

Data and Analysis
CPA 19-12,
Shoreline Protection
Zone

2013

Martin County Shoreline Inventory and Analysis



Growth Management Department

8/14/2013

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Introduction

Martin County has provided shoreline protection measures since the adoption of its first Comprehensive Plan in 1982. The intent is to protect estuarine waters, to minimize activities that degrade, destroy, or otherwise negatively impact estuarine systems, and where appropriate, to reestablish and restore natural habitat. Development on the waterfront is controlled by policies in the Comprehensive Growth Management Plan (CGMP) and Land Development Regulations (LDRs); specifically the policies found in Chapter 8, Coastal Management Element; Chapter 9, Conservation and Open Space, CGMP; and Article 4, Site Development Standards, LDR's.

The CGMP provides for a shoreline protection zone for all waterfront development. The shoreline protection zone extends 75 feet laterally upland from the mean high water for all properties on estuarine waters within the county. Estuarine waters is defined as all surface waters of the State that are both hydrologically connected (to the estuarine waters) and navigable. In addition, county code requires a 10-foot construction setback to a primary structure or a 5-foot setback to an accessory structure (such as a pool) from the shoreline protection zone. Shoreline protection policies prohibit the creation of canals and significantly limits hardening of the shoreline. There are policies that prohibit the destruction of mangroves, and require restoration or replanting of native habitat.

Since its enactment in 1982, the County has strengthened its shoreline protection requirements within the Comprehensive Plan, but over the course of years, particularly in 1990, and 1997, a number of exceptions were added to the policies and regulations. Exceptions exist for lots of record that were platted prior to 1982 and are 1-acre or less. Chapter 8, Coastal Management Element provides the following exceptions to the 75 foot shoreline protection zone:

8.1C.1.(3) (h) Exceptions. The following exceptions to Policy 8.1C.1(1) above are to be recognized:

- 1) For lots of record with an upland area of one acre or less, the landward extent of the shoreline protection zone shall be reduced to 25 feet.
- 2) The minimum shoreline protection zone shall be 20 feet from mean high water for properties, including Community Redevelopment Area properties, with legally hardened shorelines (i.e., seawalls, riprap, retaining walls and/or interlocking brick) that do not contain a predominance of native wetland or upland vegetation. Protection of adjacent water quality through stormwater control shall be required as set forth in Policy 8.1C.1(3)(h)5).
- 3) For legal, single-family residential lots of record as of April 1, 1982 that have hardened shorelines, the shoreline protection zone may be reduced to a minimum of 15 feet by the Growth Management Director upon a determination that special and unique circumstances exist that have created a hardship for the property

owner. Protection of adjacent water quality through stormwater control shall be required as set forth in Policy 8.1C.1(3)(h)5).

- 4) For properties located on manmade canals and basins with unhardened shorelines that existed on the date the plan was adopted, the landward extent of the shoreline protection zone (Policy 8.1C.1(1)) may be reduced to a minimum of 25 feet. The first 20 feet from mean high water shall be restored with native vegetation to stabilize the shoreline.

In addition to defining a shoreline protection zone, the CGMP specifies when shoreline hardening may take place. Prior to 1982, it was permissible to dig man-made canals (and harden the shoreline) as a part of residential development. The 1990 Plan provided increased regulations for shoreline protection and the current CGMP prohibits altogether the construction of canals for access to surface waters of the State or its tributary systems. Current policies allow shoreline hardening only when erosion is causing a serious (significant) threat to life or property. Vertical seawalls are allowed to stabilize or harden a shoreline only when it is determined that significant erosion exists and no other protection method is suitable to the specific and unique conditions of the site.

The CGMP provides for a number of exceptions to allowable seawall construction. Chapter 8, Coastal Management Element provides the following exceptions to construction of a vertical seawall:

8.1C.2.(3) Bulkheads or vertical seawalls may be allowed under the following circumstances:

- (a) The lot was a residential lot of record as of April 1, 1982; and
- (b) The lot fronts on a manmade canal created prior to April 1, 1982; and
- (c) At least 75 percent of the canal lots of the subdivision or plat have permitted bulkheads or vertical seawalls that existed as of January 1, 2000; and
- (d) The lot was undeveloped as of January 1, 2000.

During the presentation of this report to the Local Planning Agency (Agency), members requested additional analysis on some of the data provided in the report. Agency members requested further details on permits for shoreline hardening and waivers to the shoreline protection zone. Agency members also asked for additional information on the existing uses on commercial waterfront properties. The additional analysis requested by the Local Planning Agency is included in this report.

The purpose of this report is to provide data and analysis on the composition of the shoreline and status of parcels fronting on the water within the study area. The maps and data herein are intended for use in the planning process to guide in policy creation and decision making.

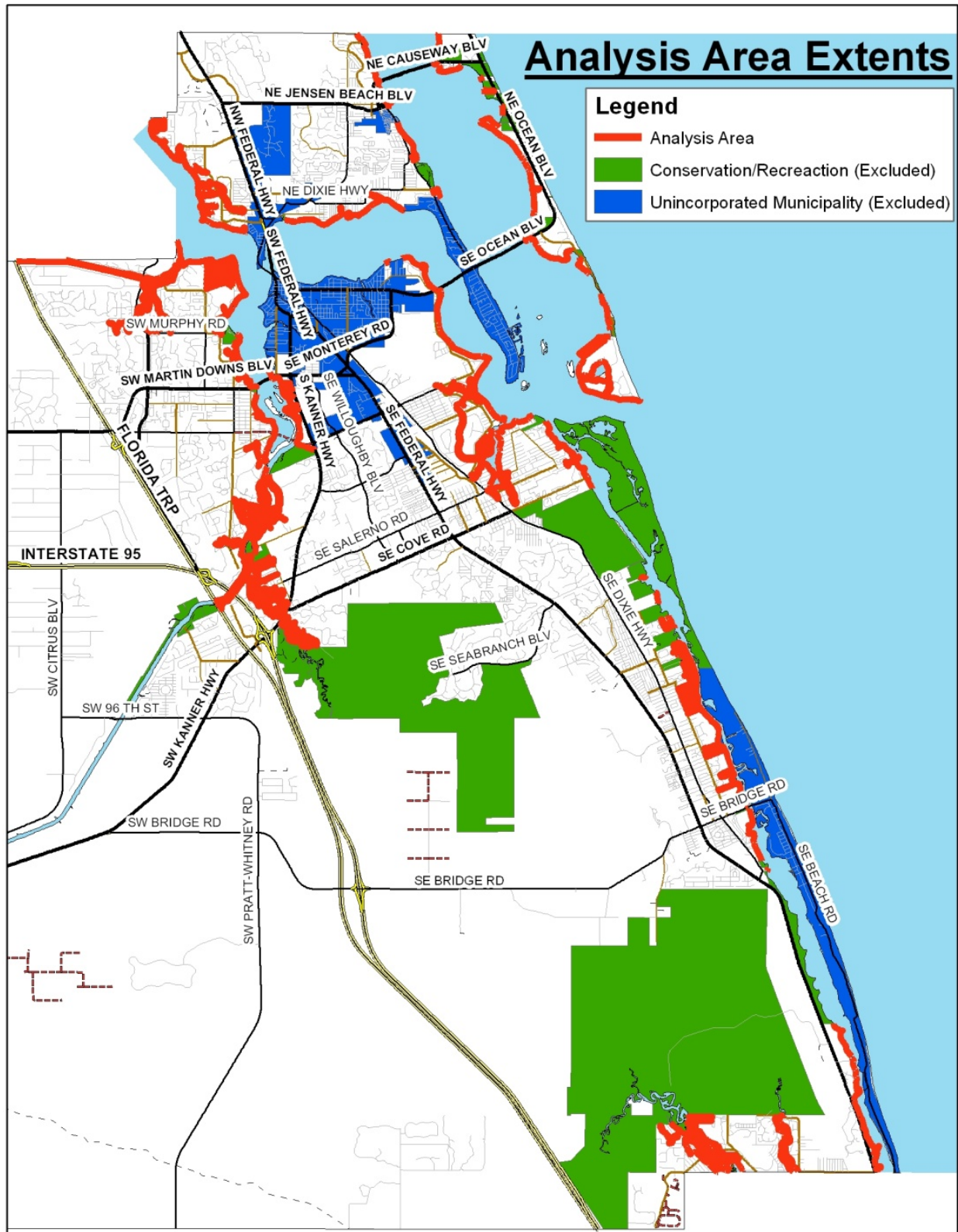
Analysis Area Extents

The analysis area for this report (minus excluded areas as discussed below) includes all navigable waters hydrologically connected to estuarine waters of the St. Lucie River, Indian River Lagoon, Loxahatchee River, and all navigable tributaries and canals.

The analysis area extent ends at the locks on the St. Lucie Canal, and the drainage weir on the C-24 canal located just west of Bessey Creek. All of the analysis in this report takes place on the tidal waters east of Florida's Turnpike.

The analysis is further confined to the unincorporated areas of the county and specifically excludes the municipalities of City of Stuart, Town of Jupiter Island, Sewall's Point and Ocean Breeze Park.

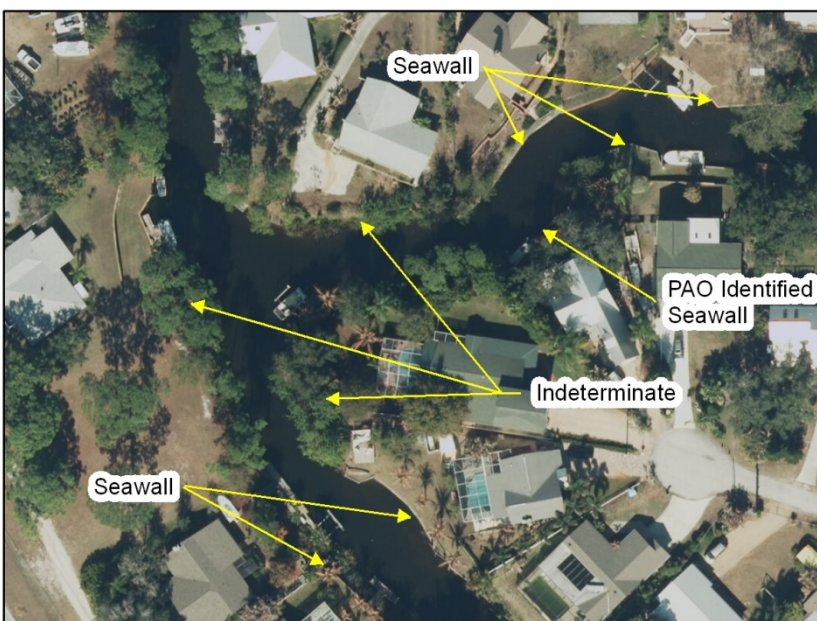
In addition, the analysis takes place only on *residential* and *commercial lands* and purposely excludes Conservation, Recreational, and Institutional land use lands that as a general rule are limited in potential for shoreline hardening. The excluded lands include the Conservation and Recreational lands on Jupiter Island and Jonathan Dickinson Park as well as the numerous Recreational/Conservation parcels that line the waterways of the county. The Atlantic Ocean side of Hutchinson Island is excluded from the analysis area because very little shoreline hardening exists and what does exist is difficult to spot on aerial photographs. All analysis and the subsequent shoreline inventory has taken place on the areas described above. See *Analysis Area Extents* map below to view the limits of the analysis area.



Methodology

To perform the analysis, staff created two data sources in the county's Geographic Information Systems (GIS) mapping system: a "Shoreline Hardening Inventory" and a "Shoreline Parcel Inventory". The Shoreline Hardening Inventory was created using heads-up digitizing from aerial photography to visually identify shoreline that has been hardened with either seawalls and/or rip rap. The Shoreline Parcel Inventory, was created using GIS tools and techniques to link various county databases together to create a cohesive dataset of parcel data that contains information on land use, zoning, year platted, PAO DOR codes and other information pertinent to the analysis. These databases are a "snapshot-in-time" and reflect conditions that were in place at the time of the creation of the databases.

The Shoreline Hardening Inventory was created using GIS aerial photography to identify the makeup of the shoreline. The advantage of creating a seawall inventory by this method is that it is reasonably quick and cost effective. A more precise, but far more costly and time-consuming way to conduct an inventory, would be to do a visual inventory by boat. The drawback to an inventory by aerial photography is that in instances of heavy tree cover or vegetation it can be difficult or impossible to classify the shoreline.

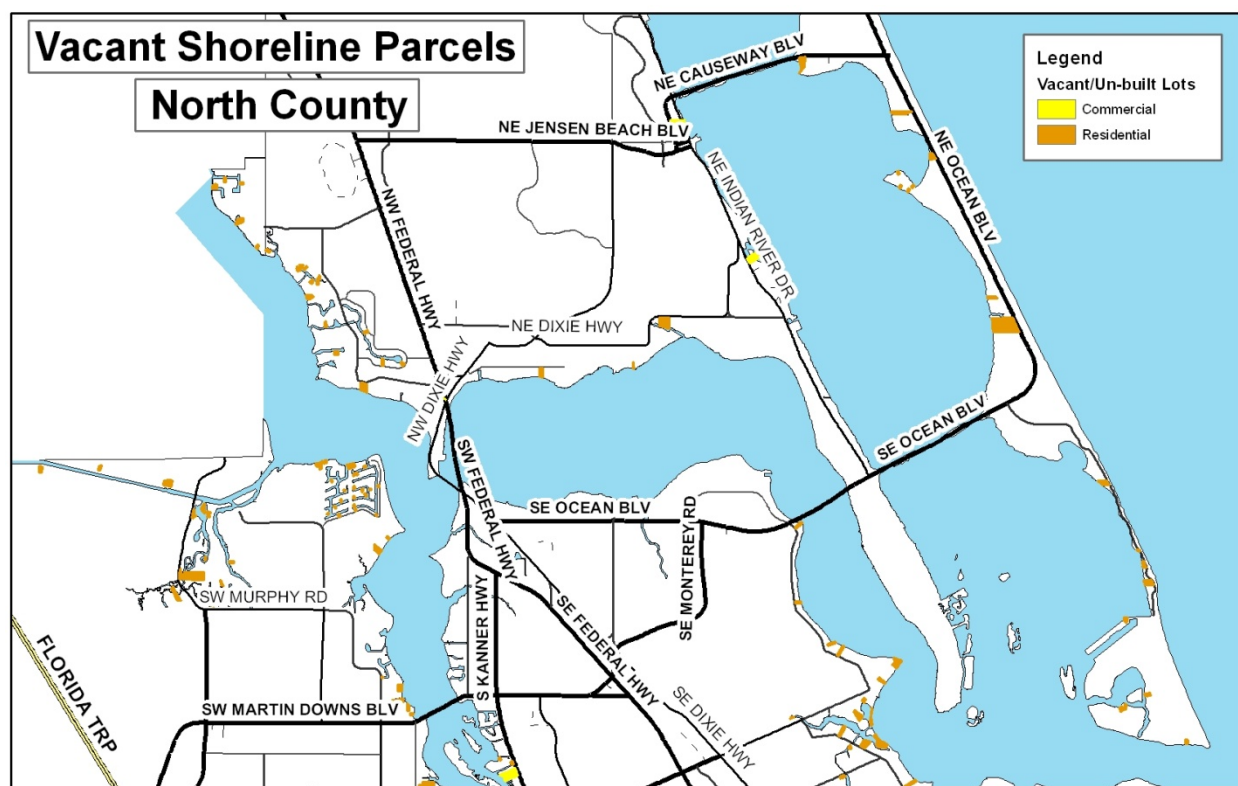


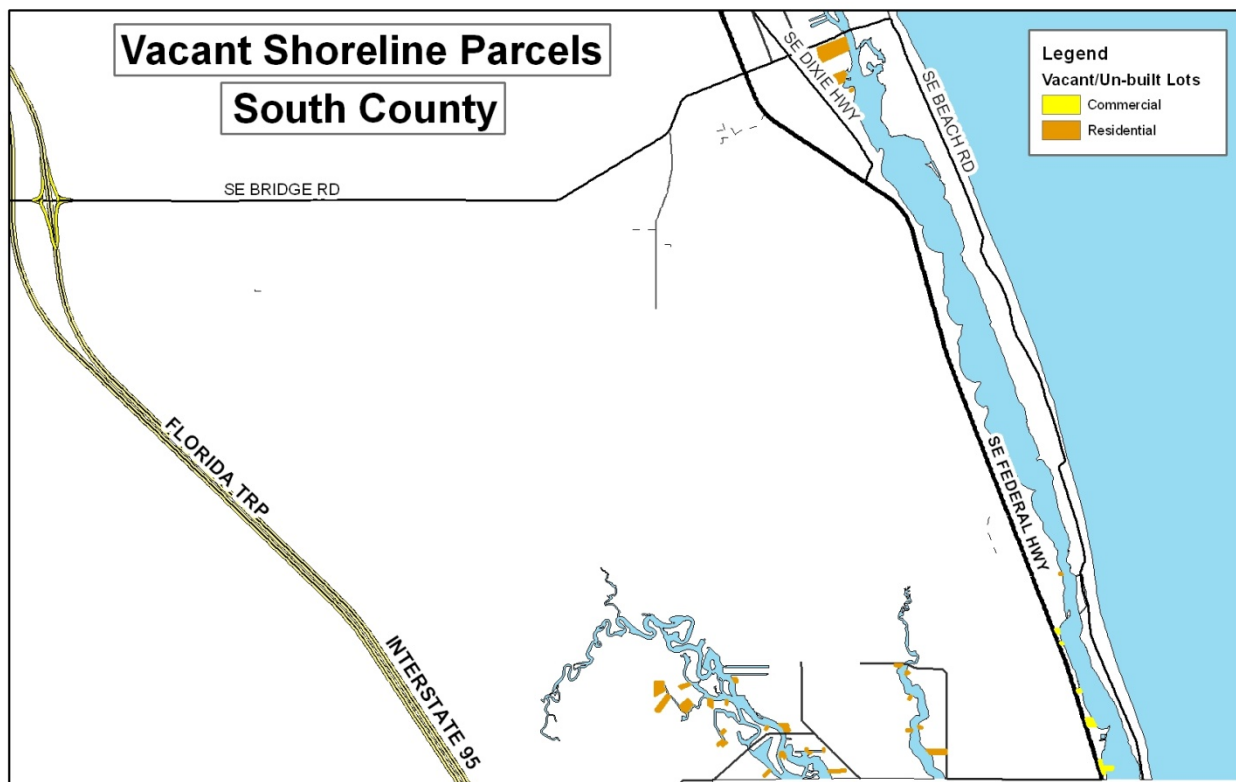
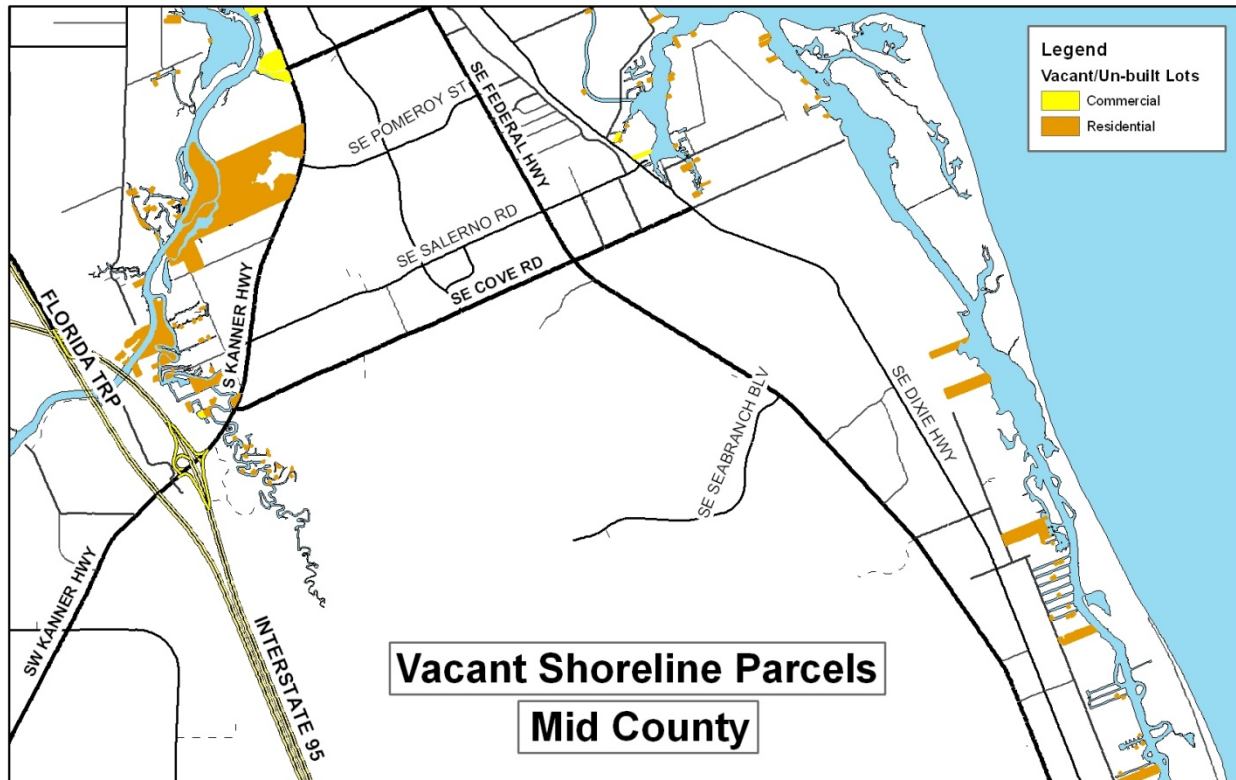
Staff was unable to identify seawalls when there is heavy tree canopy in the way. The picture above illustrates some of the difficulty in determining shoreline features from aerial photography in areas of heavy vegetation.

The shoreline inventory was further refined by comparing visual findings with seawall inventory data provided by the Property Appraisers Office (PAO). The Property Appraisers Office states that it is only over the past three years or so that they have started tracking properties with seawalls and therefore they do not have a comprehensive list of all properties with seawalls. The PAO database was used to double check and augment the visual inventory findings.

Shoreline Parcel Inventory in Analysis Area

The GIS Shoreline Parcel Inventory provides data on waterfront parcels for future land use designation, year platted, acres, current use, and whether vacant or developed. As described in the Analysis Area section, the analysis looks at residential and commercial lands and specifically excludes Conservation, Recreational, and Institutional future land uses that as a general rule are limited in potential for shoreline hardening. Staff has generalized waterfront parcels as either *residential* or *commercial*. The residential category includes all residential future land uses including Agricultural and Mobile Home. The commercial category includes all commercial and industrial future land uses including the Commercial Office/Residential designation. For the purpose of this analysis, staff has defined the Commercial Office/Residential future land use as commercial use even though it allows both residential and/or commercial uses. (Note: There are no waterfront Industrial parcels within the analysis area.) The figures below show the location of vacant waterfront parcels.





Martin County Shoreline Inventory and Analysis

The data shows that Martin County has 4,820 waterfront lots within the analysis area. Broken down by land use, Martin County has 4,571 waterfront residential lots and 249 waterfront commercial lots. 316 of the residential lots are vacant/un-built and 21 of the commercial lots are vacant/un-built.

TOTAL WATERFRONT PARCELS BY USE				
Total Waterfront Lots	Total Residential Waterfront Lots	Vacant Residential Waterfront Lots	Total Commercial Waterfront Lots	Vacant Commercial Waterfront Lots
4,820	4,571 (95%)	316	249 (5%)	21

ALL WATERFRONT PARCELS BY LAND USE				
Land Use	Total Number of Lots	% of Total	Number of Vacant Lots	% of Land Use
AG. RANCHETTE	2	0.04%	0	0.00%
COMM. GENERAL	6	0.12%	1	16.7%
COMM. LIMITED	42	0.87%	1	2.4%
COMM. WATERFRONT	155	3.22%	14	9.0%
COMM/OFF/RES	46	0.95%	5	10.9%
ESTATE DENSITY 1UPA	24	0.50%	15	62.5%
ESTATE DENSITY 2UPA	2,077	43.1%	138	6.6%
HIGH DENSITY	29	0.60%	2	6.9%
LOW DENSITY	1,991	41.3%	127	6.4%
MEDIUM DENSITY	154	3.20%	11	7.1%
MOBILE HOME	169	3.51%	13	7.7%
RURAL DENSITY	111	2.30%	9	8.1%
RURAL HERITAGE	6	0.12%	1	16.7%

Martin County has 4,820 waterfront lots within the analysis area of which 3,514 (73%) were platted prior to 1982 and are less than 1-acre. Section 4.5.A.2. Land Developments Regulations provides the following shoreline protection zone reduction for lots of record less than 1-acre:

4.5.A. Waivers for certain lots of record. The Shoreline Protection Zone and setbacks may be altered on certain lots of record to provide reasonable use of such lots of record under the following circumstances. It is not the intent of this section (4.5.) that this subsection A. be used in conjunction with a division of a lot of record into more than one lot.

Martin County Shoreline Inventory and Analysis

2. For lots of record so existing on April 1, 1982, with an upland area of one acre or less, the landward extent of the Shoreline Protection Zone shall be reduced to 25 feet. No waiver application needs to be submitted however, all shoreline performance standards remain applicable and a berm or swale described in section 4.5.A.3., shall be required.

The 3,514 waterfront lots noted above are eligible for a reduced shoreline protection zone of 25 feet. Residential lots of record may be eligible for further reduction to 20 feet upon meeting additional requirements. Out of the total 4,820 waterfront lots, 335 lots (7%) are vacant/unbuilt, of which 197 lots are lots of record less than 1-acre and qualify for a reduced shoreline protection zone of 25 feet.

TOTAL NUMBER OF WATERFRONT PARCELS				
Total Waterfront Lots	Platted Prior to 1982	Platted After 1982	Platted Prior to 1982 and Less Than 1-acre	Platted Prior to 1982 and More Than 1-acre
4,820 lots	4,006 lots (83%)	814 lots (17%)	3,514 lots (73%)	492 lots (10%)

VACANT WATERFRONT PARCELS				
Total Vacant Waterfront Lots	Platted Prior to 1982	Platted After 1982	Platted Prior to 1982 and Less Than 1-acre	Vacant Lots Greater Than 1-acre
335 lots	268 lots (80%)	67 lots (20%)	197 lots (59%)	71 lots (21%)

Commercial Parcels by Use

The Local Planning Agency asked for additional information on the existing uses of commercial waterfront parcels to better understand the makeup of the waterfront. Commercial waterfront property is defined herein to include all commercial land use designations. (Eg.: Commercial Waterfront, Commercial Office/Residential, Commercial Limited, Commercial General) There are no waterfront properties with the Industrial future land use designation within the analysis area. The County's 249 commercial waterfront lots consist of the following land use designations on the Future Land Use Map:

COMMERCIAL WATERFRONT PARCELS BY FUTURE LAND USE DESIGNATION	
Future Land Use Designation	Total Number of Parcels
COMMERCIAL GENERAL	6 parcels
COMMERCIAL LIMITED	42 parcels
COMMERCIAL OFFICE/RESIDENTIAL	46 parcels
COMMERCIAL WATERFRONT	155 parcels
TOTAL	249 parcels

Martin County Shoreline Inventory and Analysis

In the below analysis, commercial property has been grouped by its current use into one of the following categories: County-owned, Retail, Office, Restaurant, Hotel/Motel, Residential, Vacant, or Marina. The following table provides a breakdown of the acres of actual use on commercial waterfront property as well as the percentage of parcels platted prior to April 1, 1982.

COMMERCIAL WATERFRONT PARCELS BY USE				
Current Use	Total Acres	Percent of Total Acres	Total Number of Parcels	Percent of Total Parcels Platted Prior to 1982
COUNTY	5.8 acres	1.8%	9 parcels	67%
RETAIL	5.9 acres	1.8%	9 parcels	100%
OFFICE	5.9 acres	1.8%	12 parcels	100%
RESTAURANT	7.1 acres	2.2%	5 parcels	100%
HOTEL/MOTEL	12.9 acres	4.0%	8 parcels	88%
RESIDENTIAL	72.1 acres	22.4%	138 parcels	70%
VACANT	98.1 acres	30.5%	21 parcels	100%
MARINA	113.9 acres	35.4%	47 parcels	87%
TOTAL	321.5 acres		249 parcels	

The above data reveals that the majority of waterfront commercial lots (206-lots/284-acres) are being used as either Residential, Vacant, or Marina. The remainder (43-lots/37.6-acres) are either County-owned, Retail, Office, Restaurant, or Hotel/Motel. One-half of the Residential lots and almost all of the Marina lots have the Commercial Waterfront land use. Two-thirds of the Vacant lots have the Commercial Waterfront land use. The following table provides a breakdown of the future land use designations and number of parcels for each of the three majority existing uses.

COMMERCIAL WATERFRONT PARCELS BY FUTURE LAND USE DESIGNATION			
CURRENT USE	LAND USE	TOTAL PARCELS	TOTAL ACRES
RESIDENTIAL	Commercial Waterfront	71 parcels	47.9 acres
	Comm. Office/Residential	32 parcels	11.6 acres
	Commercial Limited	33 parcels	12.1 acres
	Commercial General	2 parcels	0.5 acres
	TOTAL	138 parcels	72.1 acres
VACANT	Commercial Waterfront	14 parcels	71.4 acres
	Comm. Office/Residential	5 parcels	24.1 acres
	Commercial Limited	1 parcels	0.1 acres

Martin County Shoreline Inventory and Analysis

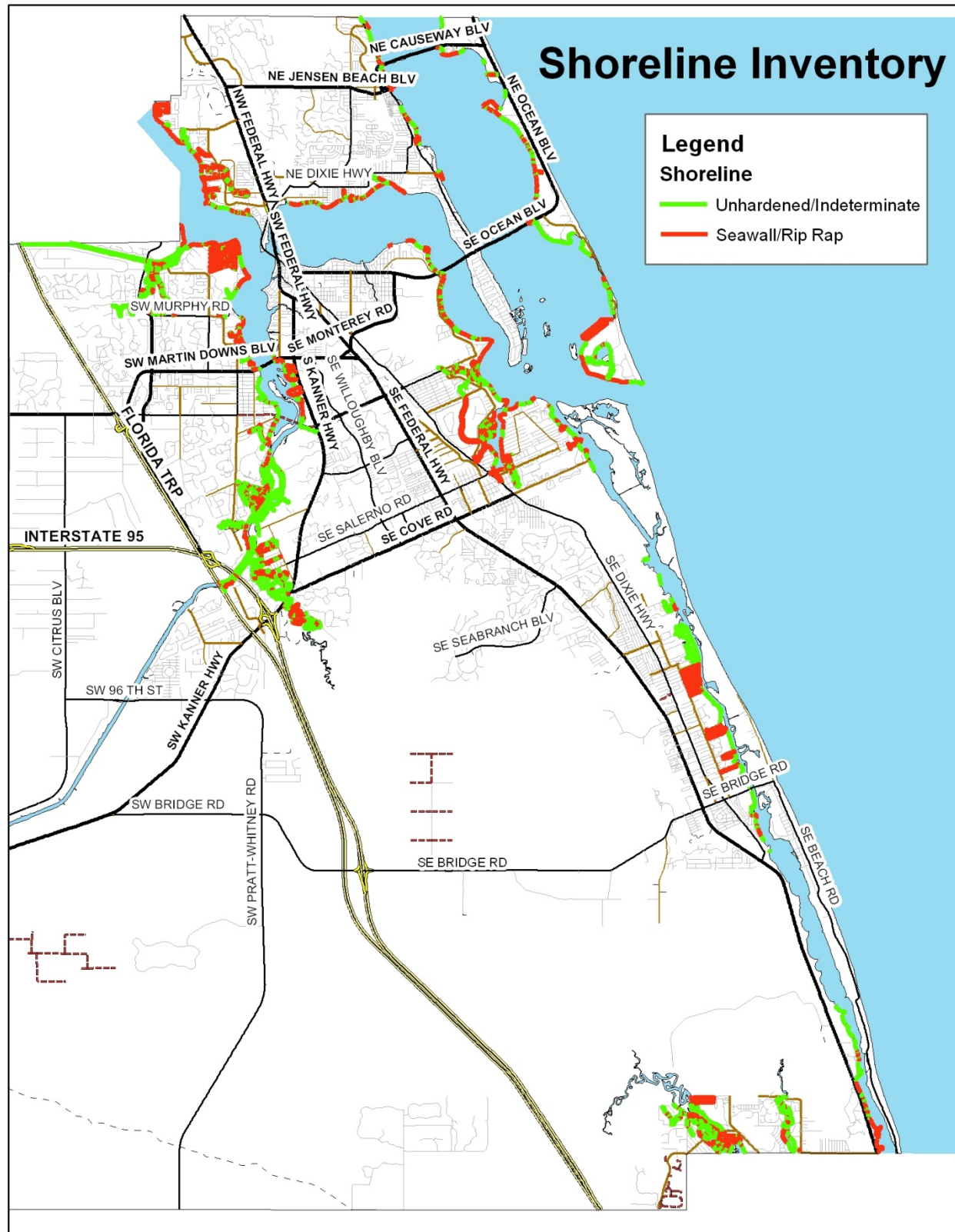
	Commercial General	1 parcel	2.5 acres
	TOTAL	21 parcels	98.1 acres
MARINA	Commercial Waterfront	45 parcels	113.2 acres
	Commercial Limited	1 parcel	0.4 acres
	Commercial General	1 parcel	0.3 acres
	TOTAL	47 parcels	113.9 acres

Shoreline Hardening in Analysis Area

The visible shoreline is classified into one of five categories depending on how it looked on aerial photographs: Unhardened shoreline; Vegetation; Indeterminate; Rip Rap; and Seawall. The “Unhardened shoreline” category was given to shoreline that displayed a predominance of sandy shoreline. “Vegetation” was assigned to shoreline where it could be determine with some confidence that no shoreline hardening was hidden beneath the vegetation. The “Indeterminate” category was given to shoreline where shoreline hardening was visible in the general area but it could not be specifically determine what was located under overhanging vegetation. “Rip Rap” was assigned to shoreline where rip rap was visible. “Seawall” was assigned to shoreline where the seawall was visible or the database provided by the Property Appraisers Office listed the property as having a bulkhead wall.

In summary, the analysis area contains a total of a 161 miles of shoreline that consists of 84 miles of unhardened shoreline, vegetation or indeterminate-vegetation and 77 miles of shoreline hardening. The numbers of course are approximate and represent only what can be visually determined on aerial photography. Hidden in the 17-miles of indeterminate-vegetation could be some length of shoreline hardening. Only a visual inspection by boat could provide a more precise inventory of the shoreline.

SHORELINE HARDENING SUMMARY		
Shoreline Classification	Total Length Feet	Total Length Miles
Unhardened shoreline	30,389.4	5.8
Vegetation	322,388.4	61.1
Indeterminate	91,507.6	17.3
Rip Rap	42,754.9	8.1
Seawall	363,605.0	68.9
Total	850,645.4	161.1



Permits for Shoreline Hardening

Permits are issued for structural shoreline hardening whenever erosion is causing a serious (significant) threat to life or property that cannot be remedied through bank stabilization with native vegetation, in accordance with the CGMP, and the LDR's. A separate Shoreline Hardening permit is reviewed and issued by Engineering and Growth Management Departments for new all new structures, including riprap. In addition, state permitting may be required. Lastly, a Building permit is issued for structures inspected under the FL Building Code, such as walls but not riprap. Most repairs to shoreline structures are issued exclusively under a Building permit, unless new riprap is added to the face of the repaired wall or existing riprap is repaired and enhanced.

The data for shoreline hardening permits and waivers to the shoreline protection zone was downloaded from the County's Kiva system and reflects the total number of applications contained within the system. The analysis on permits and waivers includes the additional analysis requested by the LPA. To perform the following analysis staff investigated each individual application to reveal what action was taken on the application.

In the analysis below, applications are categorized as approved for new construction, approved for repairs to existing construction, or application denied. For the years 2005 through 2012 the county processed a total of fifty-eight applications for shoreline hardening. Twenty-nine applications were approved for new shoreline hardening and twenty-four applications were approved for repairs to existing shoreline hardening. Five applications were denied.

PERMITS FOR SHORELINE HARDENING				
Year	Total Number of Applications	Approved for Repair of Existing Seawall/Rip Rap	Approved New Seawall/Rip Rap	Application Denied
FY 2005	1	0	1	0
FY 2006	7	4	2	1
FY 2007	11	2	8	1
FY 2008	5	2	1	2
FY 2009	5	3	2	0
FY 2010	6	4	2	0
FY 2011	9	5	4	0
FY 2012	14	4	9	1
TOTAL	58	24	29	5

Waivers to Shoreline Protection Zone

The shoreline protection zone extends 75 feet laterally upland from the mean high water line. Additional policies require a 10-foot construction setback to a primary structure or a 5-foot setback to an accessory structure (such as a pool) from the shoreline protection zone.

Martin County Shoreline Inventory and Analysis

Exceptions to the 75 foot shoreline protection zone are contained in both the CGMP and LDR's. Waivers for a reduction to the shoreline protection zone are provided to lots of record that existed on April 1, 1982, that have an upland area of one acre or less. Additional reductions can be granted for special and unique circumstances provided compliance with all additional criteria and shoreline performance standards including buffer and construction setbacks. When considering special and unique circumstances staff looks at the existing view corridor, neighborhood pattern, hardships, existing native vegetation, and existing conditions. Waivers for reduction in shoreline protection zone setbacks are generally sought for such items as construction of a pool, home, or a retaining wall.

For the years 2004 through 2012 the county processed a total of 135 applications for waivers to the shoreline protection zone. The data show that the majority of waivers (89 out of 135 applications) were granted for a reduction in the shoreline protection zone to 20-feet from the mean high water line. The data in the table below is categorized as waivers equal to 20-feet, waivers to less than 20-feet, or waivers to more than 20-feet.

WAIVERS FOR REDUCTION IN SHORELINE PROTECTION ZONE				
Year	Total Number of Applications	Waiver granted to <u>less than</u> 20-foot SPZ	Waiver granted to 20-foot SPZ	Waiver granted to <u>more than</u> 20-foot SPZ
FY 2004	9	0	6	3
FY 2005	38	1	25	12
FY 2006	35	0	18	17
FY 2007	12	1	7	4
FY 2008	11	0	7	4
FY 2009	5	0	3	2
FY 2010	12	0	10	2
FY 2011	4	0	4	0
FY 2012	9	0	9	0
TOTAL	135	2	89	44

Shoreline by Community Redevelopment Area

There are seven Community Redevelopment Areas (CRA) in Martin County and all except the Indiantown CRA are within the analysis area for this report. The six CRA's within the analysis area contain a total of 63,789 feet (12.1 miles) of shoreline. Of that, 25,954 feet (4.9 miles) is hardened and 37,835 feet (7.2 miles) contains unhardened shoreline, vegetation, or indeterminate-vegetation. There are a total of 34 vacant waterfront lots for a total of approximately 34.9 vacant acres within the CRA's. An analysis by CRA area follows.

VACANT WATERFRONT ACREAGE			
Total Vacant Waterfront Acres	# of Vacant Waterfront Lots	Total Vacant CRA Waterfront Acres	# of Vacant CRA Waterfront Lots
719.5 acres	335 lots	34.9 acres	34 lots

Jensen Beach CRA:

The Jensen Beach CRA borders the St. Lucie estuary to the east and the Town of Ocean Breeze to the south. The Jensen Beach CRA contains a total of 4,129 feet of shoreline that consists of 2,656.5 feet of shoreline hardening and 1,472.8 feet of unhardened shoreline, vegetation, and indeterminate-vegetation. There are two vacant waterfront commercial lots for a total of approximately 8.5 vacant acres within the Jensen CRA. The south parcel has a seawall.



JENSEN BEACH CRA SHORELINE SUMMARY		
Shoreline Classification	Total Length Feet	Total Length Miles
Unhardened shoreline	558.5	0.1
Vegetation	762.0	0.1
Indeterminate	152.3	0.0
Rip Rap	359.8	0.1
Seawall	2,296.7	0.4
Total	4,129.3	0.8

Rio CRA:

The Rio CRA borders the St. Lucie estuary to the south and contains a total of 19,751.3 feet of shoreline that consists of 13,870.7 feet of shoreline hardening and 5,880.6 feet of unhardened shoreline, vegetation, and indeterminate-vegetation. There are two vacant waterfront residential lots for a total of approximately 6.4 vacant acres within the Rio CRA.



RIO CRA SHORELINE SUMMARY		
Shoreline Classification	Total Length Feet	Total Length Miles
Unhardened shoreline	2,900.4	0.5
Vegetation	1,155.8	0.2
Indeterminate	1,824.3	0.3
Rip Rap	3,019.1	0.6
Seawall	10,851.6	2.1
Total	19,751.3	3.7

Golden Gate CRA:

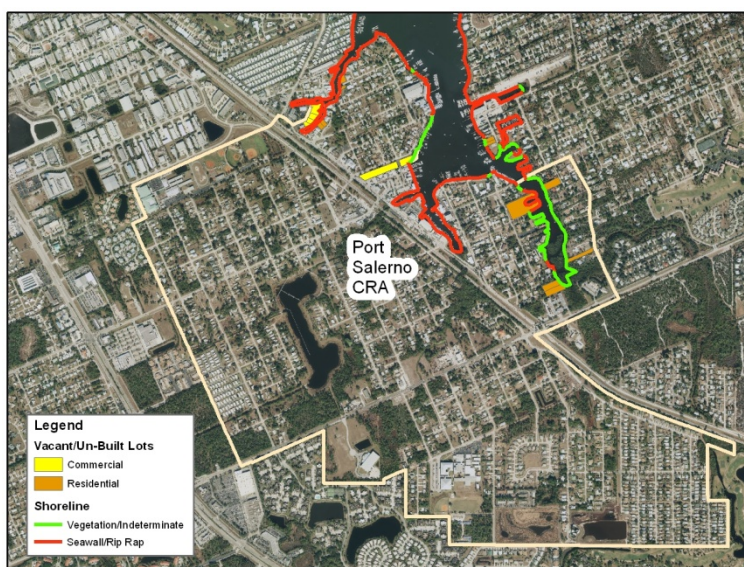
The Golden Gate CRA is delimited on its north-east boundary by the West Lake tributary which connects to the St. Lucie estuary. The Golden Gate CRA contains a total of 1,829.4 feet of shoreline that consists of 447.7 feet of shoreline hardening and 1,381.8 feet of unhardened shoreline, vegetation, and indeterminate-vegetation. There is one 0.2-acre vacant waterfront residential lot within the Golden Gate CRA.



GOLDEN GATE CRA SHORELINE SUMMARY		
Shoreline Classification	Total Length Feet	Total Length Miles
Unhardened shoreline	0.0	0.0
Vegetation	898.3	0.2
Indeterminate	483.5	0.1
Rip Rap	0.0	0.0
Seawall	447.7	0.1
Total	1,829.4	0.3

Port Salerno CRA:

The Port Salerno CRA borders on southern portion of the Manatee Pocket and contains a total of 16,569.0 feet of shoreline that consists of 11,451.5 feet of shoreline hardening and 5,117.5 feet of unhardened shoreline, vegetation, and indeterminate-vegetation. There are ten vacant waterfront residential lots for a total of approximately 5.5-acres and five vacant waterfront commercial lots for a total of approximately 3.0-acres within the Port Salerno CRA.



PORT SALERNO CRA SHORELINE SUMMARY		
Shoreline Classification	Total Length Feet	Total Length Miles
Unhardened shoreline	68.8	0.0
Vegetation	3,318.3	0.6
Indeterminate	1,730.5	0.3
Rip Rap	177.1	0.0
Seawall	11,274.3	2.1
Total	16,569.0	3.1

Hobe Sound CRA:

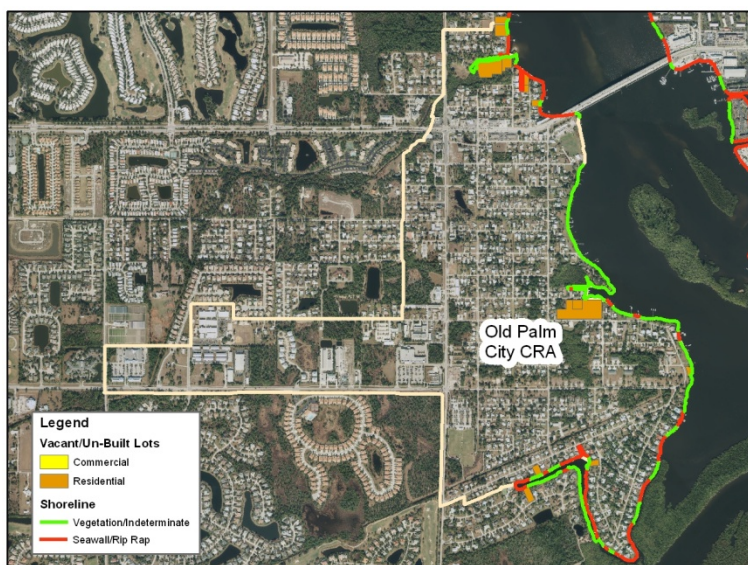
2,800 feet of the Hobe Sound CRA borders on the intra-coastal waterway. The remainder of the CRA lies in-land. None of Hobe Sound's residential developments on man-made canals are contained within the CRA boundary. The Hobe Sound CRA contains a total of 2,804.2 feet of shoreline that consists of 1503.2 feet of shoreline hardening and 1,300.9 feet of unhardened shoreline, vegetation, and indeterminate-vegetation. There are three vacant waterfront residential lots for a total of approximately 1.3 vacant residential acres within the Hobe Sound CRA.



HOBE SOUND CRA SHORELINE SUMMARY		
Shoreline Classification	Total Length Feet	Total Length Miles
Unhardened shoreline	0.0	0.0
Vegetation	624.0	0.1
Indeterminate	677.0	0.1
Rip Rap	468.5	0.1
Seawall	1,034.7	0.2
Total	2,804.2	0.5

Old Palm City CRA:

The Palm City CRA borders the south fork of the St. Lucie River and contains a total of 18,705.7 feet of shoreline that consists of 7905.0 feet of shoreline hardening and 10,800.7 feet of unhardened shoreline, vegetation, and indeterminate-vegetation. There are eleven vacant waterfront residential lots for a total of approximately 10-acres vacant residential within the Old Palm City CRA.



PALM CITY CRA SHORELINE SUMMARY		
Shoreline Classification	Total Length Feet	Total Length Miles
Unhardened shoreline	0.0	0.0
Vegetation	7,370.1	1.4
Indeterminate	3,430.5	0.6
Rip Rap	237.5	0.0
Seawall	7,667.6	1.5
Total	18,705.7	3.5