking lots. The difficulty is raising *enough* money to build an entire parking facility, which can be costly in small increments.

Despite some obvious disadvantages of small parking lots (higher cost per space, extra traffic caused by those searching for a parking space), a number of small public lots may be a more desirable parking solution than one large lot. Large lots are inherently hostile to pedestrians (although good design can make them less so). Small lots can be surrounded by garden walls or hedges, yet because of their size drivers can quickly see if any spaces are available.

Regardless of size, public parking needs to be fairly convenient for users, yet not placed in the center of pedestrian activity. This is the reason that WRT suggested shared parking *behind* new shopfronts along Old San Carlos. Those heading for the beaches would walk along Old San Carlos, rejuvenating it as a public place. For the same reason, a parking garage would be better if placed on the site of the existing cruise ship parking lot next to Snug Harbor, instead of at the foot of the bridge. The Snug

Harbor location would also have the advantage of interfering less with the majestic view of the Gulf of Mexico that now greets motorists as they cross the Matanzas Pass Sky Bridge.

An easily-overlooked component of a rejuvenated pedestrian zone is an adequate loading zone for delivery vehicles. Unless deliveries can be completed very early in the morning, delivery vehicles will interfere with pedestrian and traffic flow, as is the case at present at Times Square and the Villa Santini Plaza. The probably solution to this dilemma at Times Square is an off-site waiting area for delivery trucks, with merchandise shuttled to individual merchants on hand-trucks. At the Santini Plaza, a redesign of the entire complex could include an adequate loading area for all merchants.

Transportation Demand Management

The concept known as "transportation demand management" (TDM) attempts to reduce the number of single-occupant vehicles during peak traffic periods. Potential measures can be grouped into three categories:

- Strategies that eliminate trips completely;
- Strategies that accommodate existing trips in fewer vehicles; and
- Strategies that move trips before or after the most congested periods.

TDM strategies for Fort Myers Beach would be directed to three somewhat distinct groups. One is island residents who commute to jobs off the island; another is employees of island businesses who live on the mainland. The third group is seasonal residents and tourists who are not likely to be employed during their stay.

The purpose of TDM is to curb demand without reducing personal mobility, while providing alternate travel means to offset peak period congestion. It tries to use transportation more efficiently as an alternative to "building our way out of congestion." The goal is to reduce the number of vehicles using the road system during peak periods while providing a wider range of mobility options to those who wish to travel.

TDM provides alternatives to driving alone and techniques to encourage their use. These alternatives must be customized to the problem at hand; techniques that work well in major urban centers may not fit Fort Myers Beach.

Some common TDM strategies include:

- **Matching services**, to connect commuters interested in ridesharing with others on similar schedules;
- **Transit promotion**, which can include a free trolley pass instead of a free parking place;
- **Alternate work hours**, with flexible shifts or shifts that are staggered to avoid peak travel periods; and
- **Non-motorized mode program**, where employers or motels provide sidewalks, bicycle racks, showers, or lockers to make non-motorized travel convenient for commuters or guests.

TDM techniques are often implemented by individual large employers (often to meet government mandates to reduce peak-hour trips). Tourism and the hospitality industry are the largest employers at Fort Myers Beach. Since many jobs in this industry are low-paying, there are opportunities to reduce vehicle travel while providing a valuable service to employees by providing transportation between the workplace and off-island locations (such as interceptor parking lots, or major bus transfer points). Some employers already provide this kind of service to attract employees who live as far away as Fort Myers.

TDM strategies often include:

- new or improved modes of transportation;
- financial or time incentives for the use of these alternative modes (for example, compensatory time for those not commuting alone);
- supporting activities that make the use of alternative modes more convenient or to remove impediments to their use; and
- marketing activities to promote these modes.

The effectiveness of TDM often depends heavily on the level of participation by employers. The development of effective TDM programs should be approached as a major public/private partnership.

Of greater complexity, and perhaps importance to Fort Myers Beach in the long run, is the development of "congestion avoidance" strategies to preserve the capability of the transportation system to handle *future* travel demands. Congestion avoidance strategies traditionally fall into two broad categories:

- **supply-side**, by building significant additional road capacity, such as widening Estero Boulevard and building new bridges, or
- **demand-side**, by implementing land use/growth management policies that tie land use densities/design to transportation systems demand capability.

Trip-making patterns, volumes, travel mode choices are largely a function of development patterns. The town's control over the trip-generating characteristics of the land use (such as the density of development) could be used to make the resulting travel demand consistent with the transportation infrastructure and the desired level of service.

TDM programs could be an integral part of comprehensive planning for Fort Myers Beach, providing cost-effective transportation improvements that reduce or alleviate traffic congestion. These improvements can include expansions of the sidewalk/bicycle path network or water shuttle facilities such as docks and waiting areas, and intangibles such as improved trolley service.

The new comprehensive plan could explicitly lay out long-range congestion-avoidance strategies to deal with future development and its impact on travel. Despite the limited vacant land at Fort Myers Beach (about 120 acres, or only 8% of the total land), the redevelopment potential is substantial enough to merit an aggressive TDM linkage. Providing mobility in such a context requires innovations, coordination, and both short- and long-term perspectives in planning.

Some TDM strategies have proven effective in attracting commuters as well as visitors from single-occupant vehicles, but their effectiveness is always limited by the users' awareness, ability to use, and willingness to use these alternatives. Driving alone is such a long-standing habit that few even think of trying an alternative without encouragement and assistance. Fort Myers Beach has the dubious advantage of so much peak season congestion that TDM strategies won't seem unrealistic or more of a constraint on freedom than sitting in traffic.

TDM strategies can become practical when combined with supporting activities that make the alternative more pleasant and convenient, or reduce the need for a personal automobile for other purposes during the trip (such as personal errands). By themselves, these activities would be costly and have little chance of success; in concert with aggressive promotion of TDM strategies, they can make change travel behavior in ways that benefit individuals and the community.

Supporting Activities

Although Fort Myers Beach is more oriented to pedestrians than most newer communities, many of its attractions were designed with the expectation that most people would arrive by private car. This expectation often becomes self-fulfilling because the site design or linkages with other activities do not accommodate the needs of those without a car. The correction is to provide "rideshare-friendly" site design, plus services for those without cars. Site design should include accommodating the safe maneuvering of trolleys, convenient and pleasant transit stops and shelters, bicycle racks, and showers/lockers for bike commuters. On-site services such as childcare, ATMs, convenience goods, and laundry service can minimize the true and perceived need for a private car.

Another program that is crucial to the success of a TDM program is the guarantee of a ride home, if necessary by taxicab. This service addresses the two main factors that hinder TDM programs: the fear of being stranded in an emergency, and the fear that ridesharing hinders the time flexibility that a job may require. This idea can be extended by the lodging industry to their visitors.

Because of the important role that businesses must play in TDM programs, the "Main Street" program or other public-private partnership could be the vehicle for coordinating the efforts of businesses with those of government. Even smaller businesses can be involved in one of the most critical activities will determine both the town's economic viability and its livability.

TDM Marketing

Potential users must be made aware of the availability of TDM programs and encouraged to try them. This will be difficult at Fort Myers Beach because so many motorists are just visiting.

Marketing efforts begin by disseminating information on available TDM services and incentives. This information can be directed to the public at large by mass mailings; newspaper, radio, and TV ads; and roadside signs. It can also be targeted to specific markets (such as in travel pamphlets, or to arriving visitors).

Marketing can also include personalized trip planning assistance by telephone or through information centers at strategic locations. The Fort Myers Beach Chamber of Commerce and the TDC welcome center volunteers could be trained to take on this responsibility.

In addition to general and on-demand information on TDM strategies, TDM marketing often includes special promotions such as contests, prize drawings, and other activities to attract the attention of commuters and visitors, generate excitement about the alternative modes, and reward those who begin to share rides. The effectiveness of TDM would be increased with the following ideas:

- **Information materials** should reflect the characteristics and attitudes of potential users. For visitors, stress their appreciation of the coastal environment; why sit in traffic while on vacation?; leave your car at home and travel by boat; etc. For commuters, stress practical matters such as less wear-and-tear on their car; cost savings, companionship during the trip; etc.
- **Promotions** should be scaled to the target population (e.g. regional information campaigns for potential visitors; direct distribution to employees and motel guests; van-pool information targeted to long-distance commuters; and bicycle information to nearby commuters).
- **Marketing** should be highly visible and continuous to reach visitors and new residents.
- **Information centers** should be easily accessible and staffed by people with some training in TDM strategies.
- **Pilot programs** should be encouraged for untested TDM strategies to evaluate their effectiveness and to estimate costs.

Improved Management of Traffic

When it is not feasible or desirable to add enough lanes to avoid congestion, TDM is often used in conjunction with techniques to better manage the flow of traffic on the existing road system. Like TDM, a traffic management system must be custom-made to respond to local conditions. Potential elements in such a system for Fort Myers Beach might include:

- *Adding a third (reversible) travel lane*
- *Preference for high-occupancy vehicles*
- *Traffic calming*
- *Redevelopment of major activity nodes*
- *Reducing intersections onto Estero Boulevard*
- *Improved law enforcement*
- *Innovative signage*
- *Tolls on bridges*
- *Funding for road maintenance and improvements*

Each of these options are discussed in the following sections.

Adding a Third (Reversible) Travel Lane

One alternative to be considered is providing a third lane of traffic in the direction of highest traffic flow. Under this configuration, the existing pavement could be used in its current width (or with slight widening) to increase its traffic-handling capacity, without converting Estero Boulevard into a four-lane highway.

Arterial roads are usually operated with an equal number of lanes in each direction, and with no lane serving traffic in different directions in different hours. Yet travel patterns are rarely equal in both directions at all hours of the day. This condition typically "wastes" road capacity, particularly in a bottleneck situation.

Reversible lanes have the potential to make more efficient use of roads with uneven travel patterns. Reversible lanes are not uncommon on commuter routes in major cities where additional road capacity cannot be provided. One lane (usually a center lane) is designated for one-way travel during certain hours of the day, and in the opposite direction during other hours, with the directions selected to provide an extra lane in the dominant direction. The outer lanes provide normal flow at all hours of the day. Another method is to make a two-lane street operate one way only during the peak period. The first method will be evaluated below, since there is a third lane already in existence on Estero Boulevard and a fifth lane on San Carlos Boulevard.

Reversible lanes can increase peak-period capacity of a road with minimum capital expenditures by converting unused capacity for use in the direction of heavier flow. The system is particularly effective on bridges or anywhere that additional capacity via construction would be cost-prohibitive. There are however, disadvantages including operational problems at each end of the reversible lane; difficulties in enforcing of lane-use regulations; potential interference with emergency vehicles; loss of left-turn lanes; increased safety hazards; and unsightliness of lights and/or barriers that would be required. These disadvantages would be especially problematic at Fort Myers Beach because so many tourist use the roads and would be unfamiliar with the reversible pattern, and because left turns are required to obtain access to many streets and private properties.

There are several factors that can cause reversible lanes to be warranted (meaning they would meet the objective of a short-term increase in directional flow without adverse impact on operational characteristics such as the ability of other motorists to make left turns):

- Evidence of congestion;
- Time of congestion;
- Ratio of directional traffic volumes;
- Capacity at access points; and
- Lack of alternative improvements such as a parallel route

The Matanzas Pass Sky Bridge and Estero Boulevard may meet most of the above criteria during the peak season except for the inadequate road capacity near Times Square. The breakdown lanes appear to provide the necessary width for a reversible lane, and the directional difference in travel volumes may be adequate during certain hours.

If a reversible lane is warranted (including approval by FDOT for the sky bridge) and found operationally feasible, the method of designating lanes to be reversed and the direction of flow must be selected. There are four possible methods of designating lanes:

- Suspended lighted signals over each lane, typically indicating yellow during transition periods and red when oncoming traffic will be using that lane (spaced perhaps 500 feet apart);
- Permanent signs advising the motorists of regulation and hours of operation;
- Portable barriers to discourage passing (similar to those used at the Cape Coral Bridge toll plaza); or
- Adjustable barriers that rise from the pavement when needed (as used on Lake Shore Drive in Chicago) or are moved back and forth with special vehicles (as on the San Diego Coronado Bridge).

A reversible lane could be provided on San Carlos Boulevard; on the sky bridge; on Estero Boulevard; or all three. San Carlos Boulevard has a fifth lane, now used as a two-way left turn lane, from Summerlin Road to the sky bridge. (However, there are efforts underway to introduce raised medians at some locations to eliminate the misuse of this lane as passing lane.) A segment of the center lane could be converted to a reversible lane, at least from the Hurricane Pass Bridge through the Prescott/Buttonwood intersection to the sky bridge. The Matanzas Pass Sky Bridge itself has 40 feet available for vehicles, which would need to be restriped to accommodate three 11-foot travel lanes and 3½-foot striped shoulders (in place of the current 12-foot travel lanes and 8-foot breakdown lanes). The existing barrier-separated sidewalk on the south side of the bridge cannot be incorporated into the travel lanes because of structural problems; however, an additional suspended sidewalk might be possible to replace the breakdown lanes that are now used by bicyclists.

The third lane on the sky bridge could then tie into the existing three-lane section of Estero Boulevard. It could continue to the south either to just past the public library, or as far south as Buccaneer Drive. If extended beyond the library, the existing paved shoulders from Bay Road to Albatross Street would be eliminated to leave room for three 11-foot travel lanes.

It is not clear whether a reversible lane would have enough benefits to offset the inevitable operational difficulties. The directional patterns of current traffic at Fort Myers Beach is shown in Figure 23. Between 1:00 and 7:00 P.M., traffic levels are almost evenly split in each direction. The potential for a reversible lane would be in the morning hours, when traffic is heavier onto the island, and possibly again in the evening for traffic leaving the island. Reversible lanes must be pursued with utmost caution because of the unfamiliarity of visitors with the area; also, the absence of the two-way left may bring about maneuvers that causes substantial delays. A pilot project could be tried prior to peak-season conditions to experiment with operational problems and to assess local reactions to reversible lanes.

A variation on reversible lanes would be to create an extra lane onto the island only from the Hurricane Pass Bridge to Times Square. Under this scenario, the center lane would continue onto Estero Boulevard southbound; the right-hand lane would be forced to turn right only. This configuration would provide quicker access to the north end of the island, and would be

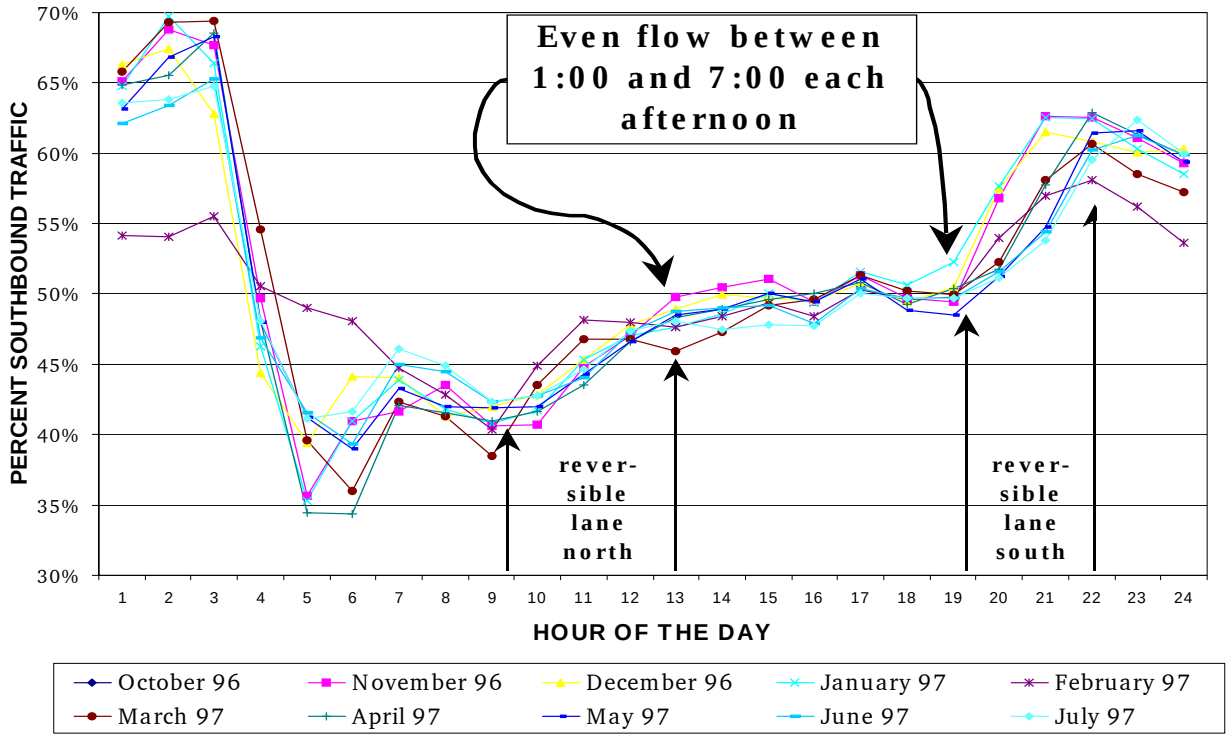


***Figure 24**, Percent of southbound traffic on Estero Boulevard at Donora*

especially suited to providing direct access to a parking garage located at the foot of the sky bridge. Problems would include drivers attempting to circumvent this lane's purpose by merging into the center lane on the bridge, or circling under the bridge and re-entering Estero Boulevard southbound from Crescent Street. This plan would also attract more cars to Estero Island without creating any more road capacity on the island itself.

Reversible lanes can also operate as high-occupancy-vehicle (HOV) lanes, although that may defeat the purpose of increasing the traffic-carrying capacity of the road. The center lane could be operated as an HOV lane, limited to vehicles with two or more passengers, for example inbound from 7:00 A.M. to 2:00 P.M., outbound from 2:00 P.M. to 9:00 P.M., and two-way left between 9:00 P.M. and 7:00 A.M. This subject will be discussed further below.

It should be noted that Fort Myers Beach traffic patterns, ironically, have achieved a plateau of even traffic volumes throughout the day. A plateau is the *objective* of most congestion mitigation programs, which seek to "flatten" the traffic peaks which usually occur in the morning and evening rush hours. The problem, however, is that the plateau at Fort Myers Beach occurs at the absolute peak capacity during the winter, in effect converting the entire day into one long "rush hour."

Before embarking on any pilot projects, these concepts should be studied further in conjunction with other strategies suggested in this appendix.

Preference for High-Occupancy Vehicles

In recent decades, highway lanes have been designated for the exclusive use of "high-occupancy vehicles" (HOV) near major cities. Their purpose is to improve the speed and convenience of buses and to provide an incentive for car/van pooling in congested areas.

HOV lanes are usually built in addition to the existing mixed-use lanes (in some cases, though, new HOV lanes have been built but later converted to standard lanes). Sometimes HOV lanes are created by converting a standard mixed-use lane. If an HOV lane on a congested highway is converted from a mixed lane, it must be heavily used by mass transit vehicles or car/van pools, or its advantages would be offset by the loss of the existing lane. Some HOV lanes allow vehicles with as few as two occupants, making HOV lanes more politically acceptable but much less

valuable for encouraging mass transit use.

Due to obvious physical limitations of the current right-of-way, an HOV lane on Estero Boulevard may have to compete for the same center lane as the reversible lane discussed previously. Further study would be needed to determine the relative feasibility of each concept independently (and the possibility of combining the two functions).

HOV lanes can be operated in different ways:

- ***Reversible/Directional Facilities:*** An extra lane can be reserved for HOVs traveling in the direction of the busiest traffic flow; this lane works very much like any other reversible lane, with extra signage to indicate the restrictions on single-occupant vehicles; or
- ***Contra-Flow Lane:*** A conventional lane that is normally used by all vehicles for travel in a single direction can be reserved for HOVs during peak periods (provided that another route can be found for vehicles traveling in the less popular direction).

A contra-flow lane is used only in unusual situations. A contra-flow application at Fort Myers Beach might each afternoon dedicate *all* lanes of Estero Boulevard to traffic leaving the island from Crescent Street to the sky bridge, at which point a reversible center lane on the bridge would allow at least two continuous northbound lanes all the way to the mainland. Traffic that would normally use the southbound lane of Estero Boulevard from Fifth Street to Crescent Street would be detoured across Old San Carlos, Third Street, and Crescent Street. (A traffic light would probably be required at Crescent Street to allow these cars to reenter Estero Boulevard.)

A similar contra-flow situation might be tried in reverse in the mornings. If the sky bridge were configured for two southbound lanes, they could both flow onto Estero Boulevard, merging to a single lane just past Crescent Street. Northbound traffic would be required to turn right on Crescent Street to reach Lynn Hall Park and points to the north.

Each contra-flow example poses a number of operational difficulties that would offset some of its effectiveness. To the degree either or both work successfully, they would increase capacity on Estero Boulevard north of Crescent Street, only to reach the same bottleneck that now occurs on Estero Boulevard from Crescent Street to Bay Oaks.

Another possible configuration would merge the reversible-lane and HOV concepts. When two lanes are flowing along Estero Boulevard in the peak travel direction, the outside lane (curb lane) would be designated for HOVs only (trolleys and cars with at least two or three passengers). This separate HOV lane would make travel by trolley much quicker, making it a more desirable option than it is at present.

Since any HOV concept would use roads and bridges that are maintained by the county and the state respectively, their concurrence would be required. Without such concurrence, the town would first have to take over all responsibility for maintaining and operating those facilities.

Prior to their use, HOV lanes must be marked by restriping the pavement. This requires grinding down and removing the existing pavement markings (ideally resurfacing the pavement at the same time so that remnants of the old markings do not show through and confuse drivers, particularly at night or during storms). The new stripes and lane markings are then painted onto the surface.

If an HOV lane is found feasible, publicity and incentives would be needed to educate the public and encourage the use of higher occupancy vehicles. The same would be true for preferential parking for HOVs. See the previous discussion on TDM market-

ing for some general ideas.

Although any promotional incentives for HOV implies a disincentive for single-occupant vehicles, this disincentive may not be strong enough to sufficiently change travel patterns. Merchants in particular would be sensitive to the perception that they are penalizing some of their patrons for driving alone. Participating merchants might pursue this matter through parking surcharges, particularly in conjunction with a shared parking scheme.

Traffic Calming

"Traffic calming" is a concept that recognizes the importance of streets for all modes of travel, not solely for cars and trucks. Pedestrians and bicyclists usually must share the same streets, but planning and engineering trends over the past 40 years have placed them at a distinct disadvantage compared to high-speed vehicles.

Most traffic calming efforts have been made in response to residents of side streets who have become upset by cars racing through their neighborhoods to avoid traffic congestion on major roads. In this situation, undesirable though traffic is "calmed" with physical techniques such as speed humps, narrowed lanes, landscaping, traffic diverters, jogs, or traffic circles at intersections. These can be considered "active" traffic calming techniques, which are intended to reduce speeding, or even reduce the capacity of the road, to discourage its use as a shortcut.

In 1992, Lee County adopted an administrative code (11-14) with standards for applying active traffic calming measures in local residential roads. The county is also planning to construct roundabouts on a few collector roads, although these will serve as traffic control devices (replacing four-way stop signs at intersections) rather than for traffic calming. Local roads are seldom used as shortcuts because of Estero Island's long and narrow shape, so this kind of traffic calming will have very limited application at Fort Myers Beach.

There are also "passive" measures that calm speeding traffic. These measures can play a major role in reducing speed without diminishing the number of vehicles that can use the road. Fort Myers Beach has an obvious problem with too-slow speeds near Times Square during the peak season, but excessive speeding is also a problem along Estero Boulevard at other times and locations. With the number of bicycles and pedestrian sharing Estero Boulevard, this speeding is extremely dangerous, especially with the nightlife and bars that are patronized by Lee County residents who then drive themselves home.

"Passive" traffic calming measures do not interfere with the number or continuity of travel lanes in a road (although they sometimes reduce lane widths slightly). Typical techniques include providing curbs and street trees; allowing buildings nearer the road; and creating interesting vistas for drivers. These measure make the road more attractive and usable for pedestrians, and also discourage speeding by ending the resemblance of the road to a rural highway whose wide travel lanes, minimum curvature, and wide breakdown lanes are designed for high-speed vehicles. Passive traffic calming measures have received little attention from traffic engineers; they are not even mentioned in Lee County's formal policy on traffic calming (which only addresses active measures).

The precise design of an intersection can also have a great impact on travel behavior and pedestrian safety. Sharp corners (with a short radius) require drivers to slow down before turning. When the corner has a larger radius, vehicles can turn at faster speeds and crosswalks must be longer, making crossing much more dangerous. Some corners are designed with a channelized turn lane with a very large radius; these are extremely dangerous to pedestrians, although a raised island can be provided as a refuge for pedestrians. Figure 25 illustrates these types of intersections.

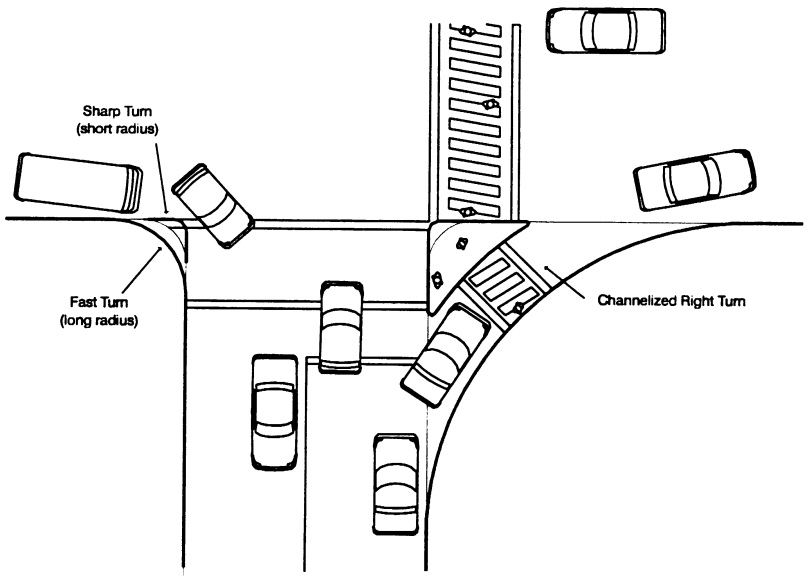


Figure 25*, Examples of pedestrian-vehicle conflicts*

Landscaping and street trees provide a hospitable environment for pedestrians and thus pedestrian-oriented commercial activities. The presence of pedestrians passively calms traffic. Some of the innovative signs that are being tried at Fort Myers Beach acknowledge the presence and the rights of pedestrian and cyclists and also act as passive traffic calming measures.

Motorists understand the nature of a more urban street and tend to slow down, not just for fear of being cited for speeding, but because there are inherent uncertainties about what lies ahead. As a bonus, these roads are more interesting to drive along, even when congestion slows traffic to a crawl.

Some parts of Estero Boulevard, such as from Times Square to the library, already have many passive traffic calming measures (and some active ones such as parking spaces that require backing out, to the detriment of its traffic-carrying capacity). Its passive measures include sidewalks, heavy pedestrian usage, power poles near the road, many buildings near the road, and even the jogs in the right-of-way at Times Square and the library. Extending the Times Square streetscape south of the Lani Kai will have a further calming effect on traffic while better protecting pedestrians from reckless drivers (through the curbs and street trees).

The potential effects of specific traffic calming measures, whether passive or active, should be carefully studied before they are implemented. Actual vehicular speeds can be measured over a period of time to identify the most problematic areas. Then various techniques that will serve other community needs as well can be evaluated for their impact on traffic flow and safety and to ensure that emergency vehicles will retain full access. This type of study can be done for the entire town, or for selected areas that seem particularly dangerous or that are being considered for redevelopment.

Redevelopment of Major Activity Nodes

There are four major nodes of activity along Estero Boulevard: Bowditch Point, Times Square, Bay Oaks, and Villa Santini Plaza (see Figure 26). All four have reasonable access (or potential for access) by trolleys, by sidewalks, and by dockage for boats. Parking issues for Bowditch Point and Times Square have been discussed above. Neither Bay Oaks nor Villa Santini have great surpluses of parking, but parking is adequate for the existing land uses. Any redevelopment within these nodes should be coordinated with promoting access by means other than just cars.

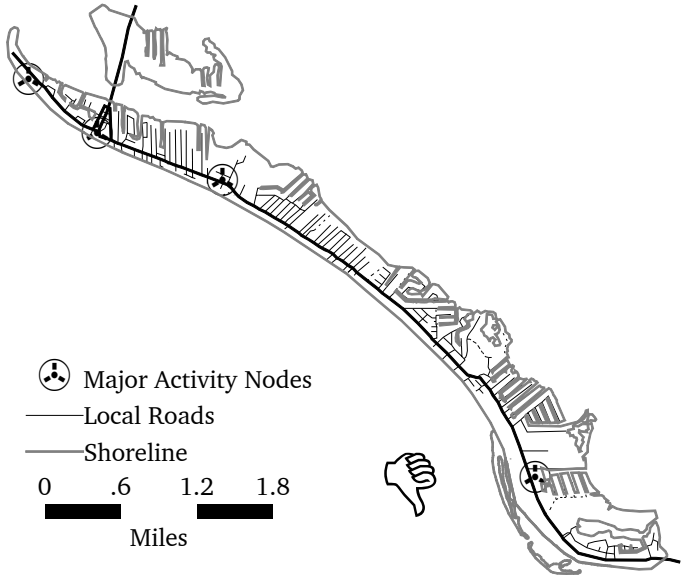


Figure 26*, Major activity nodes at Fort Myers Beach*

For instance, redevelopment areas could have parking limitation criteria by which new trips generated as a result of new or expanded land uses would not result in additional parking (a "no net gain" policy). Good design can often produce this result, as in the previous example (Figure 16) of stores separated from the sidewalk by large parking lots.

For work trips, accessible shower facilities for employees can encourage the use of bicycles. Currently only the Bay Oaks Recreation Center has publicly accessible showers. The showers at Bowditch Point do not lend themselves to accommodating work trip because they are located away from most places of employment.

The town should insist on considering these matters before approving major redevelopment projects. The Diamondhead convention center, for instance, is being built between two of the most important nodes of activity on Fort Myers Beach, and will have great impacts on both. Under current rules, however, no traffic circulation analysis was required except for a determination of whether to build a single turn lane. (Further analysis wasn't required because no rezoning was needed and the number of trips generated in the peak hour fell below a fixed county-wide threshold.) The Town should ensure that its development regulations do not allow this situation to continue.

Reducing Intersections onto Estero Boulevard

An option that may merit further study would be better use of some existing roads that run parallel to Estero Boulevard. Such roads exist at several locations on the Bay side and function as minor collector roads; Shell Mound Boulevard is an example. The purpose would be to reduce the number of intersections onto Estero Boulevard by partially or fully closing some local streets where they intersect Estero Boulevard. The closure could be total, creating a cul-de-sac on the local street; or partial, where right turns could be made in or out, but a median on Estero Boulevard would prevent left turns in or out. Pedestrian passage would never be blocked. Vehicular turns that are blocked would be made on an alternate route whose design would be improved to handle those turns. The intent of these changes would be to avoid some of the conflict points and turning maneuvers that restrict the capacity of Estero Boulevard.

An obvious concern of nearby residents would be increased traffic by motorists seeking to avoid congestion on Estero Boulevard. This can be prevented in a number of ways, such as narrowing the parallel road or carefully selecting the intersecting streets to remain open. For instance, if Madison Court provided a main access to Shell Mound Boulevard (rather than Donora as at present), traffic on Shell Mound might even be lower than today's levels.

Figure 27 shows some candidates for street closure that could be examined in more detail to determine their feasibility. The heavy lines indicate the parallel roads, and the stars indicate some intersections with Estero Boulevard that might be partially or fully closed (see Table 7-A-8). Unfortunately, these intersections are not in the area of greatest congestion on Estero Boulevard (refer back to Figure 5).

Table 7-A-8 — Parallel Minor Collectors

Parallel Collector	*Intersection With Estero Boulevard*
OAK STREET:	
	Gulf Beach Road
	School Street
	Bay Road
SHELL MOUND BOULEVARD:	
	Donora Boulevard *(minor collector)*
	Voorhis Avenue
	Eucalyptus Court
	Madison Court *(minor collector)*
	Washington Avenue
	Jefferson Street
	Mid Island Drive
	Connecticut Street *(minor collector)*
LAUDER STREET:	
	Sterling Avenue
	Aberdeen Avenue
	Lanark Avenue

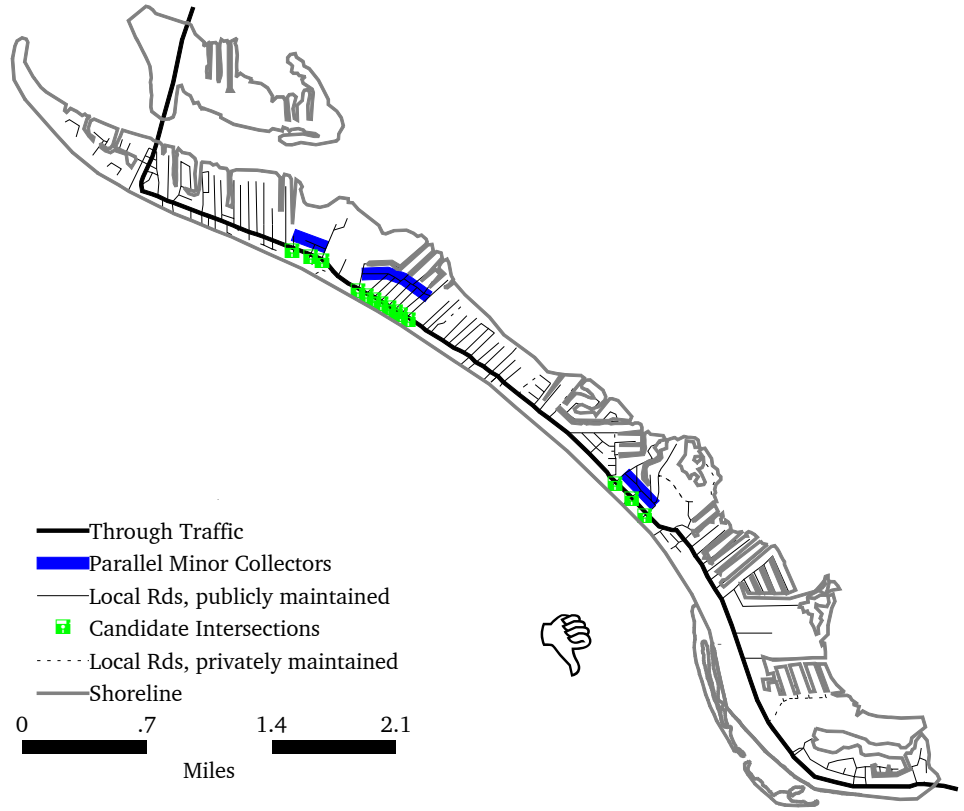


***Figure 27**, Candidates for reducing intersections onto Estero Boulevard*

It may even be possible to acquire land or easements to partially extend some roads parallel to Estero Boulevard. This could improve the interconnection of neighborhoods and allow local and inter-neighborhood trips to avoid Estero Boulevard. Neighborhood attitudes to such changes should be gauged before any extensive work is done on this subject. Attitudes are difficult to predict in advance because street closings and extensions have multiple impacts:

- they may reduce traffic on one street while dumping it on another;
- they may stabilize the residential character of some streets by isolating them from potential encroachment of commercial uses;
- they may be so controversial among neighbors that the discord itself outweighs the potential benefits.

There may also be opportunities for connecting parking lots and shared driveways towards the same objective.

Improved Law Enforcement

The number of traffic violations at Fort Myers Beach isn't documented as higher than other parts of the county, but the town's position as a pedestrian hub of the region makes law enforcement a critical safety matter. Recent innovations such as community policing have demonstrated the value of unconventional techniques such as bike patrols and reintroduced techniques such as mounted police and beat cops. These techniques provide human contact between the police and the community; and the presence of the police at the street level improves law abidance including reduced traffic violations. The future will bring more new techniques and will reintroduce some currently unfashionable ones.

Reckless driving can cause injuries and property damage, and depending on the hour of the crash, can also bring the operation of the road network to a halt. The reduction of reckless driving must be the highest priority if the pedestrian character of Fort Myers Beach is to be retained and improved. Running red lights, for example, has reached epidemic proportions throughout the state. Since there will never be enough policemen to regularly patrol intersections, video cameras have been successfully tried and have shown promising results. However, some courts do not recognize traffic violations that were not personally observed by a deputized officer, precluding the video system from automatically issuing tickets. Two alternatives to resolving this impasse are changes to state law, or having officers personally view the videotape and witness violations after-the-fact.

Parking violations can also become law enforcement issues. Overdue parking meters and the misuse of handicapped parking spaces are the most obvious. But more important parking issues also arise. A major issues at Fort Myers Beach is the towing of cars that are parked illegally on private property. Although this practice is legal as long as kickbacks aren't paid to the property owner, it is a major black eye for the entire community, especially when excessive towing rates are charged along with punitive payment policies. The town has recently adopted an ordinance to control rates and payment policies. The real solution, though, is for the entities doing the towing to recognize that their resource of extra parking can be made directly profitable through parking fees. Towing is hardly the best way to make use of a valuable resource.

Cars may not be towed by a third party from public rights of way unless the car impedes a driveway and essentially blocks a means of egress and ingress. This applies along Estero Boulevard and on side streets. A problem may arise along Estero Boulevard where there is grandfathered on-street parking or zero-lot-line parking, or the common situation where existing spaces are partly on private and partly on public land.

Innovative Signage

In the last five years, improved traffic signs have been placed along Estero Boulevard to emphasize heavy pedestrian use there. In addition, the new "zebra" pedestrian crossings alert motorists of pedestrian crossings, primarily at beach access points (13 out of the 36 beach access points have pedestrian crossings) and more intense commercial and residential nodes (Times Square, Villa Santini Plaza, and Red Coconut RV Park). Their effectiveness cannot be gauged yet but some reduction in injuries and property damage have already appeared. Lee County is now considering new signs that would encourage northbound traffic to use Crescent Street to reach the bridge or the north end of the island.

Hurricane evacuation signs are currently located only at Lovers Lane, Donora Boulevard, Washington Street, and Lenell Road, with the first two directing the traffic towards San Carlos Boulevard and the last two towards Bonita Beach. The point of division is about 2 miles south of Times Square, although no data has been located that would support this split of traffic. The signs at Donora and Washington face traffic from the local roads, while the signs at Lovers Lane face northbound traffic and signs at Lenell face southbound traffic along Estero Boulevard. The location and adequacy of these signs needs to be evaluated now that San Carlos Boulevard and Bonita Beach Road have been widened and any low points on the evacuation routes can be identified. The current division of evacuation traffic should be considered preliminary and subject to further evaluation.

During an evacuation, instructions from law enforcement and emergency management personnel will supersede the signs, but prior to those agencies taking control, opportunities for an early, orderly, and safe evacuation could be lost without proper attention to details such as roadway elevations and properly located signs. Also, the signs provide a constant reminder of the potential danger and general instructions on how best to proceed if evacuation is needed.

Tolls on Bridges

Currently, road maintenance at Fort Myers Beach is divided between the state, the county, and the town. The Florida Department of Transportation (FDOT) maintains San Carlos Boulevard from the signalized crosswalk at Times Square to McGregor Boulevard on the mainland. Lee County DOT maintains Estero Boulevard from the crosswalk south to Big Carlos Pass and beyond. The county has retained maintenance of this portion primarily because Estero Boulevard is part of the county's arterial network and an evacuation route.

The town is responsible for maintaining all other public roads, including Old San Carlos and Estero Boulevard from Times Square north to Bowditch Point. The town does not have its own maintenance crews; it contracts maintenance work to private firms or to Lee County DOT through an interlocal agreement. Under this agreement, the county agrees to provide maintenance as requested by the town at rates that are specified in the agreement. The town and the county have recently extended this agreement through September 1998.

With the recent widening of San Carlos Boulevard and improvements to Estero Boulevard, the routine maintenance costs in the short term will be relatively low. The town could absorb those costs if Lee County and FDOT are willing to relinquish their responsibilities for these facilities. Table 7-A-9 summarizes the maintenance costs for these facilities in 1996.

Table 7-A-9 — Reported Maintenance Costs

Facility	*1996 Maintenance Cost*
Big Carlos Pass Bridge*	$70,000
Estero Boulevard	$37,500
Matanzas Pass Sky Bridge**	$1,000
San Carlos Boulevard***	$45,000

* *Includes bridge tenders salaries*
** *Hurricane Pass Bridge not available individually*
*** *Includes up to US 41 via McGregor/Colonial*

The benefits and costs of such a roadway turnover, however, need to be carefully evaluated. The immediate benefit of maintaining all the roads and bridges within the town would be the ease in decision-making about operational improvements such as traffic signals, speed limits, and reversible lanes. The immediate costs might be similar to those found in Table 7-A-7-A-4, plus the cost of professional engineering assistance.

The longer-term benefit of assuming responsibility would be the ability to implement the town's policies from a focus on "vehicle moving" to "people moving," without having to persuade several other jurisdictions every time an operational change is desired. The long-term costs would include major highway renovation and bridge replacement, including unexpected costs from hurricane damage. Avoiding those costs would be the likely motivation for the state and county to give up their current responsibilities. An independent engineering evaluation of the condition of both bridges would be essential before seriously negotiating over their future.

The turnover of county facilities to the town might be relatively easy due to the county's recent efforts to turn over responsibility for a wide variety of county facilities, especially those in cities, including neighborhood and community park maintenance (such as Bay Oaks) and arterial road maintenance (such as Periwinkle Way and Sanibel-Captiva Road on Sanibel).

The transfer of maintenance responsibility from the state, however, may be more complex. FDOT's general policy disfavors a piecemeal approach to turning over their facilities. Since the sky bridge is part of San Carlos Boulevard, FDOT can be expected to suggest that turnover of the bridge be connected with assuming responsibility for an entire link of San Carlos Boulevard to a logical terminus as far away as Summerlin Road (which is about 3 miles outside the town's boundary).

FDOT proposed a similar approach in 1995 during negotiations with Collier County about placing a toll on the bridge to Marco Island. FDOT cited its formal policy against imposing tolls where they are not needed to repay revenue bonds; this policy is designed to keep motorists from "paying a second time" for a facility that was built with traditional user fees such as gas taxes. However, FDOT will consider exceptions to this policy after examining the effect of tolls on the overall transportation system and how they relate to local transportation planning. (Whenever tolls are in excess of costs to maintain a road or bridge, FDOT uses them for other roads in the same county.) In the Marco Island case, FDOT suggested that Collier County might take over the Marco Island Bridge, but only in a package with all of State Road 951 from Marco Island to U.S. 41 (a distance of 7 miles). Then FDOT policy would not affect any decisions on tolls.

The imposition of tolls has the potential to modify travel behavior as well as be a significant revenue source for transportation purposes. Properly used, tolls can help manage congestion, with toll levels varying by season or time of day. There are potentially suitable sites for a toll facility off the island, but none on the island. Maintaining former county and state roads and bridges could allow the use of tolls if they prove desirable. The impact of tolls on the tourism-based economy of Fort Myers Beach, however, must be carefully evaluated before this possibility forms the basis of assuming additional road maintenance responsibility.

The town may also wish to consider the potential for future annexations in the same discussion on road turnover. For instance, a terminus on San Carlos Boulevard might be negotiated with FDOT in conjunction with establishing a maximum future boundary of the town, or considering the use of the San Carlos Boulevard right-of-way as the required contiguity with the town for land that doesn't directly abut the town's current boundaries. The same issues might arise in taking over responsibility for the Big Carlos Pass Bridge and portions of Hickory Boulevard be-

yond the bridge. The town should not try to impose annexation on any land; voter approval is required in nearly every case. But prudent planning might leave open options for annexation should they ever be in the interest of the town and those currently outside its boundaries. Governmental responsiveness to the needs of coastal communities could become a driving force for annexations in the future.

Funding for Road Maintenance and Improvements

Funds for maintaining and improving roads at Fort Myers Beach can come from gasoline taxes, impact fees paid by new development, and special taxing districts. The town can also use any of their general revenues (such as property taxes) for transportation improvements.

There are two types of gasoline taxes, those charged to motorists statewide and those charged by initiative of the Lee County Commission. Part of each gasoline tax is shared with the Town of Fort Myers Beach.

The state of Florida charges statewide gasoline taxes, 1 cent per gallon of which is deposited in a municipal revenue sharing trust fund (along with a portion of the state cigarette tax). A share of this fund is distributed annually to each municipality based on a complex statutory formula. The Town of Fort Myers Beach will receive about $84,000 from this fund in 1998. About 35% of this amount comes from the municipal gas tax and can be used only for transportation purposes, including transportation-related public safety activities.

In addition to the statewide gasoline taxes, Lee County has adopted a "local option" gasoline tax of an additional 11 cents per gallon. The county is obligated to share a portion of this tax with all of its municipalities. Although state law provides a distribution formula, counties and cities are allowed to negotiate a different distribution by interlocal agreement. Such an agreement has been reached in Lee County, resulting in the distribution shown in Table 7-A-10.

Table 7-A-10 — Division of 11 Cents Per Gallon Local Option Gas Tax

Municipality	*Percentage*
Fort Myers Beach	2.3%
Sanibel	5.0%
Fort Myers	14.0%
Cape Coral	23.3%
Unincorporated Area	55.4%

In 1998, Fort Myers Beach will receive about $575,000 from this source. There is no rational reason for Fort Myers Beach's share to be less than half that of Sanibel (which is of similar size and character as a tourist destination). The town is attempting to renegotiate the agreement for a fairer apportionment of revenue. A new allocation could be based on peak (rather than permanent) population, or the number of vehicles using the roads (both of which would reflect the impacts of tourism better than other measures).

The town also collects road impact fees, having adopted Lee County's road impact fee ordinance upon incorporation. Prior to issuance of building permits, these fees must be paid into a fund that is used to build new roads to offset the impacts of growth. Table 7-A-11 shows the current rates that are charged for several common types of development.

Until late 1997, impacts fees paid by those developing property at Fort Myers Beach were deposited into the same account as all development occurring west of Interstate 75 between Bonita Springs and Fort Myers. A total of $315,000 had been deposited into this account from development at Fort Myers Beach from the date of incorporation through 10-31-97. Lee County and the town are negotiating an interlocal agreement that will turn these funds and future road impact fees over to the town. For budget

purposes, these fees can be expected to total about $150,000 per year in the future.

Table 7-A-11 — Road Impact Fee Rates (Per Dwelling Unit or 1,000 Sq. Ft.)

Land Use	*Amount*
Single Family	$1,712
Duplex	$1,251
Multifamily	$1,075
Mobile Home	$775
Office (<100,000 s.f.)	$1,990
Medical Office	$4,169
Convenience Store	$11,177
Retail (<100,000 s.f.)	$3,297
General Industrial	$1,079

Road impact fees are spent to improve roads in the same district where they are collected; unspent fees are retained for future use within that district. Since no further road improvements are planned by Lee County on Estero Island, the impact fees collected there will always be used on the mainland. Although mainland roads do benefit town residents, mainland traffic causes acute congestion at Fort Myers Beach during the peak season. Lee County only allows its road impact fees to build new roads (and occasionally bike paths); it will not make other types of transportation improvements such as mass transit or parking. The town may wish to establish its own road impact fee program that would allow other means of offsetting the impacts of growth, given the town's intractable transportation problems. Instead of limiting expenditures to new roads, the program may be expanded to cover capital improvements such as improved mass transit, better sidewalks, elevating roads to prevent flooding, and providing off-island parking areas.

In addition to gasoline taxes and road impact fees, the town council can establish a special district within a defined area of the island to fund maintenance and/or capital improvements there. The council is currently considering this concept, sometimes called a Municipal Service Taxing or Benefit Unit, for use in the downtown area. It could fund continuing maintenance of existing and future improvements (such as the existing street lighting district). It can also be used to build specific capital improvements such as underground utilities or sidewalks. Taxing districts usually pay for on-going maintenance with a levy based on the assessed value of property. Benefit districts usually pay for one-time capital improvements, based on the acreage or front-footage of properties being benefitted by the improvement. The council can establish these districts without a referendum.

Roads, even local roads with very little traffic, must be resurfaced occasionally to protect the underlying layers of crushed rock that support the surface layer of asphalt. Lee County has recently resurfaced nearly all roads at Fort Myers Beach, but the next maintenance cycle on local roads will be the responsibility of the town. Well in advance of reconstruction of this magnitude, an inventory of all the roadways and their anticipated life cycle will be needed. Based on that inventory, a phasing schedule can be developed to take advantage of substantial economies of scale. (Generally it is cheaper to advance a scheduled reconstruction by a couple of years so that mobilization costs can be spread across a larger number of roads.)

CAPITAL-INTENSIVE ALTERNATIVES

The transportation options in the previous section could be implemented without acquiring major new rights-of-way. None of these options would "solve" traffic congestion in the peak season; there is so much pent-up demand for driving to the beach that many "partial solutions" would merely encourage additional drivers on the road, offsetting the advantages just gained.

This section looks at more ambitious solutions to traffic congestion, even though they may be widely dismissed as financially infeasible or environmentally questionable or unsound. These options are worth examining for many reasons, including the possibility of redesigning the traffic circulation network if a major hurricane destroys major parts of the existing network. The options to be examined include:

- a new bridge to the mainland (at four different locations);
- the four-laning of Estero Boulevard; and
- the conversion of Estero Boulevard into a "grand boulevard" (with separate lanes for local traffic).

Additional Bridge to the Mainland

Additional bridges to Estero Island have probably been contemplated since the second bridge was built across Big San Carlos Pass in 1965. That bridge converted the dead-end Estero Boulevard into a beautiful through-route along the beaches that even today attracts drivers who never plan to stop on Estero Island. It also justified the high-density rezonings that have resulted in today's high-rise resort district that includes buildings whose densities average well above 20 dwelling units per acre (compared to today's cap of 6 per acre). Following a seemingly inevitable pattern, each new bridge spawns the need for "just one more."

Four potential locations for another bridge are reviewed here (see map in Figure 28):

- a bridge from Black Island to Coconut Road;
- a mid-island bridge to tie into Winkler Road;
- a bridge from just north of Bay Oaks to Main Street on San Carlos Island; and
- a twin span near the existing Matanzas Pass Sky Bridge.

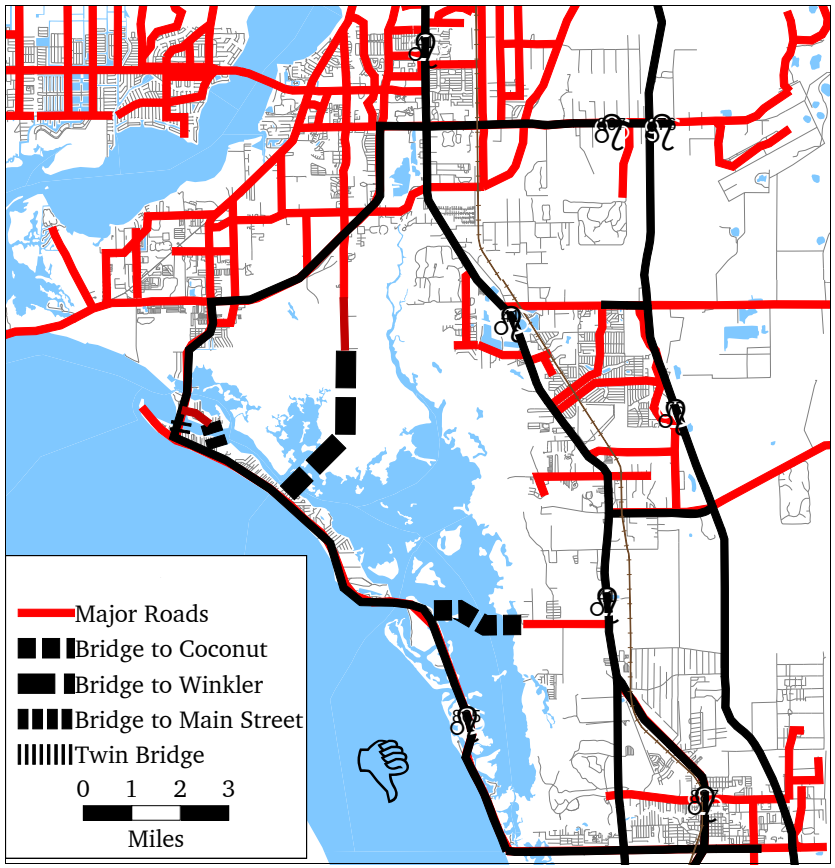


***Figure 28**, Potential routes for an additional bridge*

Black Island to Coconut Road

A new bridge connecting Black Island to Coconut Road has long been discussed by Lee County, although it is no longer included in any official transportation plans. This idea was widely considered in the early 1980s when Black Island and Lover's Key were be considered for intense urban development and/or a public park; a consultant to Lee County identified three specific locations where this bridge could connect to Black Island.

Coconut Road now runs between Estero Bay and U.S. 41, and would provide a corridor to connect a new bridge to U.S. 41. Private developers are planning to extend Coconut Road further to the east, and ultimately would like to connect it to a new interchange on Interstate 75 (although an interchange at that location was recently rejected by FDOT). A new bridge to Coconut Road would provide direct access for tourist to reach the new state recreation area on Lover's Key. Much of this traffic now uses the sky bridge and Estero Boulevard to reach Lover's Key. A new bridge would also provide another route off Estero Island, especially for those who live towards the south end.

Unfortunately, this route would require an extremely long and expensive bridge, since causeways (like the one to Sanibel) cannot be built across the Estero Bay Aquatic Preserve. Environmental damage would be extensive, permitting would be very difficult, and feasibility for toll financing is questionable given the easy availability of two other bridges (which have extra capacity except during the peak season).
Neither Lee County nor the state has shown any recent interest in building a bridge to Coconut Road; in fact it appears to be against the policies of both. The Lee County Comprehensive Plan now contains the following language:

GOAL 76: LIMITATION OF PUBLIC EXPENDITURES IN COASTAL HIGH HAZARD AREAS. *To restrict public expenditures in areas particularly subject to repeated destruction by hurricanes, except to maintain required service levels, to protect existing residents, and to provide for recreation and open space uses.*

OBJECTIVE 76.1: COASTAL HIGH HAZARD AREA EXPENDITURES. *Public expenditures in areas particularly subject to repeated destruction by hurricanes shall be limited to necessary repairs, public safety needs, services to existing residents, and recreation and open space uses.*

POLICY 76.1.1: *All further public expenditures made for new facilities on undeveloped barrier islands or within V zones shall require a finding by the county commission that such expenditures are necessary to maintain required service levels, to protect existing residents, or to provide for recreation and open space needs.*

POLICY 76.1.2: *No new causeways (public or private) shall be constructed to any islands.*

POLICY 76.1.3: *No new bridges shall be constructed to undeveloped barrier islands except where needed to achieve evacuation clearance time objectives on adjoining islands connected by existing bridges. In such a case, this plan shall be amended to insure that the ultimate development of all areas served by the new bridge is limited to levels which can safely be served by the new and existing bridges.*

POLICY 76.1.4: *When state funding is required for the relocation or replacement of infrastructure currently within the Coastal Building Zone, the capacity of the replacement structure shall be limited to maintaining required service levels, protecting existing residents, and providing for recreation and open space needs.*

Some of the language above is derived from the 1981 Charlotte Harbor Management Plan, which required that local governments prohibit construction of bridges and causeways on or to

undeveloped barrier islands. The Charlotte Harbor Management Plan was prepared by a "Charlotte Harbor Resource Planning and Management Committee" appointed by the governor.

In 1981, the governor issued an executive order restricting the use of state funds for infrastructure improvements to barrier islands. This order directed state agencies to give priority to barrier islands in land acquisition programs, and allow state and federal grants only in those coastal areas:

> *"which can accommodate growth, where there is need and desire for economic development, or where potential danger to human life and property from natural hazards is minimal. Such funds shall not be used to subsidize growth or post disaster redevelopment in hazardous coastal barrier areas."* *(EXECUTIVE ORDER NUMBER 81-105)*

Mid-Island to Winkler Road

A mid-island bridge is an earlier idea for reducing congestion on Estero Boulevard. An actual 100' right-of-way existed at least back to 1963 that would have provided a direct route from the end of Winkler Road (south of Summerlin Road) to Estero Boulevard just south of Mid Island Marina. This route has merit from a transportation standpoint, providing another evacuation route while allowing beachgoers to totally bypass the congested roads just south of Times Square. However, its route is very environmentally sensitive, traversing Matanzas Pass, Julies Island, and the extensive wetlands fringing Estero Bay. Construction would be a formidable and costly undertaking, requiring extensive mitigation requirements for damaging pristine wetlands and wildlife habitat (if permits could be obtained at all).

Several major factors have now made this route quite infeasible:

- The right-of-way would reach Estero Island between Bayland Road and Madera Road, just south of Mid Island Marina. Most lots on both streets already have homes, which would result in major dislocations and public costs (although dislocations could be reduced by using an alternate route through the Mid Island Marina).
- The state has purchased 5,500 acres on the north side of Estero Bay to form the Estero Bay State Buffer Preserve. This land lies on both sides of the right-of-way; it is the same land that was proposed for the massive 1970s development to be known as "The Estuaries." The land was purchased because of its unsuitability for urban development.
- The right-of-way itself has recently been donated by Lee County to the state. The county had applied for permission to dredge a navigation channel from the Imperial River to the Gulf. This channel traverses the Estero Bay Aquatic Preserve, where new dredging is prohibited by state law. A permit condition required donation of the right-of-way to offset damage caused by the channel dredging.
- A bridge at this location would face many of the same problems with county and state policies that were discussed above for a bridge to Coconut Road.

In a post-disaster scenario, if the existing homes on Bayland and Madera were badly damaged or destroyed, they may no longer be an impediment to construction of a new bridge. But the loss of the right-of-way, combined with the environmental sensitivity of the route and state ownership of the land on both sides for preservation purposes, effectively eliminates this route from further serious consideration.

Bay Oaks to Main Street (on San Carlos Island)

There is another bridge alignment that would be much shorter but would still allow through-traffic to bypass Times Square and some of the most congested parts of Estero Boulevard. It would connect near the easterly end of Main Street on San Carlos Island, crossing Matanzas Pass to the east of the federal channel. The terminus on Estero Island would be near the northern end of

Bay Oaks Park, possibly at Gulf Beach Road (a short street between the Topps grocery store and Bay Oaks). Figure 29 illustrates this alignment.

This route would have environmental impacts to the Matanzas Pass Preserve and the Estero Bay Aquatic Preserve. These impacts would be much less than the first two alignments, however. This alignment also has the potential for neighborhood impacts at each end.

The major advantage over the first two alignments would be a greatly decreased cost, simply because of the reduced length. This alignment would have major impacts on San Carlos Island; some of these could be positive, particularly to the large marine industrial parcels on the south side of Main Street, but others would be negative, by increasing traffic past several existing mobile home parks.

If a bridge were built along this alignment, it should be expected to induce additional travel to Fort Myers Beach by reducing congestion on the sky bridge and on Estero Boulevard from Times Square to Bay Oaks. Congestion would be *increased*, however, south of Bay Oaks where bridge traffic would meet vehicles coming from Times Square and continuing southward for some distance, The least damaging improvement would be a European-style "grand boulevard" with an extended pedestrian realm that includes a pair of tree-lined medians and a one-way access road on each side (see pages 7-A-55 to 7-A-57 for a fuller discussion of this concept).

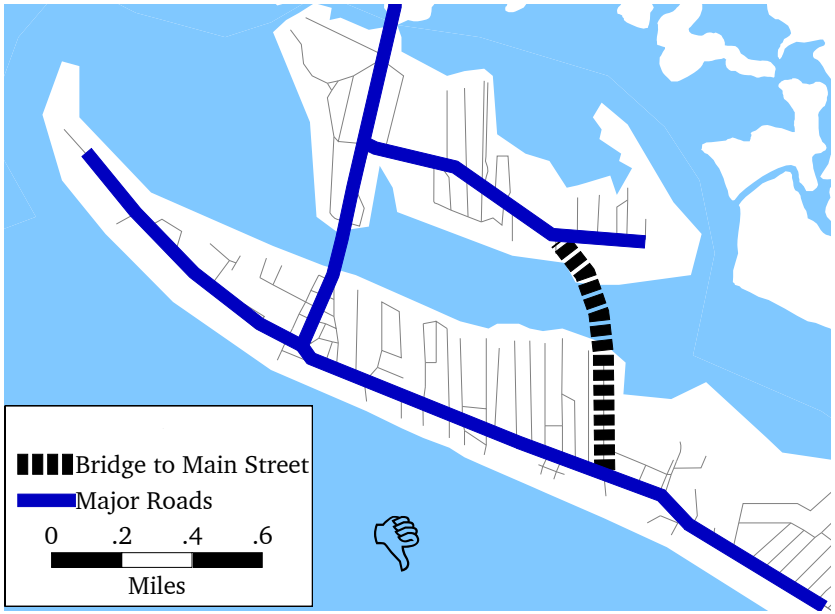


***Figure 29**, Potential bridge to Main Street*

Twin Bridge Over Matanzas Pass

If a mid-island bridge resembles the Midpoint Bridge recently opened between Fort Myers and Cape Coral, then a twin bridge over Matanzas Pass resembles the parallel bridge built in the late 1980s to increase capacity between College Parkway and Cape Coral Parkway. In that case the original bridge was still in good condition but was overloaded by commuting traffic between Cape Coral and Fort Myers. A new 2-lane bridge was built right next to the original bridge and now carries all eastbound traffic; the original bridge carries all westbound traffic. A toll plaza on the Fort Myers side collects tolls in both directions.

The existing Matanzas Pass Sky Bridge was built in 1978 and may be well past half its useful lifespan. Either as part of the reconstruction of that bridge or as a separate project, a twin bridge could be built that would connect Crescent Street to San Carlos Boulevard on San Carlos Island. This bridge could carry two lanes of northbound traffic, allowing the existing bridge to carry all southbound traffic. This location would allow a new bridge of the shortest possible length (refer back to Figure 28), reducing costs and the environmental damage inherent in building a new bridge.

Drawbacks to this bridge (besides cost) would include:

- It would increase road capacity over Matanzas Bridge even though the existing bridge is not over capacity even in the peak season (at least at present).
- It would increase the southbound capacity at the bridge from one lane to two lanes, encouraging more people to drive to Estero Island without increasing road capacity at the bottleneck just past the bridge.
- Mobile home parks and/or some businesses on the east side of San Carlos Boulevard would be displaced.

Four-Laning of Estero Boulevard

In the early 1990s, Estero Boulevard was widened to 34 feet of pavement, with traffic striping designating a center turn lane in large segments (see Figure 2 and Figure 3). Prior to these improvements, the pavement width was very much like Estero Boulevard north of Times Square, with 22 feet of pavement and unpaved shoulders. From Times Square to the Lani Kai, a new raised sidewalk has been added on the Gulf side.

Where center turn lanes have not been striped, the extra pavement is used for 5-foot paved shoulders on each side. These shoulder serve as a "recovery zone" for motorists, an area where they can regain control of their vehicle or maneuver to avoid collisions without leaving the pavement. The shoulders are also used by bicyclists riding and occasionally by pedestrians. The paved shoulders are also used for picking up and dropping off trolley passengers (since there are so few trolley pull-offs).

Due to the intensity of existing land uses, most of the center turn lane is located where the right-of-way is the narrowest. Between Lynn Hall Park and Flamingo Street, the rights-of-way ranges from 50 feet to 65 feet. For all practical purposes, the center turn lane is the last road widening within the available right-of-way. (A sidewalk can still be built on the west side, with moderate costs mostly due to relocation and removal of manmade and natural features; an additional easement would increase the buffer between the edge of the pavement and the edge of the sidewalk.)

To increase the traffic-handling capacity of Estero Boulevard further, additional right-of-way would be needed to add more travel lanes. This would be an expensive proposition because it would involve forced purchase of property, including potential payments for business damages based on loss of future income. However, in a post-disaster scenario, many buildings could already be destroyed, reducing these costs.

The amount of right-of-way needed for this improvement would be determined by the design of the road, but assuming plans would include 4 travel lanes plus a center turn lane, the minimum needed, irrespective of drainage concerns, would be an additional 11 feet for each new travel lane plus 3 more feet to provide a full sidewalk on the Bay side. (Travel lanes of 12 feet are recommended for higher speed free-flowing arterials.) If all drainage were underground, the new right-of-way would have to be at least 75 feet (instead of the current 50 feet near Times Square). This configuration is illustrated in Figure 30.

From Flamingo Street south to Big Carlos Pass, the right-of-way varies from 80 to 100 feet. In the widest areas, the road's drainage could change from closed (underground) drainage to open drainage using grassed swales. Open drainage is preferred from an environmental perspective when enough right-of-way is available, and it is much less expensive. However, unless rights-of-way are very wide, swales use up land that could otherwise be used for sidewalks and bike paths. Given the pedestrian character of Fort Myers Beach, the long-term plan should be the elimination of most swales along Estero Boulevard and their replacement with sidewalks and bike paths.

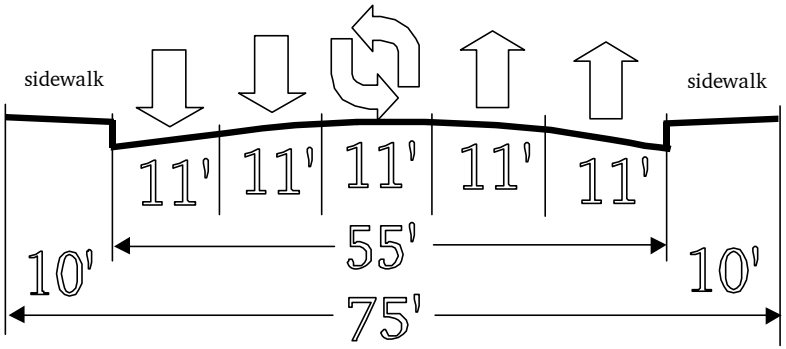


***Figure 30**, Estero Boulevard cross-section with five lanes*

Ideally, a four-lane road would *not* have a continuous left-turn lane as shown in Figure 30. Without the left-turn lane, a landscaped median could be provided to make the road more beautiful and provide a refuge for pedestrians crossing the street (see Figure 31). However, without closing many of the intersecting side streets along Estero Boulevard (or providing other access to them), it would be very difficult to find locations where a median could be constructed.

Figure 31*, Landscaped median dividing a four-lane road*

Like many other traffic improvements discussed in this appendix, the widening of Estero Boulevard should be expected to reduce congestion enough to attract additional drivers; it may also move the "most congested area" further down Estero Boulevard where widening isn't needed now.

Converting Estero Boulevard to four through lanes would greatly change the character of Fort Myers Beach. The following effects should be expected:

- a very noticeable reduction in congestion (at least initially);
- an increase in the number of day-visitors to the beaches in the peak season;
- increased private sector efforts to provide paid parking lots to accommodate additional visitors;
- over time, increased traffic flow (until congestion again deters many drivers);
- great difficulty for pedestrians trying to cross five lanes of traffic;
- improved business for merchants who can provide sizable parking lots; and
- an increase in development expectations, resulting in requests to rezone land for higher intensity uses.

The following design features could mitigate some of the adverse impacts just described:

- parking garages to increase parking without spacing out buildings so much that walking becomes impractical;
- fairly narrow lane widths to discourage speeding;
- raised medians wherever possible to provide a refuge for pedestrians while crossing;
- wide sidewalks with curbs and street trees (to separate pedestrians from moving traffic); and
- regularly spaced pedestrian crossings, especially just south of Times Square (these could be signalized with yellow flashers or stop lights, or provided with raised "speed tables," to improve pedestrian safety).

Unfortunately, several of these mitigating factors (especially raised medians and wide sidewalks) can add substantially to the right-of-way that would have to be acquired from adjoining landowners, perhaps damaging the viability of one or both sides for certain land uses. The cost and therefore feasibility for this improvement would be greatly decreased if it were to be implemented only after a major hurricane where many buildings might be badly damaged or destroyed.

Rebuilding Estero Boulevard as a Grand Boulevard

Any major change to the configuration of Estero Boulevard may only be feasible after a major natural disaster. When envisioning this possibility, it is also worth considering a wider variety of options than conventional four- or five-laning. One such possibility would be to convert Estero Boulevard into a European-style "grand boulevard."[1]

There are many kinds of roads that are considered boulevards. One type is a standard thoroughfare with wide tree-lined sidewalks along each side, flanked by single-family homes. The best local example is McGregor Boulevard in Fort Myers. The current streetscaping plan for Estero Boulevard is beginning to create a more commercial version of this type of boulevard, without requiring any additional right-of-way.

Another type of boulevard has a wide central planted median and a one-way road on each side. The median may have sidewalks or formal street trees. This type of boulevard is found throughout the United States; well-known examples include Monument Avenue in Richmond, Virginia; Fairmount Boulevard in Cleveland Heights, Ohio; and Dolores Street in San Francisco.

A third type of boulevard is the European-style multiple roadway boulevard, with a central roadway for through traffic that is separated from side access roads by a pair of tree-planted medians (see Figure 32). Sidewalks can be placed on the medians, or can be on the outer edge of the right-of-way (protected from moving traffic by on-street parallel parking). This type of boulevard is found throughout Paris, where they were built in the latter half of the nineteenth century in a massive but successful "urban renewal" effort to open up parts of the medieval street pattern. These grand boulevards were designed not only to ease terrible congestion but also to link important civic destinations. Since their conversion to automobile traffic, these boulevards have combined elegant public spaces and vast mobility within a single (albeit wide) right-of-way. The best examples reconcile the seemingly incompatible: high volumes of traffic and pedestrian-friendly street edges.

***Figure 32**, Local and through traffic separated in a grand boulevard*

Grand boulevards often run through commercial districts, unlike most other boulevards. Street-level retail is fully compatible with the kind of pedestrian-oriented public spaces that are created. American versions of grand boulevards have also been built, usually in conjunction with new developments that were

[1] *This section draws heavily on "Boulevards: A Study of Safety, Behavior, and Usefulness" by Allan B. Jacobs, Yodan Y. Rofe, and Elizabeth Macdonald, University of California Working Paper 625, November 1994*

seeking to establish dignified public spaces; expensive residential structures often face these boulevards instead of commercial space.

In an intense commercial and mixed-use environment such as Estero Boulevard, the conflicts between through traffic, local traffic, and pedestrians are severe. Efforts to improve the flow of through traffic often work against pedestrian movement, and vice versa. A grand boulevard tries to reconcile each of these uses within a single right-of-way. Conflicts between through and local traffic (or between vehicles and pedestrians) of course don't disappear, but their needs are accommodated in a different way than under modern roadbuilding practices. The best boulevards do this by establishing an extended pedestrian realm that includes a pair of tree-lined medians and a one-way access road on each side, which along with the sidewalks all function at the pace of pedestrians. Buses would use the through lanes.

Some of the difficulties with the grand boulevard concept at Fort Myers Beach would include:

- additional right-of-way would be required (the absolute minimum would be 100 feet, with 125 feet and up being desirable), although a wider right-of-way might be less expensive if front setbacks were reduced for buildings along Estero Boulevard;
- the large number of cross streets, many of which might have to be restricted to right-in, right-out movements only;
- the unfamiliarity of American drivers with the complexity of the remaining intersections; and
- resistance should be expected because few true boulevards have been built in recent years.

Nonetheless, it is worth considering whether this concept could be feasible (at least in a post-disaster situation), and how it would affect traffic flow and the general character of Fort Myers Beach. Figure 33 shows one possible configuration for the most congested portions of Estero Boulevard (from Crescent Street to the public library). It would include a central two-lane bi-directional through road; turn lanes at the more important side streets; formal planted medians on each side; and then a one-way local street on the outside of each median. Drivers would move from the through lane to the parallel local street (and back) either at intersections or through angled mid-block breaks in the median. This configuration would require a continuous right-of-way of at 113 feet, with occasional wider portions to accommodate trolley pull-offs or U-turns. Other configuration could include a dedicated transit lane (with a wider right-of-way), or limiting the parallel local street to specific areas rather than a continuous street (allowing a narrower right-of-way at other locations).

Positive results of a grand boulevard might include:

- Through traffic would flow more freely by being separated from those who are merely seeking a parking place (see Figure 32).
- Sidewalks would be fully separated from higher speed traffic.
- Additional space would be provided for street trees, which would shade the road, sidewalks and parking spaces.
- Instead of using the sidewalk, bicycles could use either the parallel local street or the faster through lanes; or a separate bike lane could be provided (if there were enough right-of-way).
- This configuration would provide some additional road capacity over the current situation (although far less than conventional four-laning) at the same time it actually improves the pedestrian realm.

Negative results of a grand boulevard might include:

- Reducing the number of cross streets would require more frequent U-turns along Estero Boulevard. Uncontrolled U-turns can be dangerous; dedicated U-turn

lanes take up valuable right-of-way

- A large number of conflict points would be created at the remaining intersections with side streets.
- The intersections (and perhaps lane widths) would almost certainly violate some of the highway design standards used by most American engineers.
- The extra road capacity would induce more private vehicles to travel to Fort Myers Beach, which is likely to increase congestion wherever Estero Boulevard remains in its current configuration.
- This option would be quite expensive to construct, especially if right-of-way had to be purchased any time other than following a major hurricane.
- The extra right-of-way might be best acquired from Bay side commercial properties, damaging their viability or encouraging migration of commercial activity back into residential neighborhoods. (A better option would be to reduce setbacks, perhaps to zero, at the same time right-of-way is acquired, thus reducing the damage to commercial properties.)

A partial application of the grand boulevard concept would be in conjunction with a new bridge from Main Street on San Carlos Island to the Bay Oaks area. Improvements to Estero Boulevard would be needed where the traffic from such a bridge would rejoin Estero Boulevard (perhaps using a roundabout instead of a traffic light), and continuing southward for some distance. The amount of traffic on this portion of Estero Boulevard would be greater than before, because the new bridge would allow more traffic to reach Fort Myers Beach. Simply adding a traffic light and two more lanes to Estero Boulevard would easily handle this additional flow, but at unacceptable costs to the community because Estero Boulevard would become a barrier to movement to and from the beaches.

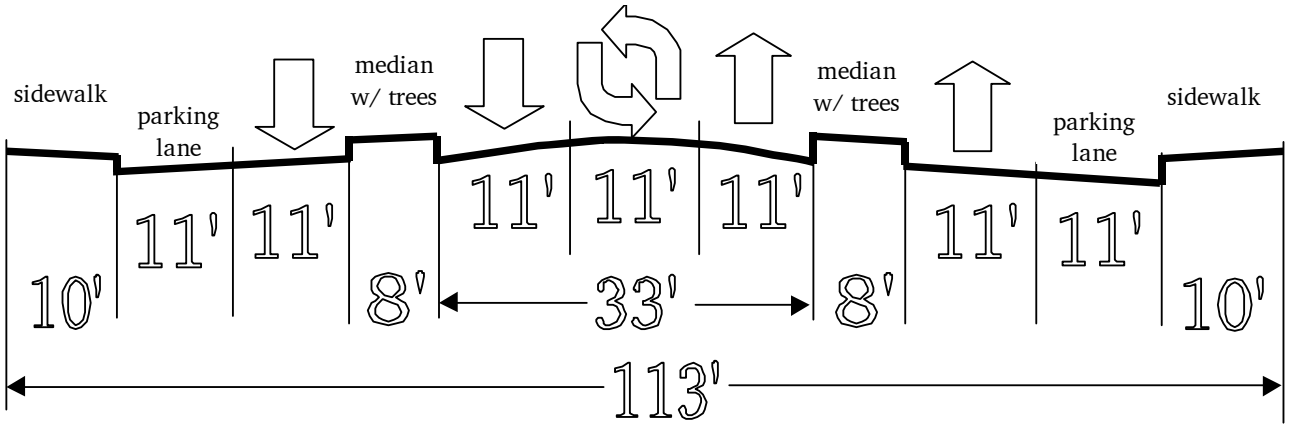


***Figure 33**, Concept for a "grand boulevard" at Fort Myers Beach*

FUTURISTIC ALTERNATIVES

All of the improvements discussed thus far in this appendix could be implemented with technology that is available now. Most of this technology is widely used, although a few types are still evolving, such as transponders and variable sign boards.

Many other transportation technologies are under development or are being explored by entrepreneurs or government agencies. The technological landscape is littered with transportation ideas that seem outlandish now, such as pneumatic trains, flying cars, and rocket belts. But other improvements that seemed equally far-fetched are now in common use, such as driverless rail transit, air bags, and global positioning systems.

The following sections provide an overview of some technologies under development which provide some promise at Fort Myers Beach. Examined first are improvements to private vehicles, followed by potential mass transit improvements.

Improvements to Individual Vehicles

Low-Emission Vehicles

Tremendous efforts are being made to produce non-polluting cars that do not require large internal combustion engines. These efforts have been boosted by a California mandate to major auto manufacturers to begin selling zero-emission vehicles by the end of the decade. There are thousands of electric-powered vehicles on the road today; their limitations include a limited range between recharges of their onboard batteries (typically 75 miles) and relatively high cost because they are not mass-produced.

An alternative to all-electric vehicles is a hybrid electric vehicle that combines battery power with a small internal combustion engine (or possibly a fuel cell). The engine could charge the batteries continuously, or only at higher speeds, or only when the batteries become depleted to some level. Toyota is now marketing the first commercial hybrid cars. The extra engine adds to the cost of the vehicle, but it has several advantages:

- it increases the maximum range of an all-electric vehicle;
- the engine can be one-fourth the size a standard car engine because its power is not needed for acceleration; and
- the engine itself can run at a constant speed (despite the car's varying speed); this allows the engine to be tuned for very low emissions compared to a standard car engine.

Although all-electric or hybrid vehicles hold great promise for reducing air pollution, their use as private cars would have little or no impact on congestion. Each vehicle would still require the same space on the road and use up the same amount of parking, although the air quality improvements would be welcome at Fort Myers Beach. Electric vehicles could easily be used for fixed-route vehicles such as mail trucks where the limited range poses no impediment. Small electric vehicles are also being tested as adjuncts to mass transit systems in "station car" experiments, where they be in a pool for the use of transit commuters.

Low-emission technologies have immediate promise at Fort Myers Beach for mass transit vehicles, most of which are now diesel-powered. Diesel engines cause visible and offensive fumes during acceleration, and they cannot be turned off for short periods, which makes trolley transfer points into undesirable neighbors for businesses that would otherwise welcome the flow of potential customers. (Cleaner engines are expected from a new generation of diesel engines.)

Low-emission buses or trolleys can be powered in several ways:

- all-electric (until recently these were limited to slow tram-style vehicles or vehicles that could be conveniently recharged between busy periods);

- compressed or liquid natural gas, or liquefied petroleum (LP or propane) gas; or
- electric hybrids, which can be assisted by diesel engines, fuel cells, or gas.

Some electric buses are now being used in Burbank, Santa Barbara, and Santa Monica, California. Orlando recently added six propane-powered trolleys along International Drive and ten natural gas buses downtown; they are also being used in Las Vegas and Washington, D.C. Propane or electric-powered buses or trolleys would be highly desirable at Fort Myers Beach; its resort and pedestrian character is less tolerant of air pollution than communities where most time is spent inside air-conditioned cars and homes.

Vehicular Automation

The past decade has seen considerable research into "automated highway systems." This effort tries to increase the number of vehicles that can use a congested stretch of highway by substituting electronic systems for human avoidance of crashes. Individual vehicles (or just high-occupancy vehicles) could be equipped with automatic systems that can sense vehicles ahead and alter speed accordingly, or that use radar-based systems that sense any kind of obstacle and warn the driver or apply the brakes automatically.

A more advanced system would convert a busy highway lane into an automated lane that might carry double or triple the current number of vehicles. Only properly equipped vehicles would be allowed to enter this lane. Magnets embedded in the pavement would provide feedback to sensors mounted on these cars. A full-scale test of this concept took place in San Diego in the summer of 1997, where multiple vehicles were run along a specially equipped section of Interstate 15 (see Figure 34).

Even if automated highway technology becomes practical, there are major problems with its use at Fort Myers Beach. To keep manually controlled cars out of the automated lanes, continuous barriers are required. Thus an extra lane must be constructed, with even greater problems than would be faced by adding conventional lanes (or HOV or reversible lanes as discussed earlier in this appendix). Given that congestion at Fort Myers Beach is seasonal, many of the very cars causing the congestion belong to seasonal residents and national rental fleets, making them less likely to bear the cost of equipment that would be required for using an automated lane.

Some of the technology developed for automated highways will undoubtedly be integrated into cars of the future, but full-scale automated highways are unlikely to provide relief to congested roads at Fort Myers Beach.

Figure 34*, Automated cruising test on Interstate 15*

New Types of Mass Transit

The acceptance of trolleys at Fort Myers Beach suggests that the public is more willing to use public transportation when the vehicles are interesting and unusual—even if they are less comfortable than modern buses. This opens up some mass transit possibilities that might otherwise not be considered at Fort Myers Beach. Some ideas for different forms of public transportation are discussed below.

Monorails and Peoplemovers

A number of automated "peoplemover" technologies are now in use. Some are monorails, where vehicles hang from or straddle a single continuous beam. These are often used between airport terminals or at amusement parks where a large number of people need to travel along a single path. Figure 35 shows a fully automated monorail that has been running since 1984 at Dortmund University in Germany. This monorail is suspended on L-shaped poles to allow other uses of the space below the beam.

Much larger peoplemover systems are also in operation. An example is Vancouver's "SkyTrain" which is an advanced light rapid transit system that is integrated with trolleys and a passenger ferry. Many others operate in France and Japan. These systems compete with more conventional modes of rail travel such as light rail, rapid transit, or conventional streetcars. These modes require exclusive, fully-segregated guideways (except for streetcars or San Francisco-style cable cars which share lanes with other vehicles).

Aerial Trams

Ski-lift and gondola hardware is also being adapted for urban mass transportation by several manufacturers. The beautiful Gulf views that would be provided by this technology could make it a tourist attraction as much as public transportation, and could perhaps be implemented without dedicating an existing traffic lane for the purpose. This type of service could simply run parallel to the beach, or could connect Fort Myers Beach to the mainland as an enticement for the use of park-and-ride lots. Individual gondolas can be built to carry 4 to 12 passengers along with their bulky gear. Figure 36 shows a gondola in British Columbia. Aerial tramways provide larger vehicles and are typically used over steeper terrain, such as the new tramway in Juneau, Alaska, which connects the waterfront with Mount Roberts (see Figure 37).

Figure 35*, Automated monorail*

Figure 37*, Aerial tram*

Figure 36*, Gondola*

Personal Rapid Transit

Instead of attracting users to public transportation by making it a novel experience, a different approach known as "personal rapid transit" (PRT) is being developed that would make the vehicles more like a private car. The result would be like a fleet of automated taxicabs running along a fixed guideway, which could be elevated like a monorail (see Figure 38) or run at ground level.

The small PRT vehicles would enable a single person or small party to travel together in privacy and with the comforts of a private car (see prototype vehicle in Figure 39). Stations would be placed on a small loop off the main line so that vehicles traveling longer distances wouldn't have to stop at all stations. Because the vehicles are automated, they could run at whatever intervals are needed to meet demand, including service 7 days a week and 24 hours a day. Since each vehicle would be used repeatedly throughout the day, major parking lots wouldn't be needed as with private cars. When not in use, PRT vehicles could be stored at a remote location, probably adjoining a main terminal that includes a bus transfer point and satellite parking lot.

Figure 38*, Conceptual PRT elevated guideway*

Figure 39*, Prototype PRT vehicle*

The PRT concept has been considered for decades but is now under active development by the Regional Transportation Authority of Northeastern Illinois (Chicago area) and the Raytheon Corporation. This technology is aimed at urban areas that are not dense enough to support light rail transit. If the technology matures into a practical system, it could find applications in many Florida cities where public transportation is now limited to occasional bus routes.

TRANSPORTATION APPENDIX B

ADDITIONAL TRANSPORTATION DATA

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TRANSPORTATION APPENDIX B

ADDITIONAL TRANSPORTATION DATA

ROADS AND INTERSECTIONS AT FORT MYERS BEACH

Modes of transportation currently used within the Town of Fort Myers Beach include private and rental cars, trucks, trolleys, recreational vehicles, boats, mopeds, bicycles, and walking. Private and rental cars are the primary means of transportation to and on the island.

The existing road network within the town is depicted in Figure 1. Nearly all roads provide a single travel lane in each direction, but they serve many different purposes. The following sections identify those purposes and discuss the conflicts that often occur.

How Roads Are Classified by Their Function

A common means of classifying roads is by the function they serve within the overall road network. Roads are often divided into arterials, collectors, and local roads.

Arterial roads are primarily intended to carry through traffic connecting major activity centers. Access to abutting properties along arterials is usually limited to carefully controlled points in order to reduce traffic conflict points and maintain the capacity of the arterial to carry through traffic.

Collector roads primarily collect traffic from intersecting local streets and neighborhoods and distribute it to the nearest arterial road. A secondary purpose of a collector road is to carry moderate volumes of through traffic. Some access to abutting land uses is often available.

Local streets provide access to adjoining properties, linking these properties to the collector and arterial system. Through traffic causes conflicts with these functions and is discouraged or prohibited by the design of the road network (and can be further discouraged through careful redesign). Local streets also are used for internal neighborhood services such as trash pickup. Access from adjoining properties to local streets is relatively unlimited except for driveway location and design criteria.

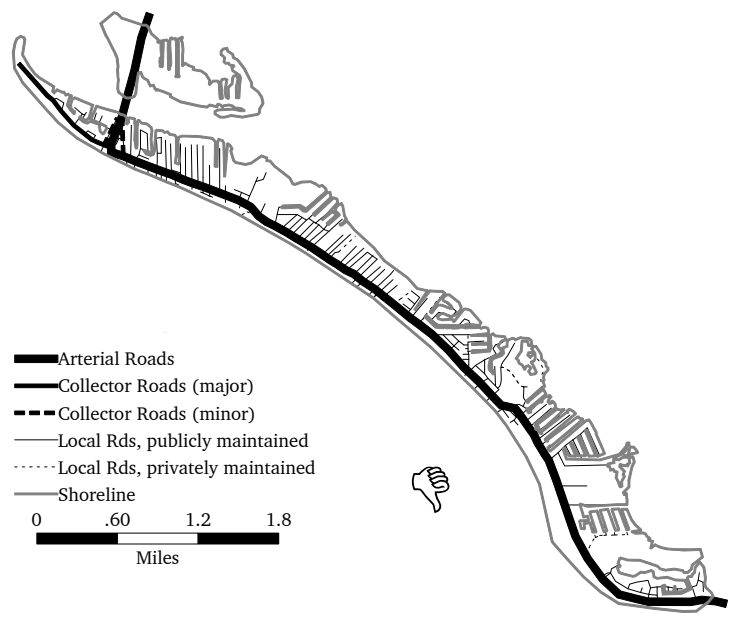

***Figure 1**, Functional classifications of existing roads*

Arterial and collector roads at Fort Myers Beach are also used by trolleys, trucks, buses, mopeds, cyclists, and pedestrians. The conflicts among these other uses limit the ability of the arterial and collectors to serve their typical functions. Because there is almost no ability to convert the present road system to the classical single-use hierarchy described above, arterial and collector roads at Fort Myers Beach will have to continue to be shared by cars, trolleys, trucks, pedestrians, and cyclists, all having to use the available rights-of-way.

Roads and Intersections

Fort Myers Beach's single arterial road is Estero Boulevard from Times Square to Big Carlos Pass. This 6-mile-long road serves through traffic and most commercial uses on the island. Its paved surface is 34 feet in width (except the new 33-foot segment from Times Square to the Lani Kai), with two through lanes its entire length. Estero Boulevard has numerous private and commercial driveways and a significant amount of on-street parking, and is maintained by Lee County.

By the mid-1990s Lee County had resurfaced all of Estero Boulevard, and to improve its traffic-carrying capacity had installed a two-way left turn center lane at many locations (shown in Figure 2). Lee County had also resurfaced most publicly maintained local roads in the early 1990s, which should last up to fifteen years (with even higher life expectancy for the more durable box culverts placed at Matanzas Street and Curlew Street).

There are evacuation routes exiting from each end of Estero Boulevard, via the Matanzas Pass Sky Bridge to San Carlos Boulevard, and via the Big Carlos Pass Bridge to Hickory Boulevard and Bonita Beach Road.

The Matanzas Pass Sky Bridge was built in 1978. It is a two-lane, 40-foot-wide bridge including full breakdown lanes on both sides, plus a 6-foot-wide raised sidewalk on the east side. In

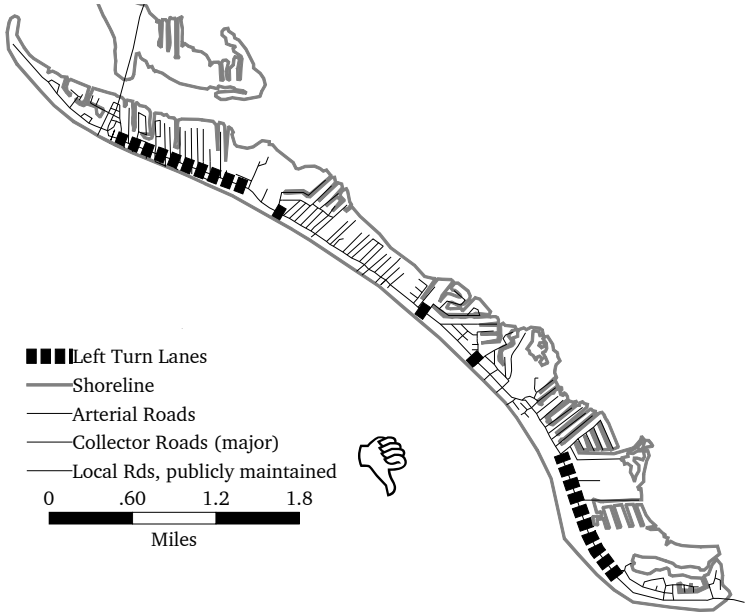

***Figure 2**, Left turn lanes on Estero Boulevard*

1996 San Carlos Boulevard was widened into a five-lane, 60-foot-wide arterial road with the center lane used for two-way left turns. Sidewalks are provided at the curb on each side. Both facilities are maintained by the Florida Dept. of Transportation.

The Big Carlos Pass Bridge is a two-lane, 26-foot-wide bridge. It has two 10-foot travel lanes and 3-foot shoulders; in addition, it has 4-foot-wide raised sidewalks on both sides. It was built in 1965 by Lee County, which still maintains it and both approaching roads.

There are 78 intersections along Estero Boulevard, 53 of which are "T" intersections where the side street does not extend across Estero Boulevard. Gulf beach access is provided from 27 of these intersections (plus another 9 easements). Access is provided to Estero Bay from the ends of 11 local roads. Access to both Estero Bay and Gulf beaches are provided from 4 of these roads. These access points are shown in Figure 3.

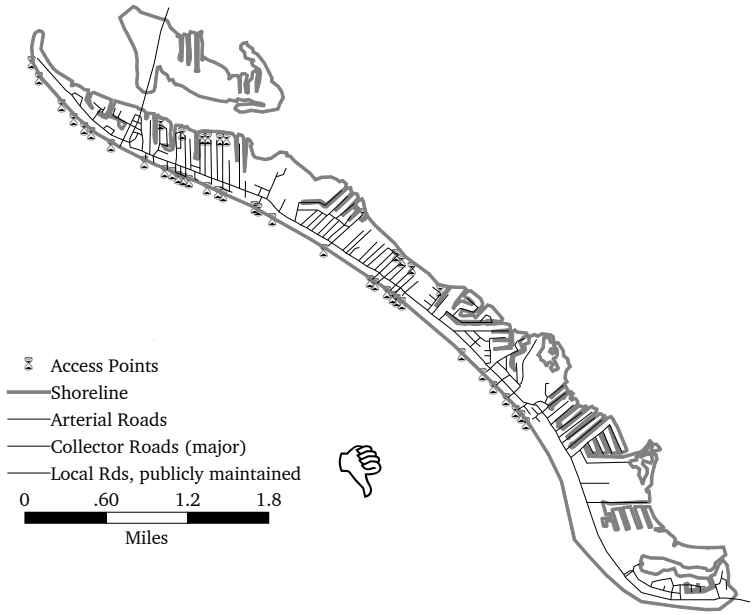

***Figure 3**, Public access to Gulf beaches and Estero Bay*

North of Times Square there are only 7 Gulf access points and 1 Bay access point. Other than at Lynn Hall Park and Bowditch Point, these access points have overhead banners but have not been improved to indicate exactly where the public access is located. The south end of the island completely lacks public access to the waterfront.

A sidewalk runs along the east side of Estero Boulevard from Times Square to Buccaneer Drive except for a gap between Lenell Road and Bay Beach Lane (along the frontage of the Villa Santini Plaza). In addition there is the new paver sidewalk on the beach side from Lynn Hall Park to Lani Kai for about ½ mile. This new sidewalk is 10 feet wide and shaded with coconut palms, continuing the design theme that has revitalized the Times Square area.

The northerly extension of Estero Boulevard is a two-lane collector road with a pavement width of 22 feet. It extends about one mile from Lynn Hall Park to Bowditch Point, serving both parks plus many residential and some commercial uses. A sidewalk runs along this portion of Estero Boulevard on the Bay side from Old San Carlos Boulevard to Carlos Circle and on the Gulf side from across Carlos Circle to Bowditch Point Park.

Old San Carlos and Crescent Street are functionally considered minor collectors due to three factors: their proximity to Estero Boulevard and San Carlos Boulevard, the type and volume of trips generated by adjoining property, and the location of intersecting local roads (First, Second, Third, Fourth, and Fifth Streets).

The public land that makes up the Estero Boulevard right-of-way ranges from 50 feet wide just south of Times Square to 100 feet wide south of Albatross Street (see Table 7-B-1). The drainage system changes from closed (underground drainage pipes) to open (open swales) depending on the availability of right-of-way and the presence of on-street parking. From Flamingo Street to Big Carlos Pass, open drainage is provided where the right-of-way is 80 feet or wider. Figure 4 illustrates where these right-of-way widths occur on Estero Boulevard.

Table 7-B-1 — Estero Boulevard Right-of-Way

From	*To*	*Width*
Bowditch Point	Vacation Villas	50
Vacation Villas	Lynn Hall Park	60
Lynn Hall Park	Lovers Lane	50
Lovers Lane	Flamingo Street	65
Flamingo Street	Albatross Street	80
Albatross Street	Castle Beach	100
Castle Beach	Big Carlos Pass	80

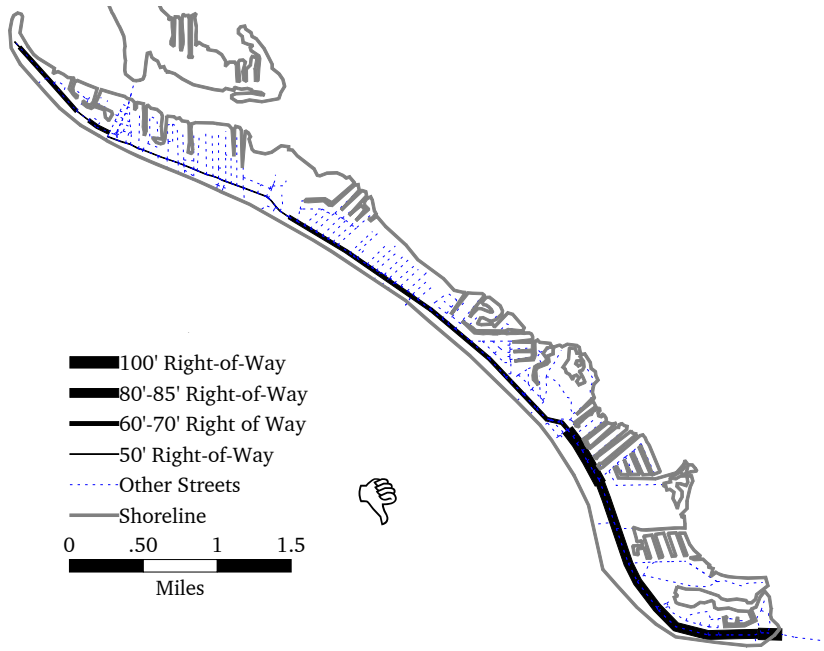

***Figure 4**, Right-of-way along Estero Boulevard*

There are 38 miles of local roads and 1 mile of Estero Boulevard (north of Times Square) that are maintained for the town under a maintenance agreement with the Lee County Department of Transportation at the unit costs shown in Table 7-B-2.

Table 7-B-2 — Road Maintenance Costs

Pothole patching	$255 per ton in place
Road shoulder grading	$3,432 per mile
Roadside machine ditch cleaning	$11,880 per mile
Drop inlet and catch basin – reconstruction	$565 each
Drop inlet and catch basin – machine cleaning	$70 each
Culvert pipe cleaning	$2 per foot

Source: Interlocal agreement on road maintenance, October 1996

Resident requests for road and drainage maintenance are investigated by town representatives and referred to the county when remedial actions are required. The county has agreed to provided specific services to the town at the rates shown in Table 7-B-2 up to a maximum of $247,233.00 until the end of the current interlocal agreement (September 30, 1997).

Some local roads are not the maintenance responsibility of the town. Table 7-B-3 lists private roads based on the information provided by Lee County (this list includes some roads maintained by other governmental agencies, such as School Street inside Bay Oaks Park).

Table 7-B-3 — Privately Maintained Local Roads

Name	*From*	*To*
Gulf Court	Palm Drive	Virginia Avenue
Pearl Street	Estero Boulevard	The Gulf
Seaview Street	Estero Boulevard	The Gulf
School Street	Oak Street	End (inside Bay Oaks)
Gulfview Trailer Pk.	Lovers Lane	southerly
Red Coconut	Donora Boulevard	northerly
Peters Drive	The bend	End
Sanders Drive	Estero Boulevard	End
Hammond Drive	Sanders Drive	End
Glenview Manor	Williams Drive	End
Lazy Way	Avenida Carita	Avenida Pescadora
Rhode Island Place	Lazy Way	End
Moody Tern Drive	The bend	Indian Bayou
Widgeon Terrace	The bend	End
Gloria Circle	Estero Boulevard	End
Bay Beach Lane	Estero Boulevard	End/Fork

Source: Lee County DOT Maintenance Map

There are no sidewalks of significance in any of the privately maintained roads in Table 7-B-3. A few publicly maintained local roads (Old San Carlos, Crescent Street, and First, Second, Third, Fourth, and Fifth Streets) have limited sidewalks and bike lane (on-road) facilities.

There are no limited or controlled access roadways, airports, port facilities, or rail lines in the town.

Intersections on Estero Boulevard

Estero Boulevard is the spine of Estero Island's transportation network. It is one of the most prominent and memorable public spaces at Fort Myers Beach, and also the scene of its worst traffic congestion during parts of the winter tourist season.

Estero Boulevard's ability to carry traffic is greatly reduced by the number of intersecting side streets; by unfamiliar motorists searching for parking spaces; by seemingly random driveways; and by heavy pedestrian usage. This appendix examines each of these subjects as a prelude to formulating strategies for enhancing mobility despite the heavy seasonal congestion.

There are 78 intersections along Estero Boulevard, 53 of which are "T" or three-way intersections (mostly on the Bay side). The remaining 25 are four-way intersections. This pattern evolved incrementally as land was platted and streets were dedicated for public use by individual property owners.

From the viewpoint of safety, "T" intersections are actually safer, provided they are spaced at least 125 feet apart. This safety is a result of a much smaller number of potential collision points where a vehicle must cross the path of another vehicle (thereby increasing the potential for a crash). Figure 5 illustrates some of the potential collision or conflict points in each type of intersection, with 24 points in a typical four-way intersection versus 6 for each "T" intersection. (The actual number of conflict points is determined by the total number of possible opposing vehicular turn and through movements from all sides of an intersection; therefore one-way lanes, bans on left turns, or multiple through lanes will result in a different number of conflict points.)

On Estero Boulevard, only 4 of the 25 four-way intersections have access to both Estero Bay and Gulf beaches. Because of the popularity of water accesses, their high number of conflict points results in dangerous conditions. Complicating matters further, when a driveway is aligned with a "T" intersection, it in effect constitutes the "fourth leg" of that intersection and increases the number of conflict points. Driveways and other access points on Estero Boulevard are inventoried in the next sections.

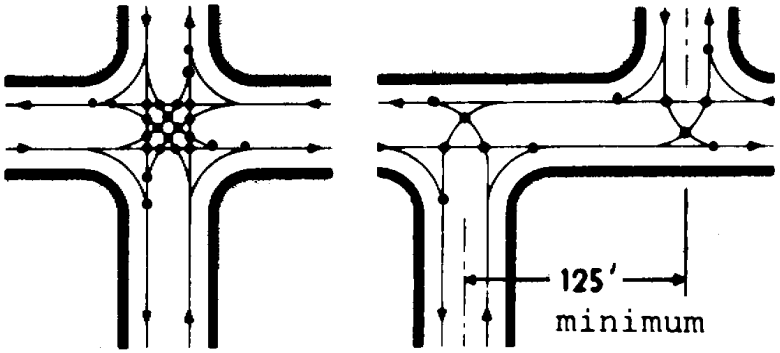

***Figure 5**, 24 collision points versus 6 collision points*

Direct Property Access and On-street Parking

Another reason that Estero Boulevard cannot carry as much traffic as most arterial roads is that it provides the sole access to many properties, often through one or more driveways. In other cases, this access includes a number of parking spaces that require backing out onto Estero Boulevard. Sometimes these parking spaces are located entirely on private property, but more often they are partly on public property as well. Each access point onto Estero Boulevard introduces another uncertainty that reduces the amount of traffic that can be carried.

A visual survey was conducted to quantify the number of access points to private property (see results in Table 7-B-4). On the Gulf side of Estero Boulevard, there are 356 driveways and 138 direct-access parking spaces; on the Bay side, 258 driveways and 97 parking spaces. These access points not only slow the flow of traffic, they introduce conflict points in the same manner as for standard intersections, as discussed earlier.

Although there are far more street intersections on the Bay side of Estero Boulevard, the Gulf side contains more driveways and parking spaces. On the Bay side, the highest number of driveways per mile is located north of Times Square up to Bowditch Point (54) followed by Pescadora Ave. to Flamingo St. (50). On the Gulf side the highest number of driveways per mile appears to be south of Times Square between Gulf Beach Road and St. Peters Drive (63) and north of Times Square to Bowditch Point (61).

Table 7-B-4 — Driveways and On-street Parking

Location	*From:*	*To:*	*Number of Driveways*	*Number of Parking Spaces*
Gulf side of Estero Boulevard:				
	Bowditch Point	Times Square	61	52
	Times Square	Big Carlos Pass	295	86
		TOTAL:	356	138
Bay side of Estero Boulevard:				
	Bowditch Point	Times Square	54	23
	Times Square	Big Carlos Pass	204	74
		TOTAL:	258	97

SEASONAL FLUCTUATIONS IN TRAFFIC

Impacts of Tourism

More than 1.5 million of Florida's 1995 visitors came to Lee County, including nearly 190,000 from Europe and 60,000 from Canada. This number increased to 1.7 million in 1996, and the first quarter of 1997 indicates an increase of 2.5% compared to the previous first quarter's figures for Lee County. The visitors to Lee County spent more than $820 million in 1996, and the first quarter of 1997 has already seen an increase of 5.8% in tourist spending into the county's economy. Out-of-state visitors stayed in Lee County an average of 7 nights, while Floridians averaged about 3½ days.

In 1995, 66.8% traveled by airplane to Lee County and 31.1 % drove their personal cars; 56.3% of those flying rented a car during their stay (usually at the Southwest Florida International Airport). In 1996, airplane travelers increased to 67.8%, with 59.5% renting cars. The use of personal cars by the visitors is continuing to decline, from 29.9% in the first quarter of 1996 to 25.3% for the same period in 1997.

Of all visitors to Lee County, 316,000 or 18% stayed at Fort Myers Beach. This 18% alone spent nearly $150 million.

Since there are data available for 1992 and 1996 for both Lee County and Fort Myers Beach, a comparison is made in Table 7-B-5 to identify common trends. A striking trend is the decrease in the percentage of visitors driving their personal cars, and the corresponding increase in those arriving by airplane and renting a car. It should be noted, however, that these figures only show the mode of travel for visitors who stayed in hotels or rented condominiums, and not those staying in their own seasonal homes or staying with relatives or friends.

Table 7-B-5 — Comparative County/Town Travel Mode of Tourists, 1992 & 1996

Travel Mode	*1992*	*1996*	*% Change*
Lee County:			
Airplane	58.5%	67.8%	9.3 %
Personal Cars	38.7%	30.4%	-8.3 %
Rental Cars	46.3%	59.5%	13.2 %
Fort Myers Beach:			
Airplane	54.5%	60.6%	6.1 %
Personal Cars	42.2%	36.2%	-6.0 %
Rental Cars	43.4%	55.9%	12.5 %

Source: Lee County Visitor and Convention Bureau Annual Visitor Profiles

In 1995, 4.7% of the visitors responding to a survey cited traffic congestion as one of their least-liked features of Lee County, followed by 2.8% not favoring roads/signs/highways. In 1996, the percentage of respondents displeased with Lee County's traffic congestion increased to 6.6%, while respondents complaining about roads/signs/highways dropped to 0.6%. Almost 20% of respondents in the first quarter of each year expressed displeasure with congestion, reflecting the peak season congestion problems that local residents experience each winter.

An additional item in the ongoing survey of the Lee County visitors indicates a substantial number of computer and on-line service users. The percentage of this user group has increased from 43% in the first quarter of 1996 to 67% this year. The number of visitors that obtain travel information via the Internet has jumped from 20% during the first quarter of last year to 43% for the first quarter of 1997. This data is relevant because of an

opportunity to use the Internet to advise visitors on opportunities to use alternate means of transportation when visiting Fort Myers Beach (airport shuttles, water taxis, trolleys, bicycles, etc.).

The above information is not available just for visitors to Fort Myers Beach. However, given the large proportion of Lee County visitors who stay at or visit Fort Myers Beach, the county-wide tourism trends are certainly relevant.

Some tourism data is available specifically for Fort Myers Beach. Figure 6 illustrates important data on seasonal visitation patterns, showing average occupancy rates by month for five consecutive years. Figure 7 shows average rates to rent a room or suite for the same period, with the expected correlation between demand and rates. In each case, these patterns reflect the county-wide data on the same subject (see Table 7-B-6), giving additional confidence in using other county-wide tourism data for planning at Fort Myers Beach.

Table 7-B-6 — Lodging Data for Lee County and Fort Myers Beach, 1995

	Winter	*Spring/ Summer*	*Fall*	*Annual*
Occupancy:				
Lee County	86.2%	61.1%	58.2%	68.5%
Fort Myers Beach	88.7%	61.5%	59.5%	67.8%
Average Room Rate:				
Lee County	$94.27	$65.29	$65.53	$75.03
Fort Myers Beach	$97.69	$62.52	$64.62	$71.84

Source: Lee County Visitor and Convention Bureau, 1995 Annual Visitor Profile

The data indicates that the county's tourist-oriented economy generally, and the Town's in particular, continues to grow in spite of legendary peak-season traffic congestion. The transportation issues facing the town, such as parking shortages and road congestion, appear to be viewed by many visitors as the price to be paid for the unique amenities of Fort Myers Beach, at least thus far. If left unchecked, however, they may lead to gridlock and a reversal of current trends, with major impacts on the area's economy and quality of life.

Peak Season Vs. Off-peak Travel Behavior

Travel behavior at Fort Myers Beach is of several different types; their interaction constitutes the core of the traffic congestion issues along Estero Boulevard. Fort Myers Beach is a destination for trips made by Lee County residents; year-round and part time residents on Estero Island; and visitors from around the world.

Tourists who stay in hotels or seasonal condominiums on Estero Island have some of their destinations on the island and some elsewhere in Lee County. During season there are visitors who stay off the island but visit regularly, sometimes on a daily basis. There are many trips made by year-round and part-time residents that start and end on the island. The reputation of Fort Myers Beach as the "playground of Lee County" attracts many visitors looking for popular beaches, waterfront restaurants, and nightlife. Each of these groups has specific travel patterns that must be considered.

In 1992, the CRA commissioned an origin–destination survey of 2,500 motorists traveling on Estero Boulevard at Times Square and Villa Santini Plaza. The motorists were asked where they lived, and where *this particular car trip* began and ended. This survey revealed that, at least in December of 1992, only 23% of trips began and ended on the Island, while 16% had both their origin and destination off the island. The majority of the respondents (61%) had either their origin or their destination off the island. A majority of the respondents were out-of-county visitors who stayed off the island; 46% were not even part-time residents of Lee County. A summary of this data is presented in Table 7-B-7.

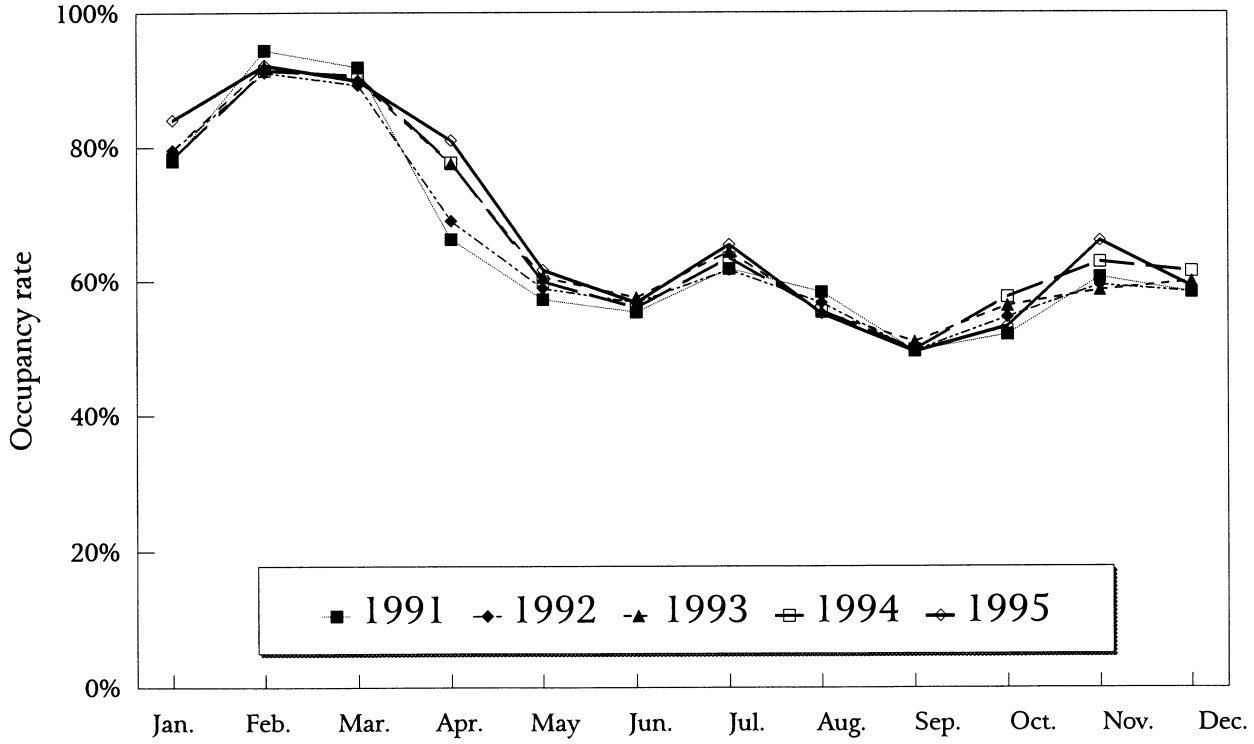

***Figure 6**, Occupancy rate for Fort Myers Beach lodgings*

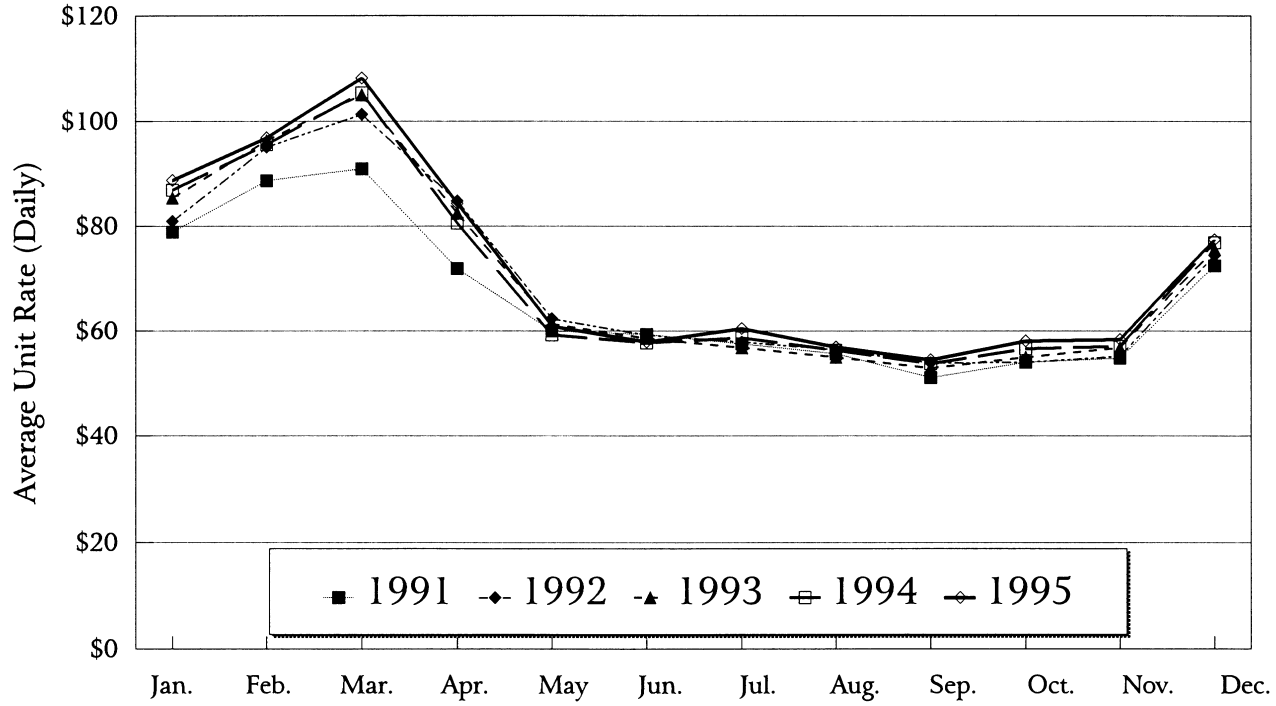

***Figure 7**, Average room rate for Fort Myers Beach lodgings*

Table 7-B-7 — Residency of Motorists and Origin/Destination Pattern, 1992

Residency	*Percentage*
Permanent Fort Myers Beach resident	22%
Part-time Fort Myers Beach resident	12%
Lee County resident	19%
Visitors	46%
Origin-Destination Patterns	
on-island to on-island	23%
on-island to off-island/vice versa	61%
off-island to off-island	16%

Source: Traffic Origin and Destination Survey, Florida Transportation Engineering, Inc., February 1994

Because this survey was taken in December, well before the height of the tourist season, its results may not accurately reflect peak season travel behavior. Nonetheless, this is the most accurate information currently available on the origins and destinations of cars on Estero Boulevard. This type of survey is of great importance in transportation and tourism planning, and should be repeated at various times of the year to provide a better picture of road users at Fort Myers Beach.

Travel behavior during the winter peak season and the rest of the year differs greatly in resort communities. Part of the difference is simply the number of motorists on the road, but others stem from trip purposes, the means by which the trip is made, and the length and place of visitors' stay. Some observations about Fort Myers Beach include:

- Fort Myers Beach residents and visitors did not have access to useful public transportation until about 1987 when four trolleys began serving Estero Boulevard. The trolley system has been heavily used since then, although major drops in ridership occur when service was reduced and fares increased.
- More than 80% of school children within a two-mile radius of Beach Elementary School ride the school bus or their parents' car, rather than walking or bicycling to school. When school buses pick up children, they stop traffic in both directions, in effect serving as a moving traffic light on Estero Boulevard. This isn't a major problem in the morning hours in the off-season, but it adds to the existing traffic congestion during other periods.
- Tourists here for short stays report little concern about the traffic congestion. They may simply use the roads less than residents, or merely accept the congestion as the price of an attractive vacation spot with many amenities.
- Most businesses do well despite the congestion (or in part because of the large number of visitors looking for places to stay, eat, or play).
- Residents without business interests seem to suffer most, since the pay the price of inconvenience without receiving any compensating benefits.
- Part-time residents who stay at Fort Myers Beach only during the peak winter season seem to complain most about congestion, probably because they don't get to experience the acceptable road conditions during most months of the year.
- Some visitors fly to Fort Myers and use a taxi or shuttle to reach Fort Myers Beach. They experience little of the congestion, and contribute almost nothing to it.

It is clear that peoples' tolerance of traffic congestion differs greatly depending on their situation and on other personal factors. However, traffic congestion is severe enough that it causes major behavioral changes each year. Many Lee County residents do not visit Fort Myers Beach (or Sanibel or Captiva) at all during the peak season, just because of the traffic. Many Fort Myers Beach residents organize their lives around low-traffic periods of the day each winter (such as first thing each morning). Clearly, though, there is a demand for improved mobility, especially during the winter. Alternate means of moving around the island will be patronized if they are more pleasant or convenient than waiting in traffic.

MEASURING TRAFFIC CONGESTION

Traffic Counts

Levels of roadway usage and congestion are quantified based on machine counts of actual traffic. Three types of counters are used: (1) permanent count stations; (2) periodic count stations; and (3) traffic counts done for special studies.

Permanent count stations have "inductive loops" embedded in the pavement (these are similar to the loops that control the timing of traffic signals); monitoring devices are placed in permanent control boxes mounted nearby on the side of the road. Most periodic counts use rubber tubes which are laid across the road for several days on a repeating schedule. The counts performed for special studies generally use stand-alone flat metal boxes that are taped to the pavement. These boxes act as signal transmitters (one popular type is the Hi-Star Traffic Analyzer). Vehicles do not have to drive directly over the flat box to be counted, as they do over the rubber tubes (for periodic counts) or inductive loops (at permanent stations). Metal in vehicles triggers the mechanism for the traffic counts, as well as classifying vehicles by type and speed.

Traffic volumes are tabulated and published each year using data from the permanent and periodic stations by the Lee County Department of Transportation (LCDOT) and Florida Department of Transportation (FDOT). Special studies are generally done by consulting firms (and sometimes by LCDOT and FDOT) for specific purposes such as traffic impact statements for proposed developments.

In late 1995 a permanent count station replaced the periodic counters north of Donora Boulevard to continuously measure traffic along Estero Boulevard. The detailed year-round data from this station can be used to adjust the occasional counts from periodic and special-study stations to reflect typical hourly and seasonal fluctuations and to arrive at the estimated number of "annual average daily trips" (AADT) for specific locations.

Table 7-B-8 contains historic traffic volumes from LCDOT's annual traffic count report from four periodic count stations. Figure 8 illustrates these volumes on a map of Fort Myers Beach, and shows the location of all count stations.

Table 7-B-8 — Traffic Counts from Periodic Count Stations in Annual Average Daily Trips, 1991/96

Location	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*
Matanzas Pass Sky Bridge	22,700	23,500	21,800	22,500	15,600	23,000
Donora Blvd.	16,800	18,500	16,500	17,000	17,500	*16,900
Pescadora Avenue	14,100	15,000	13,200	14,400	14,700	13,500
Big Carlos Pass	6,200	6,700	6,400	7,100	7,600	6,400

** converted to a permanent count station in 1996*

Source: Lee County Department of Transportation, annual traffic count reports

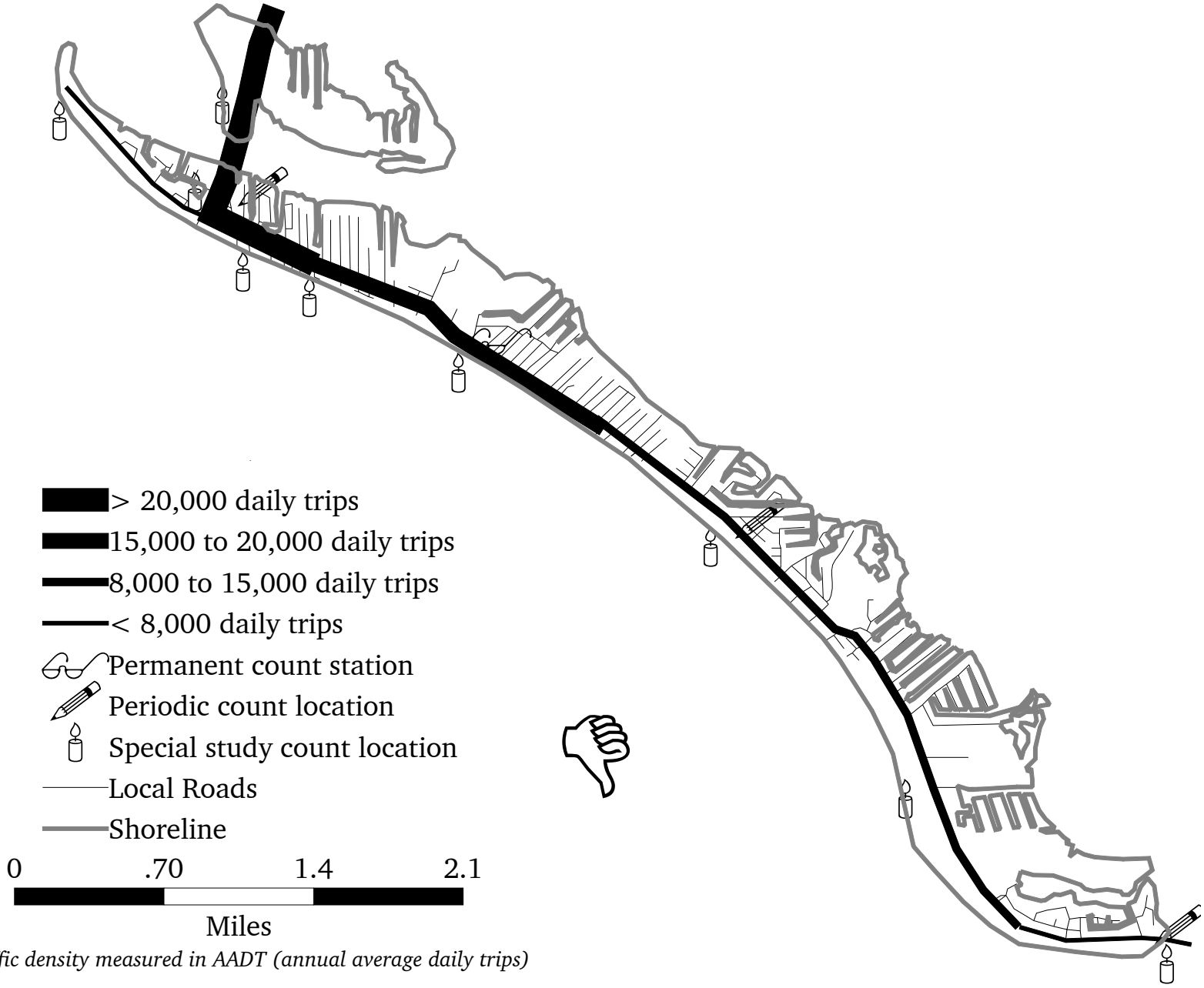

***Figure 8**, Traffic density on arterial roads*