I. INTRODUCTION

This document has been prepared to satisfy the requirements of the Local Government Comprehensive Planning and Land Development Regulation Act, Chapter 163, Florida Statutes (F.S). More specifically, this document is intended to satisfy the Coastal Management requirements set forth in Chapter 163.3177 (5)(G) Florida Statutes.

The Goals, Objectives and Policies and Coastal High Hazard Area Map (only) were amended and adopted in early 2018 as part of the 2017 Evaluation and Appraisal Report Letter required amendments.

II. COASTAL ZONE MANAGEMENT GOALS, OBJECTIVES AND POLICIES

Goal

10.00.00 Manage development and redevelopment efforts in the City of Pompano Beach Coastal Zone to maximize aesthetic, environmental, recreational and economic~~al~~ resources while enhancing resilience to sea level rise impacts.

Objective Resource Protection

10.01.00 The City shall protect and enhance the City's waterways, canals, lakes, remaining coastal wetlands, living marine resources and wildlife habitat.

Policies

10.01.01 The City shall require the mitigation of all adversely impacted coastal wetlands.

10.01.02 The City will continue to implement the current requirements and procedures to encourage boat users to reduce speeds in the City's waterways protect manatees and reduce erosion and related impacts to canal banks and seawalls from excessive wake.

10.01.03 The City shall coordinate and participate with Broward County in the sea turtle program including beach lighting regulations.

10.01.04 The City will cooperate with Broward County in requiring all marinas to have pump-out facilities and prohibit the discharge of sanitary waste from boats into surface waters.

10.01.05 The City will cooperate with Broward County in prohibiting the discharge of untreated wastewater into canals and the Intracoastal Waterway.

10.01.06 The City will enforce stormwater discharge water quality standards as established by Broward County, specifically Article V, Chapter 27 of the Broward County Code of

Ordinances, and as specified in the National Pollution Discharge Elimination System (NPDES) permit.

Objective Off Shore Reef Protection

10.02.00 The City will strive to preserve the coral and artificial reef resources off the shore of Pompano Beach.

Policies

10.02.01 The City shall assure that turbidity control measures be considered as part of any major operations (e.g., beach renourishment in the vicinity of the coral reef).

10.02.02 The City will continue to encourage the sinking of large boats and ships to add to the artificial reefs already off the shore of Pompano Beach.

10.02.03 The City will encourage the Broward County Environmental Protection and Growth Management Department (and or successor agency) to provide buoy floats for boat moorings along coral reef areas, thus lessening impacts caused by boat anchors.

Objective Support and Protect Water Dependent Uses

10.03.00 Water dependent and water related uses will be protected and encouraged within the coastal area; this shall include retaining commercial zoning so that private residential redevelopment does not displace such uses.

Policies

10.03.01 Waterfront uses shall be designed in a manner compatible with the environment and be compatible with existing surrounding land uses and are prioritized according to the following criteria:

1. Water dependent commercial and municipal uses.
2. Water related uses in conjunction with water dependent uses.

3. Public accessibility
4. Non-water related uses.

10.03.02 Other than in areas designated with residential land use categories, intrusions of land uses unrelated to marine activities, provision of public access to the waterfront, or not having coastal dependency shall be discouraged from locating in areas on the coast or adjacent to navigable waterways.

10.03.03 Land zoned for marine and water dependent commercial activities shall be preserved.

10.03.04 The City will encourage that the Hillsboro Inlet Improvement and Maintenance District keep the navigational canal of the Hillsboro Inlet open and as safe as possible by dredging out the impound sand on a regular and thorough basis.

10.03.05 The City shall seek additional beach access in redevelopment.

10.03.06 The City shall develop a capital improvement program to improve the beach access locations.

Objective Beach Protection

10.04.00 The City will continue to actively work toward stabilizing the beach area and /or decreasing the amount of erosion taking place along the shoreline; beach renourishment shall be undertaken only if the sand dynamics (current accretion) changes.

Policies

10.04.01 The City will not allow the construction of any groins on any portion of the beach within the City's municipal boundaries.

10.04.02 Continue to implement the Land Development Regulations to require beachfront properties to protect the existing sand dune system along the beach frontage as part of redevelopment.

10.04.03 The City will require the planting of sand dune vegetation coupled with the construction of dune walkovers or other approved access design at all beach access points as a part of the site plan review process. The City shall encourage the planting of vegetation such as sea oats (Uniola paniculata).

10.04.04 The City will continue to participate in the Broward County Beach Renourishment Program when the sand dynamics so require. The projects shall be designed to have a life of at least ten years.

10.04.05 The City shall prohibit vehicles on the beach with the exception of maintenance and emergency vehicles.

10.04.06 The City shall support continued operation of the Hillsboro Inlet sand transfer plant to re-supply beach sand to the City.

10.04.07 The City shall seek grant programs to other opportunities to implement on-going beach protection activities.

Objective Beach Maintenance

10.05.00 The City will take steps to improve the built environment of the coastal area and beach by cleaning it up and planning general improvements.

Policies

10.05.01 The City will encourage greater public use of the coastal area and beach through maintenance and planning general improvements such as sitting and observation areas, and where feasible, additional parking.

10.05.02 Glass bottles will continue to be prohibited on all beaches within the City's municipal boundaries and the City will discourage the use of polystyrene (styrofoam) products at the beach and at all events held at City recreational facilities.

10.05.03 The City will actively participate in semi-annual beach and reef cleanups.

10.05.04 The City will establish programs to maintain the existing beach access points.

10.05.05 The City will continue to contract for beach raking on a daily basis.

Objective Minimize Storm and Sea Level Rise Impacts

10.06.00 The City shall ensure that building, development and redevelopment activities are conducted in a manner that minimizes damage to life and property from tropical storms or hurricanes and considers the potential for flood related impacts from projected sea level rise.

Policies

10.06.01 All new construction and redevelopment shall conform to the standards set forth in the Florida Building Code and the City's Flood Regulations (Chapter 152) which may establish flood protection requirements that are more stringent than the Florida Building Code and/or the National Flood Insurance Program (NFIP) regulations.

10.06.02 Any development of structures lying partially on, or seaward of the Coastal Construction Control Line, shall be subject to the provisions set forth in Chapter 161 Florida Statutes.

10.06.03 Incorporate Federal Emergency Management Agency (FEMA) Floodplain Management Regulations, or higher regulatory standards, into the City's Floodplain Management Regulations (Chapter 152) to guide development activity where applicable, to reduce future flood losses and flood insurance claims. The City will continue to participate in the Community Rating System (CRS) program using these higher regulatory standards as one means by which to achieve points for the City's CRS rating.

10.06.04 The City will coordinate with Broward County to adopt Adaptation Action Areas (AAAs) within the City, per Florida State Law, in order to: a. Identify areas of significance that are vulnerable to the impacts of rising sea level; b. Identify and implement adaptation policies to increase community resilience; and c. Enhance the funding potential of infrastructure adaptation projects.

10.06.05 The City will coordinate and participate with Broward County on updates to climate related policies and maps, including updates to the Priority Planning Areas for Sea Level Rise Map, in the Broward County Land Use Plan, which will be updated at a minimum every 5 years based on best available data including the findings of the Broward County and USGS Joint Climate Change Inundation Modeling effort, which seeks to achieve a better understanding of the impacts of climate change and rising sea level on water supplies, drainage and flood control systems.

10.06.06 The City will, prior to approving land use plan amendments in the areas prone to flooding and/or the impacts of sea level rise, as identified on the City's Sea Level Rise and Flood GIS map layer, as well as the County's Coastal High Hazard Areas and Priority Planning Areas for Sea Level Rise Maps, determine how the proposed development will be served by adequate storm water management and drainage facilities and that it will not adversely affect area-wide flooding.

10.06.07 The City will support the goals and will implement to the maximum extent feasible in coordination with affected stakeholders, the recommended actions of the Climate Action Plan, as approved by the Broward County Climate Change Task Force, and adopted by the Broward County Board of County Commissioners.

10.06.08 In accordance with Resolution 2016-134, the City will continue to utilize the 2015 “Unified Regional Sea Level Rise Projection for Southeast Florida", authored by the Southeast Florida Regional Climate Change Compact ("Compact"), as may be amended from time to time and updated based on best available data, as the basis for sea level rise adaptation planning activities. These projections will be used until such time as this data source is replaced with another regionally accepted source of sea level rise projections.

10.06.09 To reduce future flood losses and claims made under the flood insurance policies issued in the City and to improve community resiliency, the City will coordinate with Broward County to determine appropriate minimum floor elevations; minimum crown of road elevations; and optimal seawall heights and deadlines for retrofitting to those heights; based on projected conditions from sea level rise.

10.06.10 The City will coordinate with Broward County, FDOT and other agencies and service providers that plan for, own, operate or maintain public facilities and infrastructure within or crossing proposed AAA.

10.06.11 The City will coordinate with FDOT in relation to identifying and addressing vulnerable/at risk transportation infrastructure using the best available data and tools to assist FDOT to implement the goal to provide an agile, resilient and quality transportation infrastructure system.

Objective Hurricane Evacuation

10.07.00 Persons within the Coastal Zone will be protected as much as possible from the effects of a tropical storm or hurricane.

Policies

10.07.01 The Broward County Hurricane Evacuation Plan shall continue to be the effective evacuation plan for the City of Pompano Beach.

10.07.02 The Pompano Beach Fire Rescue Hurricane Procedures (revised annually in May) shall continue to be the emergency operations plans for the City of Pompano Beach.

10.07.03 The evacuation times set forth in the Broward County Coastal Hurricane Evacuation Plan (CHEP) shall be maintained throughout the procedures set forth in the Pompano Beach Fire Rescue Hurricane Procedures.

10.07.04 The City shall work with Broward County to secure emergency shelter facilities for 100 percent of the vulnerable population.

10.07.05 The City will continue to prohibit the use of flex and redevelopment units on the barrier island by excluding it from the City's flex and redevelopment unit receiving area map.

Objective Post-Disaster Redevelopment

10.08.00 The City of Pompano Beach will adopt Broward County's Post Disaster Redevelopment Plan to reduce or eliminate the exposure of human life and public and private property to natural hazards.

Policies

10.08.01 That portion of a structure seaward of the Coastal Construction Line which has been shown to be susceptible to storm damage and which suffers repeated damage to pilings, foundations, or load bearing walls shall be modified.

10.08.02 In accordance with the City's more stringent flood plain regulations, structures which are damaged in excess of 49 percent of their appraised value shall be required to be rebuilt to meet all current construction and floodplain regulations.

10.08.03 The City shall consider public acquisition of land and property in post-disaster redevelopment situations.

10.08.04 The City shall use the East CRA redevelopment plan implementation process to help achieve certain objectives and policies of the post disaster redevelopment plan.

Objective Infrastructure Phasing in the Coastal Zone

10.09.00 The provision of infrastructure within the coastal zone will be done in a manner which ensures public health, safety and welfare and limits the use of public funds in coastal high hazard areas unless necessary to enhance public beach access, hurricane evaluation clearance times or to mitigate the effects of sea level rise.

Policies

10.09.01 The coastal high hazard areas shall be those areas below the elevation of the Category 1 storm surge line as established by the Sea, Lake and Overland Surges from Hurricanes (SLOSH) computerized storm surge model, consistent with Chapter 163.3178(2)(h), F.S.

10.09.02 The level of service standards adopted elsewhere in this comprehensive plan shall, where applicable, be the level of service standards within the coastal zone.

10.09.03 City funded public facilities shall not be built in the coastal area unless the facility provides public access, enables resource restoration, replaces existing infrastructure, is necessary to protect the public health, safety and welfare, will enhance hurricane evacuation clearance times or will mitigate the effects of sea level rise.

10.09.04 The City shall coordinate with Broward County to provide temporary emergency housing for displaced residents.

Objective Historic Resources

10.10.00 The City of Pompano Beach shall preserve and protect its historic resources in the coastal area.

Policy

10.10.01 The City shall encourage the preservation of historic and archaeological sites in the coastal area.

III. DATA AND ANALYSIS

Defining the Study Area

Coastal areas as defined in rule 9J-5.003(11), F.A.C., relate to the 35 coastal counties and all coastal municipalities within their boundaries designated by the state planning agency. These local governments are listed in the document entitled "Local Governments Required to Include Coastal Management Elements in Their Comprehensive Plans," dated July 1, 1986, prepared by the Department of Community Affairs. The local governments listed in the document and any other communities that incorporate subsequent to July 1, 1986, and meet the criteria in Chapter 380.24 F.S., shall also be included in the coastal areas.

Existing Land Use

The area defined as the coastal area (study area) totals is approximately 5.6 square miles. Existing land use in the coastal zone is generally characterized by single family and multi-family residential housing (with an average density of five units per acre) as the most predominant land use comprising 49% of the total area. Concentrations of commercial, service-related and institutional uses along major trafficways edging or traversing the study area make up approximately 17% of the coastal area. Atlantic Boulevard, anchored on the west end of the study area by City government facilities and the east end by the public beach, is lined primarily with commercial and service-related uses, as in most of Federal Highway. Dixie Highway, the westernmost boundary of the study area, is a mix of industrial, educational, governmental, multi-family housing, commercial and service-related uses. The remaining 34% of the coastal area is in either water or transportation use. In 2005, the study area was almost completely built out with only 128 acres or 3.6% of vacant land available for new development.

The economic base is centered around retail commercial, service industries, and especially tourism. The City is a summer and winter destination. Marine industries are of importance, especially those that have access to navigable waterways. In other areas of the City and the county, commercial establishments are also thriving, as Pompano Beach is a significant tourist

designation. Not to be ignored is the economic impact created by the local residents who choose Pompano Beach as their area to live, work and play. The total environment of water, air, and sunshine is conducive to the importance of the coastal zone and its related uses. Because the coastal area is essentially built out (96%), change in the economic base is occurring slowly in redevelopment. For example, a restaurant or boating facility may change ownership and name, but the use normally remains. Therefore, the relative percentage of existing individual land use types within the study area are expected to remain relative constant.

Although land use on the barrier island is also predominantly residential, housing is more evenly distributed across housing types than on the mainland. Commercial and service-related uses on the barrier island are concentrated at or near the intersection of Atlantic Boulevard and A1A but are also found at the northernmost point of the island and at the south end of the study area. It should be noted that land use on both sides of the Intracoastal is primarily residential.

Water is a significant existing land use with the Intracoastal Waterway, the Cypress Creek Canal, the Hillsboro Inlet and the numerous finger canals and isles serving 2,487 single family waterfront properties. Water accounts for approximately 515 acres or 14.4% of the coastal area.

Existing Land Use is graphically presented in Figure 1. In the table that follows, acreage of specific land uses as categorized by the State of Florida Department of Community Affairs is provided.

Figure 1 - Existing Land Use

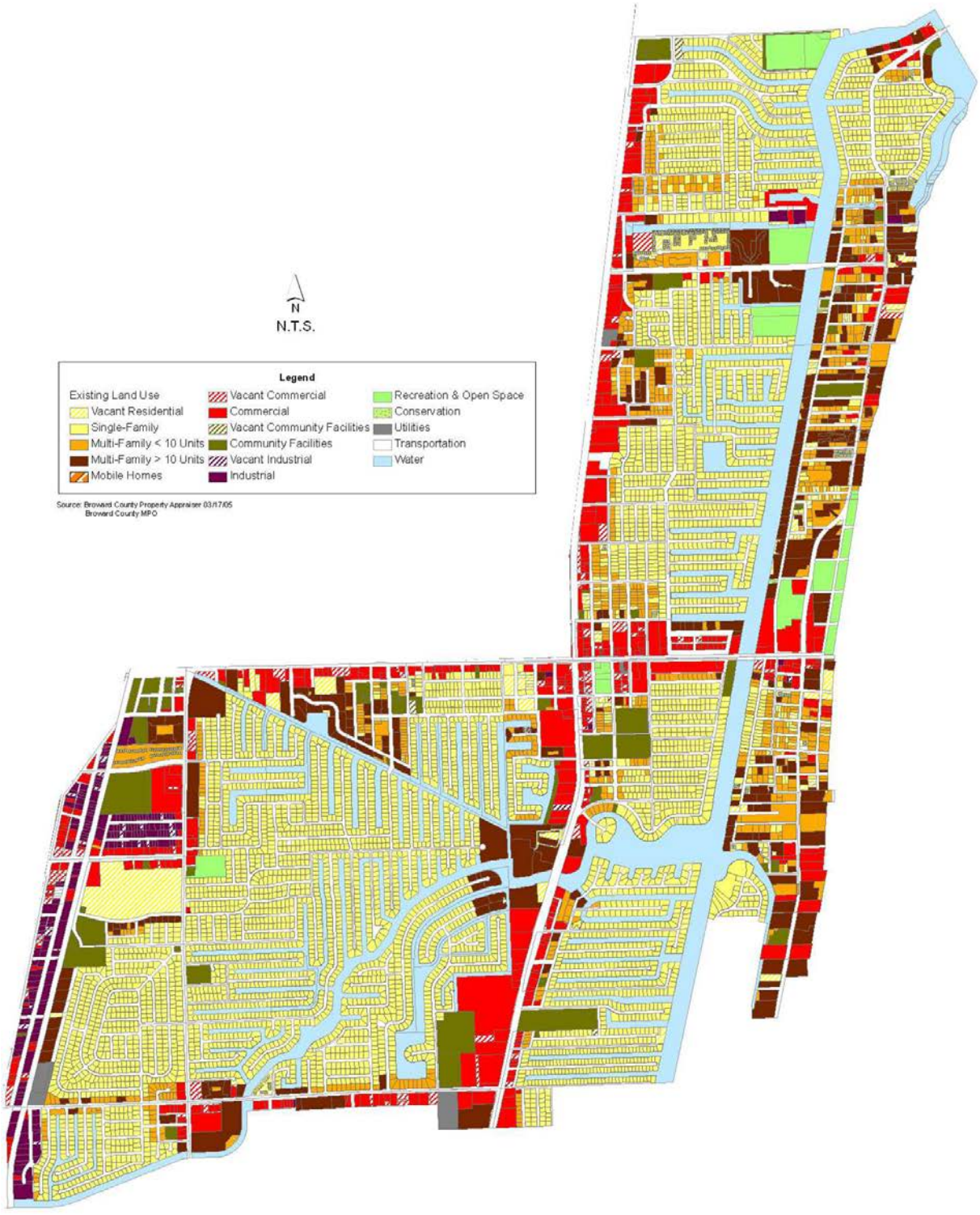


Table 1 - Existing Land Use

Land Use	Acres	% of Total
Residential		
Vacant Residential	89.7	2.5%
Single-Family	1,162.3	32.5%
Multi-Family < 10 Units	202.7	5.7%
Multi-Family > 10 Units	293.9	8.2%
Mobile Homes	-	-
Total	**1,748.6**	**48.8%**
Non-Residential		
Vacant Commercial	32.2	0.9%
Commercial	304.5	8.5%
Vacant Industrial	4.4	0.1%
Industrial	59.4	1.7%
Recreation & Open Space	74.0	2.1%
Conservation	-	-
Vacant Community Facilities	2.0	0.1%
Community Facilities	118.7	3.3%
Utilities	11.5	0.3%
Total	**606.8**	**16.9%**
Transportation/Water	**1,226.1**	**34.2%**
Total Vacant	128.3	3.6%
Total Non-Vacant	2,227.0	62.2%
Transportation/Water	1,226.1	34.2%
Total	**3,581.4**	100.0%

Source: Walter H. Keller, Inc.
Broward County Property Appraiser 2005

Water -Related and Dependent Uses

The inventory of existing water-related and dependent uses includes recreational and commercial facilities and services provided by both the public and private sector. Although many hotels, motels and restaurants may prosper because of their proximity to water, they were not included in the inventory because of the indirect nature of their water relatedness. A summary description of water-related and dependent uses in the coastal zone is provided below.

- Beach Access: There is one public beach and 16 access points to the beach via street and private property rights-of-way spaced regularly along the approximately three miles of beach in the study area. The only stretch of beach with no public access is the northernmost 2,500 feet south of the Hillsboro Inlet. The area is residential and a local homeowners group has created a private access point. Parking adjacent to or within 1/4-mile radii of the beach totals 1,001 spaces with the bulk of the parking being at Oceanside Park (413 spaces) or in the vicinity of the public beach (508).

- Fishing: There are many fishing spots in the study area. Some of these are: Hillsboro Inlet Park, the jetty at the north end of the barrier island, the pier at the Pompano Beach Park, William J. Alsdorf Park and Harbors Edge Park along the Intracoastal.

- Boat Ramps: Three (3) public boat ramps are provided at William J. Alsdorf Park.

- Parks: Numerous parks adjacent to waterways or the beach have been provided by the City. Hillsboro Inlet Park, Marine Drive, Northeast 10th Street, Northeast 16th Street, Sunset Park, North Riverside Park, Harbors Edge Park and Southeast 13th Street, Southeast 15th Street, on the Intracoastal, Lake Santa Barbara Park and Indian Mound Park are passive recreational facilities, their primary attraction being views to the water. William J. Alsdorf Park, as stated above, provides boat access via its six

boat ramps. The public beach provides beach access and is supported by Oceanside Park that was developed primarily as a parking facility.

- Scenic Routes and Overlooks: Although the entire oceanfront and Intracoastal has scenic value, areas of particular interest are highlighted on Figure 2. These include the view of the Hillsboro Bay from A1A and ocean views from Hillsboro Inlet Park and the Hillsboro jetty, Wahoo Bay pedestrian bridge and observation deck at North Ocean Beach Park. The view from the Atlantic Boulevard bridge, particularly traveling eastward, is also noteworthy. The City is working with the Broward County MPO to obtain a "Scenic Highway" designation for State Road A1A.

- Marinas: There are four marinas providing a total of 100 wet slips in the study area. This figure does not address slips associated with private residences. Approximately 1/2 of the spaces (50 slips) are at the Sands Marina adjacent to the Atlantic Boulevard bridge on the Intracoastal and twenty-four of the spaces are at marinas on Lake Santa Barbara. Fish City marina at the north end of the Barrier Island has 10 slips, but as noted below, they are occupied by charter and dive boats.

  Dry storage space is available at marinas that are found in either the Lake Santa Barbara area (300 spaces) or along Northeast 16th Street (210 spaces). While the availability of spaces is not known in this update, older information suggests additional public boat slips are needed.

- Commercial: Commercial water-related and dependent uses include fishing and drift boat charters, reef dive trips, seafood processing, boat repairs and construction, marina construction and boat sales that have or require dock space. As stated above, Fish City Marina is the home of a fishing and dive boat charter fleet. The most concentrated area of commercial activity, however, is along Northeast 16th Street. Immediately adjacent to the Intracoastal is a commercial zoned area containing

fishing and charter boat dockage, seafood processing, marine construction and boat repair and construction.

The Atlantic Boulevard Bridge area is another center of water-related and dependent commercial activities: charter fishing boats at the Sands Marina and fuel dock at Basin Marina. The Lake Santa Barbara area to the south is a center of boat-related commercial activities. In addition to the marinas in that area, there are boat repair operations and numerous boat dealers requiring dock space.

Charter fishing boats are an important part of the City's tourist-based economy and therefore preservation of these uses is very important.

Beach access, popular fishing spots, boat ramps, limited boat access points, parks adjacent to waterways or beaches, points of particular scenic value, marinas and commercial marine-related operations are located on Figure 2 and listed in Table 2.

Figure 2 - Water-Related Uses

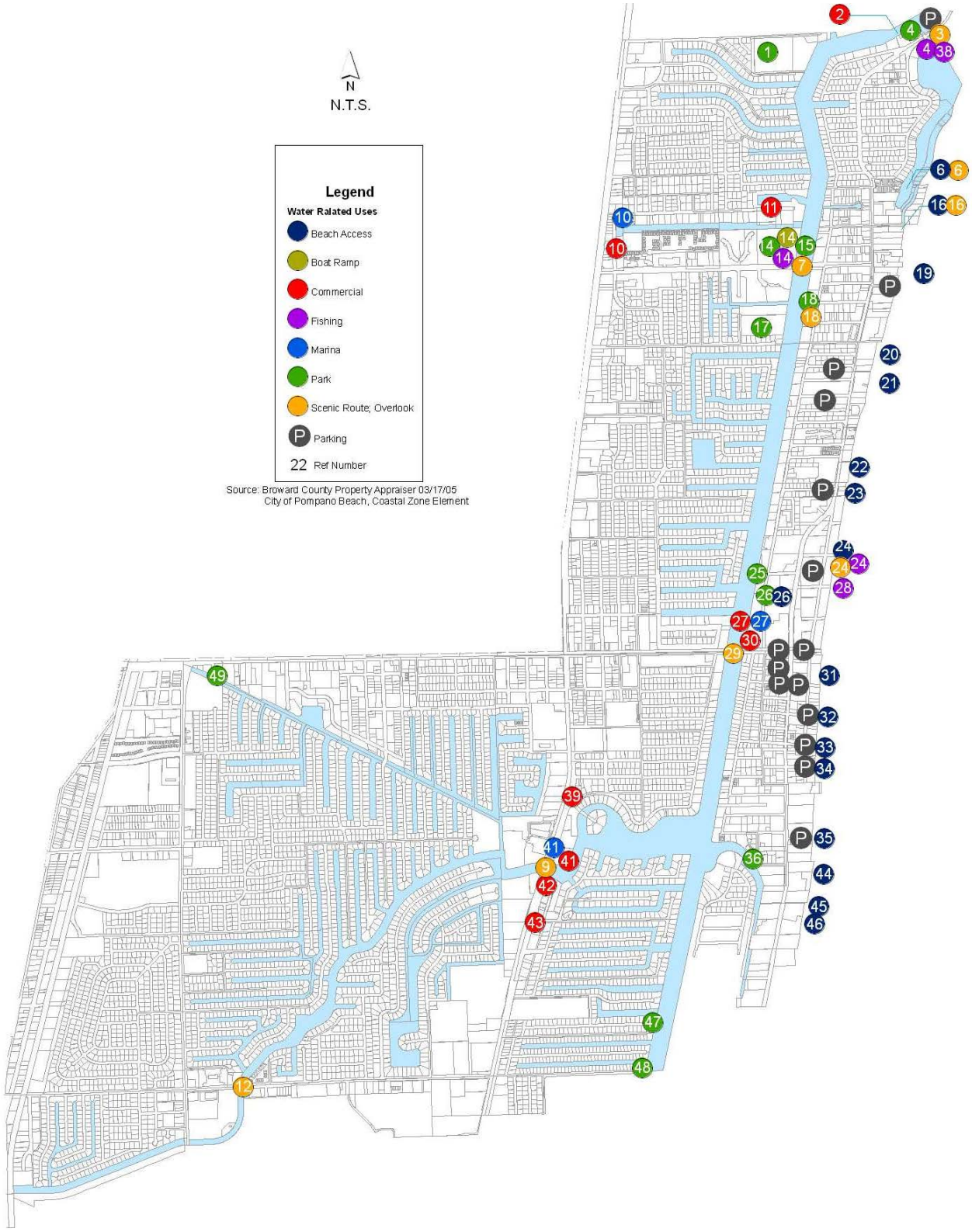


Table 2 - Inventory of Existing Water-Related and Dependent Uses

Map Ref No.	Name	Use	Parking Spaces
Beach Access			
22	Silver Thatch Ocean Club ROW	Beach Access	
19	NE 13th Street ROW	Beach Access	
20	NE 10th Street ROW	Beach Access	
21	Admiralty Towers ROW	Beach Access	24 *
23	NE 5th Street ROW	Beach Access	11 *
31	SE 2nd Street ROW	Beach Access	15
32	SE 4th Street ROW	Beach Access	4
33	SE 6th Street ROW	Beach Access	4
34	SE 8th Street ROW	Beach Access	4
35	SE 12th Street ROW	Beach Access	4
44	Criterion ROW	Beach Access	
45	Renaissance of Pompano (North)	Beach Access	
46	Renaissance of Pompano (South)	Beach Access	
24	Public Beach	Beach Access, Fishing, Scenic	508 *
Marina Commercial			
11	Merritt Marine Complex	Marina, Boat Repair and etc.	
8	Hidden Harbor	Marina, Boat Sales	
42	Aqua Toy Store	Marina, Boat Sales	
39	Marine Max	Marina, Boat Sales, Repair	
2	Fish City Marina	Marina, Charter Fleet	
27	Sands Marina	Marina, Charter Fleet	
30	Basin Marine	Marina, Fuel Dock	
Park			
1	Exchange Club Park	Park	20
5	Marine Drive ROW	Park	
15	NE 16th Street Park	Park	
17	Harbors Edge Park	Park	
25	North Riverside Park	Park	
28	Pompano Fishing Pier	Park, Fishing	
36	Indian Mound Park	Park	
37	Lake Santa Barbara Park	Park	
38	Hillsboro Inlet Jetty	Park, Fishing	
47	SE 13th Street Park	Park	
48	SE 15th Street Park	Park	
26	Oceanside Park	Park, Beach Access	413+2 bus
6	Wahoo Bay Bridge Park	Park, Beach Access, Scenic	22
16	North Ocean Park	Park, Beach Access, Scenic	30
14	William J. Alsdorf Park	Park, Boat Ramp, Fishing	67
4	Hillsboro Inlet Park	Park, Parking, Fishing, Scenic	40
18	Sunset Park	Park, Scenic	15
49	Pompano Beach Historical Park	Park/Museum	
Scenic			
3	SR A1A/Hillsboro Inlet Bridge	Scenic	
7	14th Street Causeway Bridge	Scenic	
9	US 1 Bridge	Scenic	
12	SW 15th St. Bridge	Scenic	
29	Atlantic Blvd. Bridge	Scenic	

Source: Walter H. Keller, Inc.

Notes: * - Includes parking within 1/4 mile radii of beach access points.

Public Access

Public access to the saltwater (Atlantic Ocean) beach and other coastal recreational resources, as previously discussed, is provided by numerous public right-of-ways, the public beach, public boat ramps and marinas. In Table 3 below, these features are summarized.

Table 3 - Summary of Coastal Access Features

Facility	Private	Public	Total
Saltwater Beach (miles)		2.9	2.9
Beach Access Points (sites)		16	16
Saltwater Fishing Pier (linear feet)(site)		850	850
Saltwater Jetty (linear feet)		400	400
Saltwater Boat Ramps Lanes (1 site)		3	3
Saltwater Marina Slips (4 sites)	90		90
Saltwater Dry Storage (4 sites)	510		510
Scenic Views/Observation Areas		7	7

Source: Walter H. Keller, Inc.

As noted in the previous discussion of beach access points, the City has provided, in addition to the public beach, 16 access ways via street and private property rights-of-way along the entire length of the beach with the exception of the northern 2,500 feet where a local homeowners group has provided private access. Table 4 provides the location of each access point with information on existing features.

Table 4 – Beach Access Locations

Access Point	Spacing	Amenities
Wahoo Bay Bridge Park	400'	Lighted walk to wooden bridge (scenic view)
North Ocean Park (NE 16th Street)	1,050'	Restrooms, picnic tables & pavilions *
NE 13th Street	1,000'	*
NE 10th Street	410'	Trash receptacles & shower
Sea Point Condominiums	100'	
Admirality Towers	1,575'	Chain link fence and gate w/posted hours
Silver Thatch Ocean Club	430'	Concrete walkway & trash receptacle
Main Public Beach	520'	Restrooms, picnic tables, pavilions & pier *
SE 2nd Street	500'	*
SE 4th Street	500'	*
SE 6th Street	350'	*
SE 8th Street	1,250'	*
SE 12th Street	575'	*
Criterion Condominiums	1,100'	Paved concrete walkway
Renaissance (North)	530'	Stairs
Renainance (South)		Stairs

Source: City of Pompano Beach
Notes: Spacing is lineal distance to next access location.
* with parking, bench, shower & trash receptacles.

The importance of the public beach, located at the terminus of Atlantic Boulevard, cannot be over emphasized. The beach and surrounding area serves as a regional resource as well as a local one. The saltwater pier that is located here is a major recreational focal point for both local residents and tourists who fish, enjoy the ocean view, and people watching from the vantage point of the pier. Hillsboro Inlet Park and the saltwater jetty at the Hillsboro Inlet are other popular fishing spots as is William J. Alsdorf Park. Public boat ramps, available at Alsdorf Park, are heavily used throughout the year.

The vast majority of recreational boats are docked at private residences but there are marinas leasing dock space to individuals. As stated above, the marinas providing this service are generally full and five out of seven maintain a waiting list. Dry storage facilities are fewer in number but overall provide a greater number of storage spaces.

While the City of Pompano Beach has provides significant access to coastal recreational facilities, it is recommended that additional beach access be secured in redevelopment. The East CRA plan calls for increased parking to serve beachgoers. With respect to saltwater boat access, both the public and private sector contribute substantially to accessibility through the public boat ramps at William J. Alsdorf Park and privately owned and operated marinas that respond to market forces.

Future Land Use

As indicated in the Existing Land Use section, 96 percent of the 3,581 acres comprising the study area are developed. The Land Use Plan classifications, acreages and percentage included in the study area by land use are presented in Table 5.

Figure 3 - Future Land Use

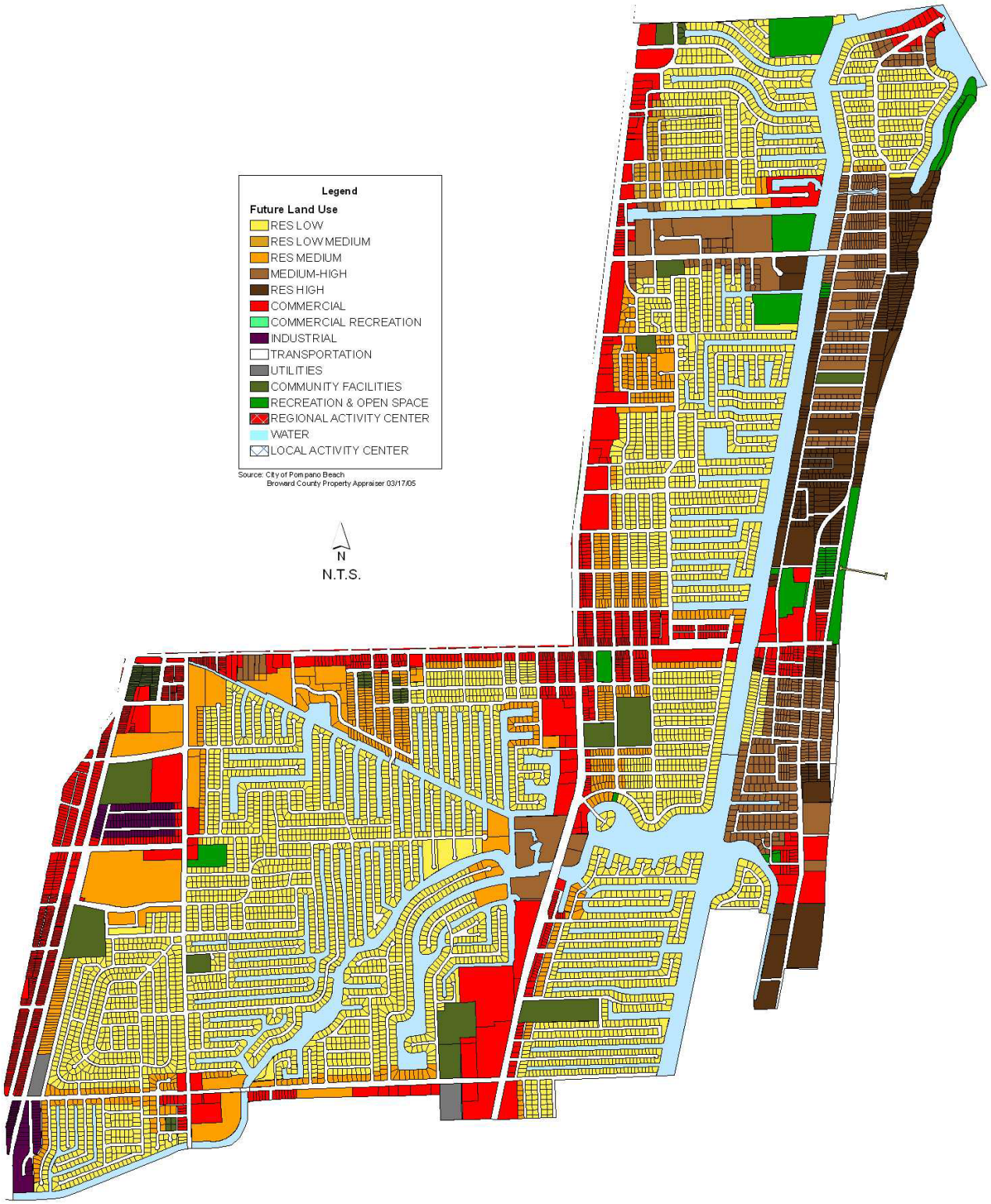


Table 5 - Future Land Use

Land Use Code	Land Use Category	Acres
	Residential	
L	Residential - Low (1 - 5 DU/AC)	1,123.2
LM	Residential - Low-Medium (5 - 10 DU/AC)	20.2
M	Residential - Medium (10 - 16 DU/AC)	271.7
MH	Residential - Medium-High (16 - 25 DU/AC)	220.1
H	Residential - High (25 - 46 DU/AC)	144.9
	Total Residential	**1,780.1**
	Non-Residential	
C	Commercial	372.2
CF	Community Facilities	92.5
CR	Commercial Recreation	-
I	Industrial	27.6
OR	Recreation & Open Space	74.0
OP	Office Park	-
U	Utilities	8.9
RAC	Regional Activity Center	-
LAC	Local Activity Center	-
IR	Irregular Land Use	-
	Total Non-Residential	**575.2**
W	Water	515.0
T	Transportation	711.0
	Total	**3,581.4**

Source: Walter H. Keller, Inc.
City of Pompano Beach

Effect of Future Land Use

As indicated in the previous section, the Coastal Management Area is close to built-out (3.6% vacant), although 128 vacant acres are available and existing developed parcels under go redevelopment and subsequent intensification continually. Vacant residential acreage (from Table 1) is stratified by land use categories in Table 6 below. If the vacant residential parcel were built to maximum density, 2,164 dwelling units could be added in the coastal zone area.

Table 6 – Residential Development Potential

Land Use	Acres	Units
Low (5)	22.03	110
Low Medium (10)	0.43	4
Medium (16)	70.99	1,136
Medium High (25)	16.75	419
High (45)	11.00	495
Total	**121.20**	**2,164**

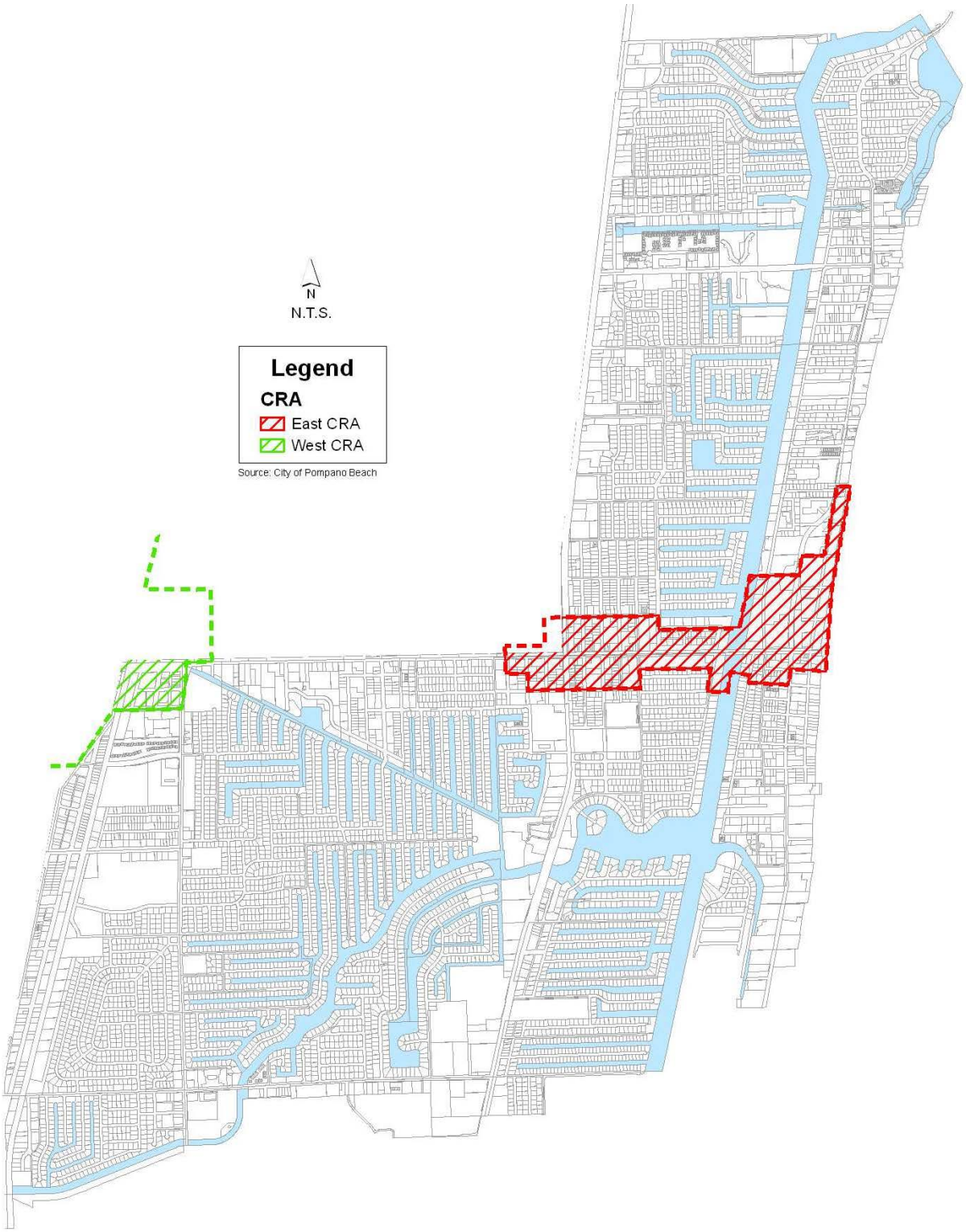
Source: Walter H. Keller, Inc.
Broward County Property Appraiser

Approximately 32 acres of commercial land is vacant in the coastal zone area. If developed at 35% floor area coverage, approximately 491,000 square feet of commercial floor area could be developed on the vacant parcels.

CRA Redevelopment Efforts

Two (2) community redevelopment areas are located within portions of the coastal zone area as shown in Figure 4. A small portion of the Northwest CRA encompasses the City Hall Complex in the west portion of the coastal zone area.

Figure 4 – CRA boundaries in the Coastal Zone



The East Pompano Beach District CRA was established in 2001. This 158 acre area is totally located within the coastal zone area and extends from 18th Avenue to the Atlantic Ocean running from about one block one each side of Atlantic Boulevard to a larger area east of the Intracoastal Waterway. Major efforts since formation have included several planning and redevelopment studies and land use planning efforts to modify the City and Broward County Land Use Plans. The initial phases pursued establishment of a Regional Activity Center. Because of concerns relative to development on the Barrier Island, the City initiated efforts to establish a Local Activity Center in 2004. Work is continuing to secure the land use approval at County and Regional Agencies.

The mixed use redevelopment of existing properties to transit oriented development is promoted. The Plan contains several elements designed to upgrade the attractiveness of the beach, including the construction of a beachfront promenade, a beachfront plaza and a beachfront park near the Pier that could serve as a continued venue for small concerts and other public events. It further proposes to increase the amount of public parking within a block of the beach. Recently, a 17 story high-rise residential project, "The Plaza at Oceanside" with 186 dwelling units, was developed as part of the redevelopment effort.

An Urban Land Institute Technical Advisory Panel was convened in May 2008 to analyze the East CRA Redevelopment Plan and reached the following recommendations:

- Use public investments to facilitate the location of medium density, mixed-use development on Atlantic Boulevard and ensure that the buildings are placed close to the sidewalks, with windows and doors to activate the street and parking located to the rear.

- Locate lower-scale development (for example, live-work units) to create a transition from the medium density development to nearby single family neighborhoods.

- Focus public investments (starting with implementing the Atlantic Boulevard streetscape) on creating great public spaces that will exemplify and promote the desired pedestrian

oriented environment.

- To maintain a small town feel, encourage smaller scale (not big box) uses.

- Undertake a series of supportive city actions, starting with initiating several strategically placed demonstration projects and illustrating the desired vision.

- Become serious champions of and investors in the CRA vision for the East Community Redevelopment Area.

Additional planning efforts were undertaken 2008 to further refine the East CRA Plan east of the Intracoastal Waterway. The Beach Master Plan was developed by design team led by Bermello and Ajamil Partners. After a series of community workshops and a workshop with the ECRA Advisory Committee, the Beach Master Plan was approved by the East CRA Board in September 2008.

Key components of the Beach Master Plan include:

- restoration of the dune system along the public beach;
- streetscape improvements and realignment for Pompano Beach Boulevard;
- streetscape improvements for the east end of Atlantic Boulevard;
- mixed use project and parking garage with 500 parking spaces; and,
- new Fire Station, Library and upgrades to North Riverside Drive Park.

Other Redevelopment

The majority of the commercial redevelopment in the Coastal Zone area over the better part of the past decade, has taken place along the major transportation corridors. The majority of the residential redevelopment has taken place on the barrier island and along the canals and waterways. This redevelopment has been sorely needed because most of the building product

was constructed in the 1950's, 60's and 70's. Clearly, it was time for redevelopment to occur; further justifying the creation of the eastern CRA.

There are three (3) primary areas of commercially designated land use on the barrier island: near the Hillsboro Inlet to the north; the properties adjacent to Atlantic Boulevard, inside the City's Eastern CRA; and, an area about a half mile south of Atlantic Boulevard around SE 13th Street.

The majority of redevelopment proposals have come in the centrally located area at the eastern end of the Atlantic Boulevard corridor. The four (4) proposed hotels in this location would add over 1,000 hotel rooms and approximately 75,000 square feet of retail to the area, while replacing 163 hotel rooms and over 200,000 square feet of retail space. A centralized location and proximity to the City's main public beach are the primary factors for these proposals and would help to develop the 'destination location' the City sorely needs.

The two other commercial areas have also had hotels proposed. These proposals point out a major omission, in terms of product, for the city's coastline, the lack of higher end chain hotels. Pompano Beach has a number of 'mom and pop' hotels along its barrier island; however, today's traveler has become accustomed to many progressive amenities; including larger rooms, vaulted ceilings and luxurious pools and spas to go along with their vacation experience. Today's vacation experience is completely different from when the 'mom and pop' hotels were constructed in the 1950's and 60's. These older, smaller buildings just cannot be renovated and upgraded enough to compete with the newer facilities. They can however, service a niche market that still exists, but they are just not equipped to attract the same clientele that the larger resorts can in a market as internationally prominent as south Florida. In this respect, Pompano Beach has suffered from not taking advantage of the States biggest industry, tourism.

There are only seven (7) properties in the coastal zone area that have a 'marine' zoning designation. While the marine industry generates $13.6 billion dollars in economic impact annually across southeast Florida, Pompano Beach, with its three (3) miles of Atlantic Ocean coastline and 36.8 miles of canals and waterways, is clearly not utilizing its marine assets to their fullest potential. Obviously, commercial properties only touch a portion of these waterways and

not all marine related businesses need to be located on 'marine' designated parcels; however, given the industry's potential, there should be a greater effort to build upon the existing commercial marine base. Pompano Beach does have a number of boat sales and brokerage operations that operate under general business zoning districts.

Pompano Beach's two primary marinas operate along the Caliban Canal, just north of the 14th Street Causeway and west of the Intracoastal Waterway, and both have recently upgraded their properties. The former Hidden Harbor Marina at the western end of the canal is in the process of completely redeveloping their property. The new plans include 310 dry stack storage boat slips along with ancillary office and retail space. These dry stack storage units are sorely needed throughout south Florida as neighboring municipalities continue to further restrict boat storage in private yards. Plus, many boaters continue to seek safe haven locations for their boats from hurricanes, while still allowing for easy access to them when needed. At the eastern end of the canal, Merritt Boat Yard, a Pompano Beach institution since the 1950's, continues to operate its numerous marine related activities, including boat building, on the site. Both facilities are examples of taking advantage of the enviable position of being a waterfront community in south Florida.

Residential redevelopment in the Coastal Zone area has typically taken place where land use and zoning designations were underutilized or where there has been a prime property in terms of location or setting, with a less-than-prime product on it. Throughout the Coastal Zone there are numerous examples of single family homes or groups of single family homes being torn down and replaced with rows of high priced townhomes. There are also numerous examples of commercial properties requesting flex and reserve units from the City to develop the commercial properties as residential. When you combine this with the latest planning push towards Transit Oriented Development (TOD), it is possible to conclude that Pompano Beach may have too much commercially designated properties along its transit corridors (not just in the Coastal Zone) and an increase in mixed use projects are needed.

Some residential redevelopment has taken advantage of the proximity to waterways and the shoreline with condominiums and townhomes being the primary products that are offered. While

there have been a few large single family homes (or McMansions) constructed in strategic locations, the cost of the land has been too high to justify single family home development.

Socio – Economic Characteristics of the Coastal Zone

Information on the socio-economic characteristics of the coastal zone area were obtained from the data sets of the Broward Area Long Range Transportation Plan. The coastal area is generally described by sixteen (16) traffic analysis zones. These zones encompass the entire area except for a small portion of the City southwest of US 1 and McNab Road. A portion of two (2) zones on the southern of the barrier island also extend beyond the City limits. The available data sets provide estimates for 2000 and 2030 for employment, parking spaces, households (with and without children), households (with and without vehicles), number of workers in households, household size and occupied hotel/motel rooms. Figure 5 depicts the location of traffic zones within the coastal area.

In 2000, 13,705 employees were working within the coastal area in the following categories: 4,422 commercial employees, 7,759 service employees and 1,524 industrial employees. A total of 17,960 households were located in the coastal area with a majority of the households (15,468) without children. Total population in the coastal area is 33,253 people and there are 15,071 workers in the housing units. The schools within the coastal area have 2,213 students. A total of 1,491 occupied hotel/motel rooms are located in the coastal area. There are 25,023 automobiles associated with the housing units in the coastal area.

In 2030, 2,009 additional employees are projected to work in the coastal area (15,714 in total) in the following categories: 5,549 commercial employees, 8,582 service employees and 1,563 industrial employees. An additional 6,203 households are projected in the coastal area with a majority of the households (20,878) without children. Total population in the coastal area is projected to increase to 45,946 people with 20,039 workers in the housing units. The schools within the coastal area have 3,202 students. Occupied hotel/motel rooms are projected to remain

constant at 1,491 rooms. There are 33,377 automobiles estimated to be associated with the housing units in the coastal area.

Tables 7 and 8 provide the socio-economic data by traffic analysis zone for 2000 and 2030. Employment, school enrollment and parking characteristics are provided in Table 7. Household and population characteristics are provided in Table 8.

Figure 5 – Traffic Zones within the Coastal Area

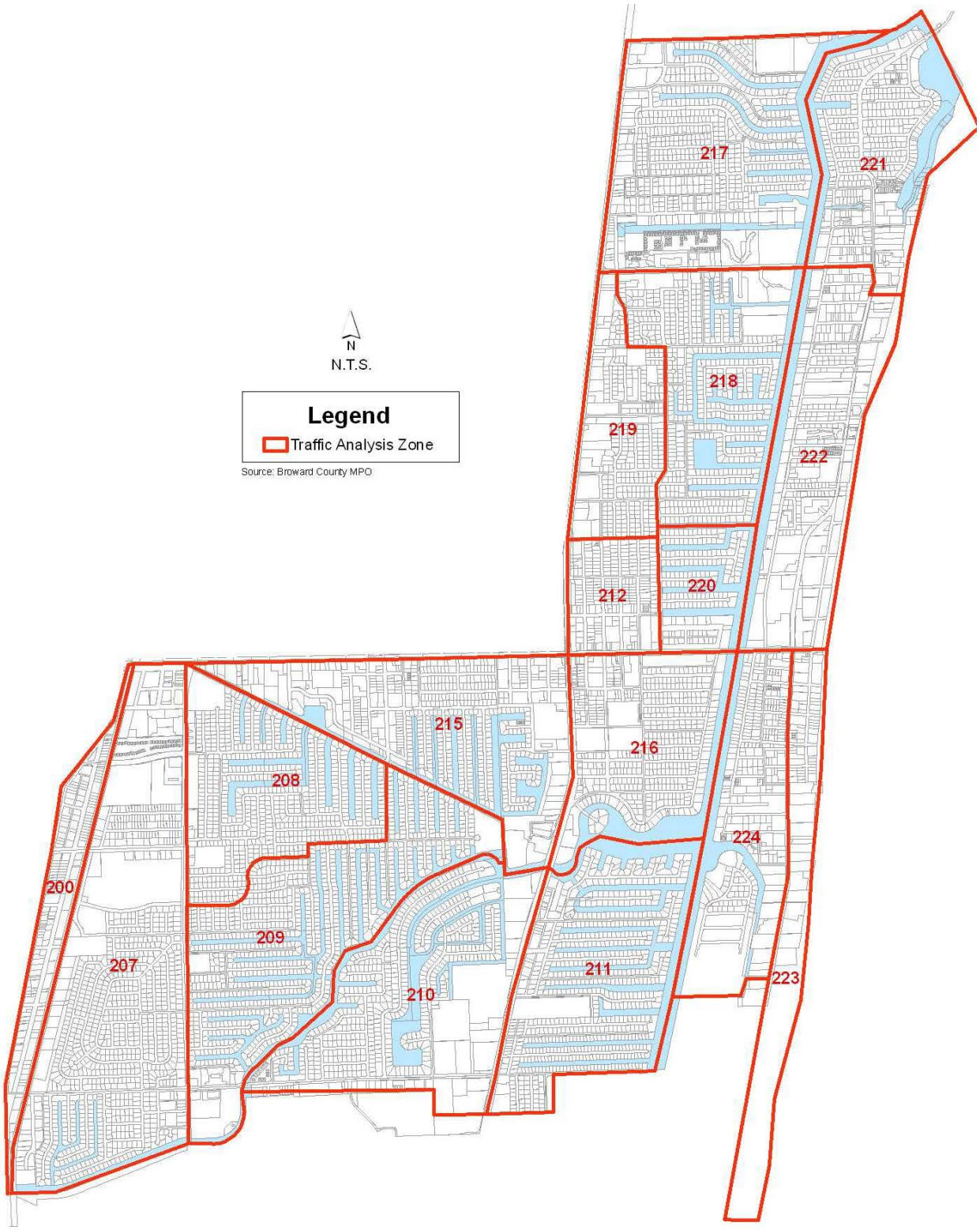


Table 7 – Employment Characteristics by Traffic Analysis Zone

Data Set	TAZ ID	Industrial Employment	Commercial Employment	Service Employment	Total Employment	School Enrollment	Short Term Parking	Long Term Parking
Year 2000	200	367	246	622	1,235	0	0	0
	207	441	445	1,669	2,555	695	0	0
	208	27	79	73	179	0	0	0
	209	17	72	122	211	0	0	0
	210	42	659	208	909	799	0	0
	211	47	190	414	651	659	0	0
	212	46	217	465	728	0	75	225
	215	109	351	902	1,362	60	0	0
	216	21	238	326	585	0	75	225
	217	216	297	257	770	0	0	0
	218	61	13	109	183	0	0	0
	219	69	626	291	986	0	0	0
	220	9	217	233	459	0	75	225
	221	9	180	268	457	0	115	152
	222	17	363	750	1,130	0	95	103
	223	21	132	675	828	0	75	225
	224	5	97	375	477	0	75	225
	Total	**1,524**	**4,422**	**7,759**	**13,705**	**2,213**	**585**	**1,380**
Year 2030	200	381	314	690	1,385	0	0	0
	207	458	548	1,895	2,901	1,004	0	0
	208	28	94	78	200	0	0	0
	209	18	99	152	269	0	0	0
	210	44	852	239	1,135	1,155	0	0
	211	49	225	438	712	956	0	0
	212	48	262	502	812	0	75	225
	215	113	458	1,024	1,595	87	0	0
	216	22	297	371	690	0	75	225
	217	224	351	267	842	0	0	0
	218	63	15	114	192	0	0	0
	219	72	825	307	1,204	0	0	0
	220	9	257	247	513	0	75	225
	221	9	235	321	565	0	115	152
	222	18	438	810	1,266	0	95	103
	223	22	156	716	894	0	75	225
	224	5	123	411	539	0	75	225
	Total	**1,583**	**5,549**	**8,582**	**15,714**	**3,202**	**585**	**1,380**
Difference		**59**	**1,127**	**823**	**2,009**	**989**	**0**	**0**

Source: Walter H. Keller, Inc.
Broward County MPO

Table 8 – Household and Population Characteristics by Traffic Analysis Zone

Data Set	TAZ ID	Households without Children	Households with Children	Vehicles in Households w/o Children	Vehicles in Households w/ Children	Workers in Households w/o Children	Workers in Households w/ Children	Persons in Households w/o Children	Persons in Households w/ Children	Occupied Hotel/Motel Rooms
Year 2000	200	23	8	35	16	22	13	26	21	0
	207	1,197	398	1,804	816	1,142	667	2,070	1,558	0
	208	650	211	939	421	617	327	1,063	712	0
	209	1,023	262	1,465	570	995	424	1,722	932	0
	210	581	164	824	338	537	272	1,011	644	0
	211	503	200	868	536	501	320	833	680	0
	212	264	67	309	80	223	113	359	219	0
	215	1,378	265	1,739	414	1,307	442	2,131	896	50
	216	522	131	753	223	502	217	760	429	0
	217	1,102	218	1,582	380	940	313	1,754	750	0
	218	766	139	1,130	296	690	201	1,316	503	0
	219	572	114	762	219	442	165	888	421	0
	220	129	55	177	93	118	76	198	172	0
	221	903	75	1,245	144	366	83	1,439	266	274
	222	2,748	56	2,835	113	1,051	63	4,126	166	444
	223	2,106	78	2,449	119	1,173	120	3,294	234	539
	224	1,001	51	1,231	98	548	81	1,491	169	184
	Total	**15,468**	**2,492**	**20,147**	**4,876**	**11,174**	**3,897**	**24,481**	**8,772**	**1,491**
Year 2030	200	34	3	52	5	33	4	48	8	0
	207	1,794	596	2,704	1,222	1,711	999	3,285	2,471	0
	208	711	231	1,028	461	675	358	1,190	799	0
	209	1,123	288	1,608	627	1,092	467	1,926	1,045	0
	210	963	273	1,367	563	890	454	1,743	1,117	0
	211	604	241	1,042	646	602	386	1,017	835	0
	212	428	109	501	129	362	184	605	367	0
	215	1,845	356	2,328	556	1,750	593	2,952	1,246	50
	216	712	178	1,028	302	685	294	1,077	605	0
	217	1,401	277	2,011	483	1,195	397	2,294	980	0
	218	863	157	1,273	335	777	228	1,504	577	0
	219	762	153	1,015	293	589	221	1,218	581	0
	220	160	69	219	116	146	96	246	215	0
	221	1,156	96	1,593	184	469	107	1,864	346	274
	222	4,090	84	4,219	170	1,564	95	6,358	258	444
	223	2,963	110	3,446	167	1,651	168	4,708	333	539
	224	1,269	64	1,561	123	696	101	1,913	215	184
	Total	**20,878**	**3,285**	**26,995**	**6,382**	**14,887**	**5,152**	**33,948**	**11,998**	**1,491**
Difference		**5,410**	**793**	**6,848**	**1,506**	**3,713**	**1,255**	**9,467**	**3,226**	**0**

Source: Walter H. Keller, Inc.
Broward County MPO

Archaeological and Historic Sites Within the Study Area

Several sites of archeological significance were identified in the 1989 Comprehensive Plan. Only one (1) of the six middin sites remain, as the other sites were destroyed by prior development activities or were incorporated into building sites. The remaining middin site, although slightly disturbed several times (the last time as recently as 1993) is now protected and has been incorporated into a City park. Indian Mound Park, a 1.0 acre park located at 1250 Hibiscus Avenue, is divided by Hibiscus Avenue into eastern and western parts. The park's name reflects the presence of a small Indian burial mound as indicated on the park's commemorative plaque. The eastern section of the park provides a waterfront view of the Spanish River. Site improvements consist of pedestrian walks, a paved parking area, landscaping and benches.

The Harry McNab House was constructed in 1925-26 by the builders Plumber and Miles. The house is a two-story T-shape consisting of a central massing with a one-story wing protruding from each site. The large spacious interior of the home includes a huge kitchen, living room, dining room and sun porch on the first floor with bedroom space above. General speaking, the house exhibits a 1920's Florida interpretation of Georgian ornament, Dutch brickwork and French style windows. The house is located at 1735 East Atlantic Boulevard.

Beach Shoreline and Barrier Island

The beach shoreline and barrier island are depicted in four (4) 2008 aerial photographs in Figure 6. The aerial photographs were obtained from the Broward County Property Appraiser. The first photo (1 of 4) covers the Hillsboro Inlet , the Hillsboro Inlet SRA1A bridge, Hillsboro Inlet Park, the Intracoastal Waterway, the NE 14th Street Causeway bridge over the Intracoastal Waterway, the Erosion Control Line and the Coastal Construction Line. Boat docks and the City's charter fleet can be located on the upper left portion of the graphic on the east side of the Intracoastal Waterway in the vicinity of the Hillsboro Inlet.

The next photo (2 of 4) includes the area south of the NE 14th Street Causeway to just north of Atlantic Boulevard. A portion of the City's municipal parking area is shown in the lower right portion of the Figure.

The Fishing Pier, City Beach and Municipal Parking Lots are shown in the third photo (3 of 4). Atlantic Boulevard and the Atlantic Boulevard bridge over the Intracoastal Waterway are in the middle portion of the photo. The Sands Marina and charter fleet are located on the north side of Atlantic Boulevard on the east side of the Intracoastal Waterway.

The southern portion of the barrier island is provided in the last photo (4 or 4). This Figure depicts Lake Santa Barbara which is the termination of the Cypress Creek Canal. Lettuce Lake is also depicted on the east side of the Intracoastal Waterway.

The 2008 aerial photos of the barrier island depict the current condition of the shoreline and beach area. The figures also support the extent of existing development.

Figure 6 - Beach and Shoreline Aerial Photo (1 of 4)

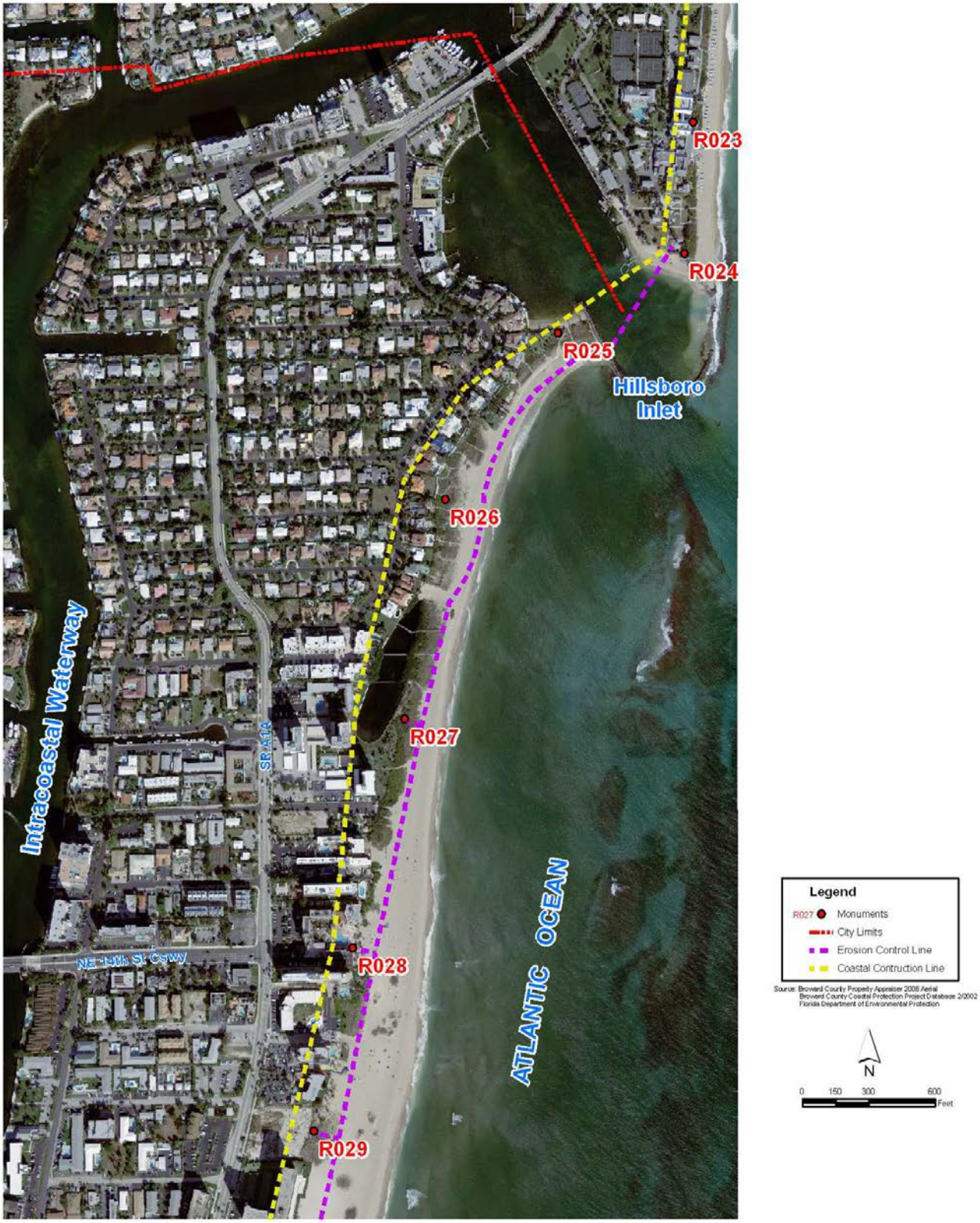


Figure 6 - Beach and Shoreline Aerial Photo (2 of 4)

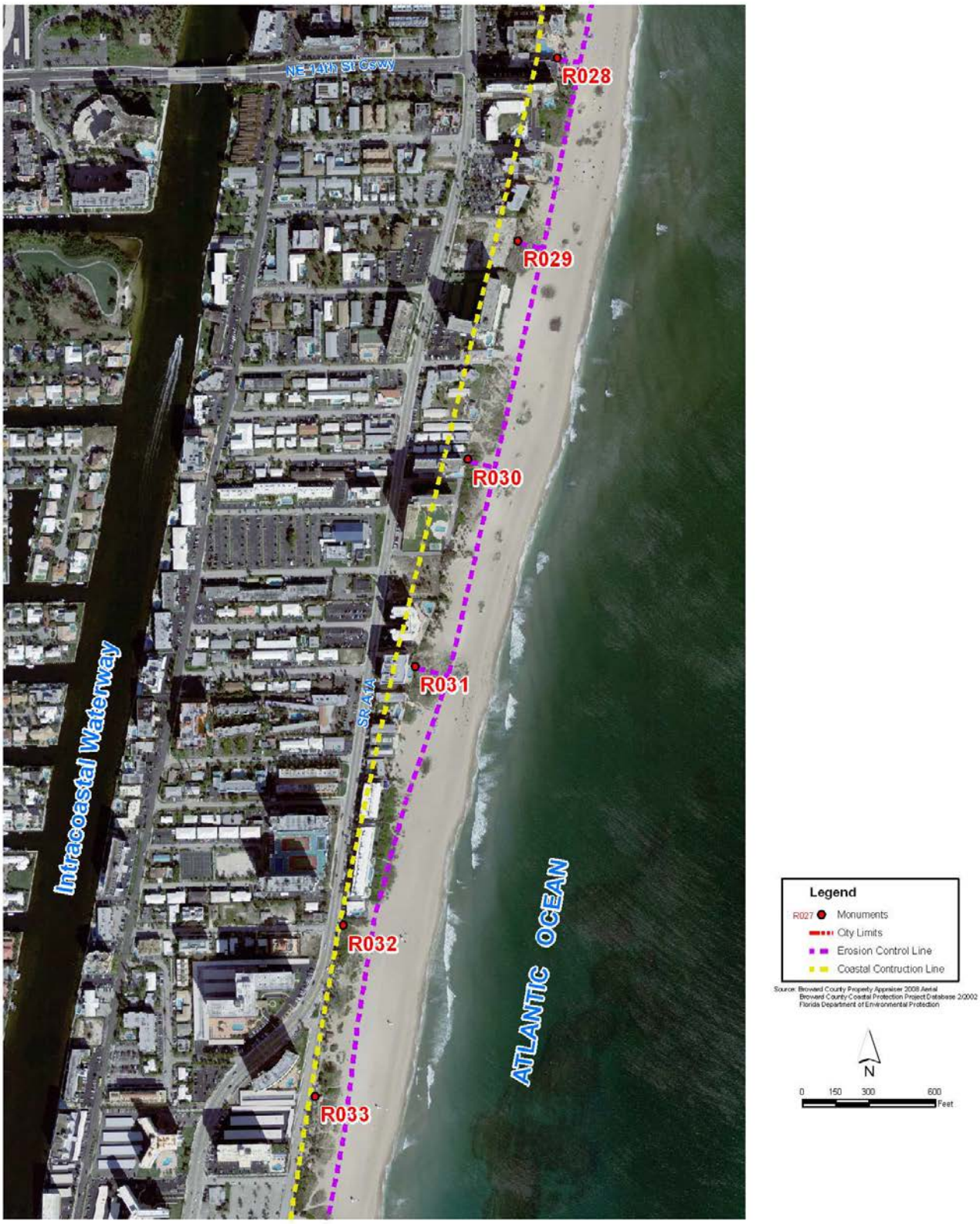


Figure 6 - Beach and Shoreline Aerial Photo (3 of 4)

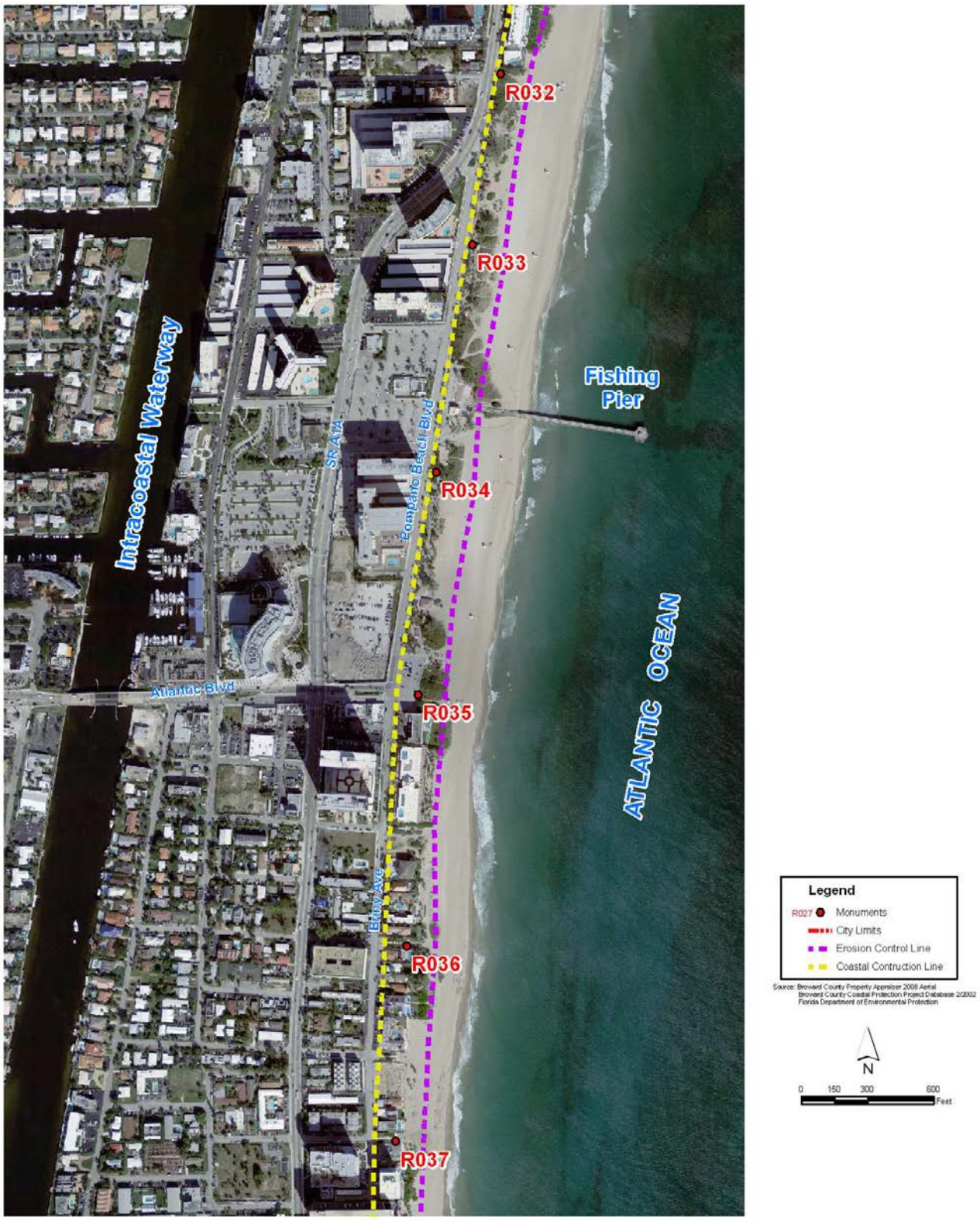


Figure 6 - Beach and Shoreline Aerial Photo (4 of 4)

City Beach and Shoreline Efforts

As noted previously, the importance of the City's public beach cannot be over emphasized. The beach and surrounding area serves as a regional resource as well as a local one. The saltwater pier that is located here is a major recreational focal point for both local residents and tourists who fish, enjoy the ocean view, and people watching from the vantage point of the pier. Between 2004 and 2008, the City's guarded public beach averaged approximately 1,030,000 yearly users. The peak monthly use occurs in March (135,000 users), April (120,000 users) and July (111,000 users).

The City of Pompano Beach participates in several programs to ensure the beach resources and recreational amenities are protected.

Clean Beaches Council (Blue Wave Award)

Launched in 1999, by the non-profit Washington, DC-based Clean Beaches Council, the Blue Wave Campaign is the first national environmental beach certification program in America. The designation, which is renewed annually, is based on factors such as water quality (based on EPA standards), beach and inter-tidal conditions, safety, service, habitat conservation, public information/ education and erosion management.

Pompano Beach, along with four other Broward County beaches including: Ft. Lauderdale, Hollywood, Dania Beach and Deerfield Beach, have been Blue Wave Award beaches since the awards inception. This designation places these beaches among the cleanest, safest and most user-friendly in the country.

Clean beaches benefit both the environment and the economy. The goal of the Blue Wave is to promote public awareness and voluntary participation in beach sustainability. Additional information about the Clean Beaches Council and the Blue Wave Award can be found at: http://cleanbeaches.com/ ; and, http://cleanbeaches.org/bluewave/bluewave.cfm

Florida Healthy Beaches Program

Beginning as a pilot program in 1998, 11 Florida coastal counties began beach water sampling every 2 weeks. In August 2000, the program was expanded to include 34 coastal counties and in August 2002, those counties expanded the program to weekly samplings. The beach water samples collected by the county health departments are analyzed for enterococci and fecal coliform bacteria. High concentrations of these bacteria may indicate the presence of microorganisms that could cause disease, infections or rashes. County health departments will issues health advisories or warnings when these conditions are confirmed.

The Florida Department of Health maintains a website which includes sampling history from July 2000. The website link is http://www.floridashealth.com . Search for "Beach Water Sampling" and in Pompano Beach there are two locations: Pompano Beach Fishing Pier; and, NE 16th Street.

Lifeguards

In Pompano Beach, the Ocean Rescue Division provides lifeguard services under the purview of the Fire Department. The Division includes 18 full time and 26 part time lifeguard and administrative personnel. The lifeguards patrol approximately 1,000 yards of public beach; however, they respond to all aquatic/ medical related accidents within the 3 mile coastal limits of the city.

The lifeguard service hours are from 9 AM to 4:45 PM. Rescue equipment includes basic life support first aid supplies, rescue buoys, rescue boards, O2 therapy equipment, underwater search and recovery gear, AED's, ATV's, 2 4-wheel drive rescue vehicles, a personal watercraft with rescue sled, an inflatable rescue boat and 2 rescue dory's.

Pompano Beach lifeguards provide coverage 7 days a week, 365 days a year. Pompano Beach lifeguards train daily in all weather conditions and practice both water and medical scenarios routinely. The Ocean Rescue Division is certified under USLA guidelines with most of the staff

also certified as EMT's. Between 2004 and 2008, the guarded portion of the beach averaged between 37 – 38 rescues per year.

Coral Reefs

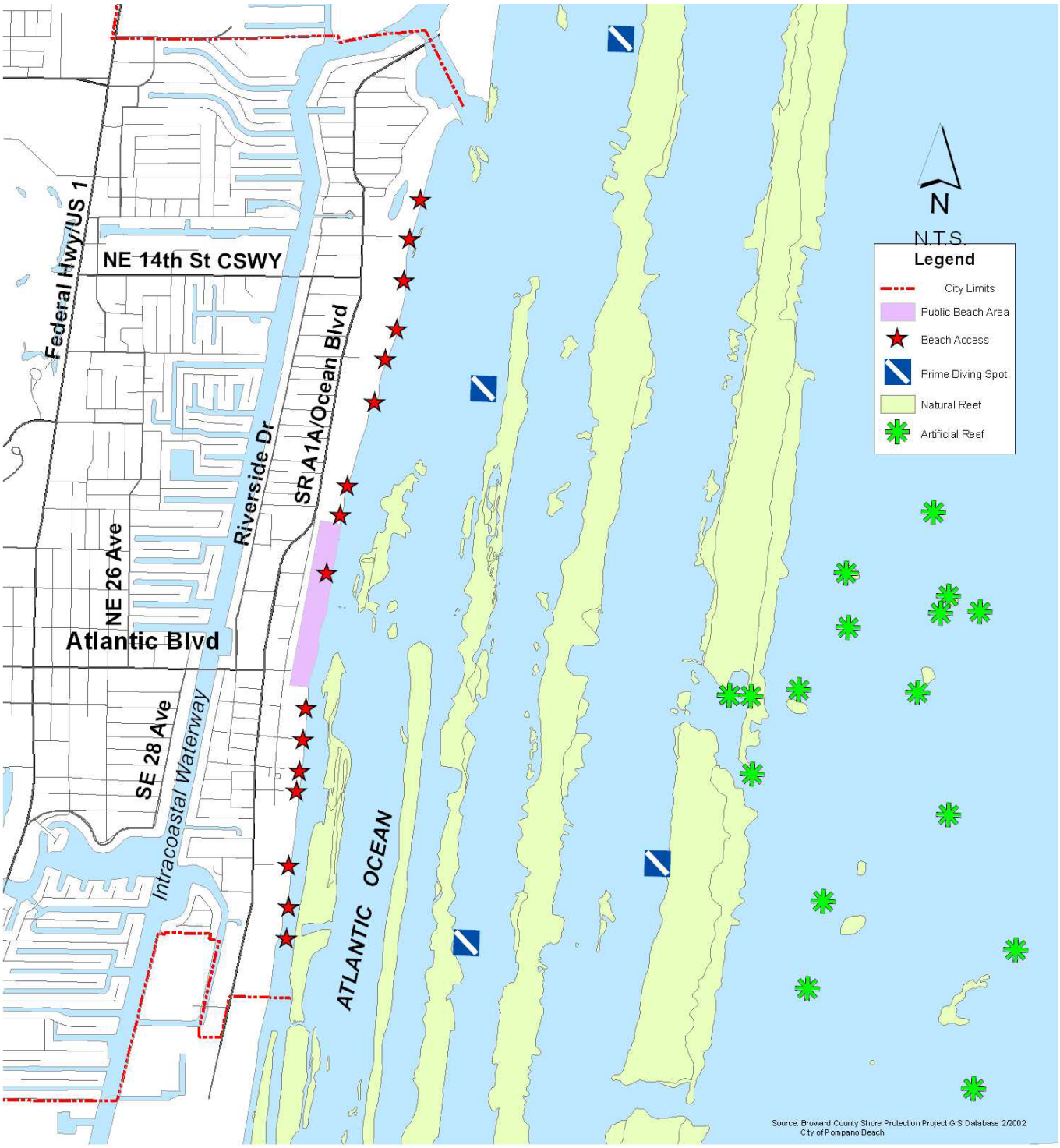
The coral reefs offshore from Pompano Beach area primary feature of the near shore underwater environment. Our area of concern (Hillsboro inlet to the southern city limits) is near the northern end of the range for many of the tropical corals.

The coral reefs offshore from Pompano Beach occur along the edges of three step-like terraces which in Broward County are at an average of 25, 48 and 85 feet below sea level (from most landward to the outermost reef). A typical coral reef location cross section in profile is presented in Figure 7. The inner and outer reefs are fairly distinct, while the center reef tends to be patchy and less well defined.

The reefs are not the massive barrier formations typical in tropic regions. Reefs offshore of the study area are based on relict barrier reefs that have fossilized to some degree. Colonies of corals form lumps and clusters of varying density scattered over this foundation. The hard corals, sponges and the surface variation of the bedrock combine to create an abundance of microenvironments which provide food and shelter for a rich variety of fish and other benthic creatures. The economic and recreational value of the reefs in terms of fisheries and diving sites makes conservation of the coral reef environment a matter of public concern.

Coral reefs are a natural resource which serve as a habitat for a diverse community of animals. Corals heads generally are very delicate structures formed by small marine animals. They are exceptionally vulnerable to destruction because they grow so slowly. Coral polyps are very susceptible to damage caused by excessive turbidity (sand from the ocean water) caused by storms or activities such as beach renourishment. Turbidity in the water tends to choke or starve the coral polyps. Coral is also susceptible to damage caused by petroleum-based substances.

Figure 7 - Prime Diving Spots, Beach Access and Artificial Reef Locations



Coral reefs can also be damaged by the careless handling of boat anchors and by individual divers who are overexcited souvenir takers. Because of the delicate character of coral reefs and their limited occurrence in North America, they should be carefully conserved through enforcement of diving rules by agencies such as the Department of Natural Resources (DNR) Marine Patrol (as is done in the Florida Keys). Their use should be limited to visitation from spectator divers who are content to just observe the coral reefs and not to destroy them. Any disturbance by the handling of coral may cause damage or kill the coral.

Coral "bleaching" and "white band disease" are both phenomena which can destroy live coral in nearby regions. Neither condition is well understood at present, but they are believed to be similar to viral infections.

The absolute cause of coral bleaching has yet to be determined by scientists. However, the most popular theory suggests that a combination of unusually high temperatures and high amounts of ultraviolet radiation trigger the phenomenon.

Bleaching of coral occurs when the algae, zooxanthellae, are expelled from the coral. This is said to occur when corals are stressed for one reason or another. The relationship and importance of the zooxanthellae is its ability to remove toxic byproducts from the coral's system and to provide added nutrition. Without zooxanthellae, the corals are most susceptible to disease and probably death.

Bleaching is a far-reaching phenomenon that occurs throughout the photic zone (the upper depths of the ocean where light can penetrate) which is the entire range of the zooxanthellae. Once the algae is expelled and bleaching has occurred, it is believed that the corals can recover from the damage by allowing the zooxanthellae to re-enter their systems.

The range of this phenomenon includes the Florida Keys as well as South Florida. No specific documentation on bleaching in the Pompano Beach vicinity has been noted; however, it is assumed that reefs in the area are also susceptible to the phenomenon.

Artificial Reefs

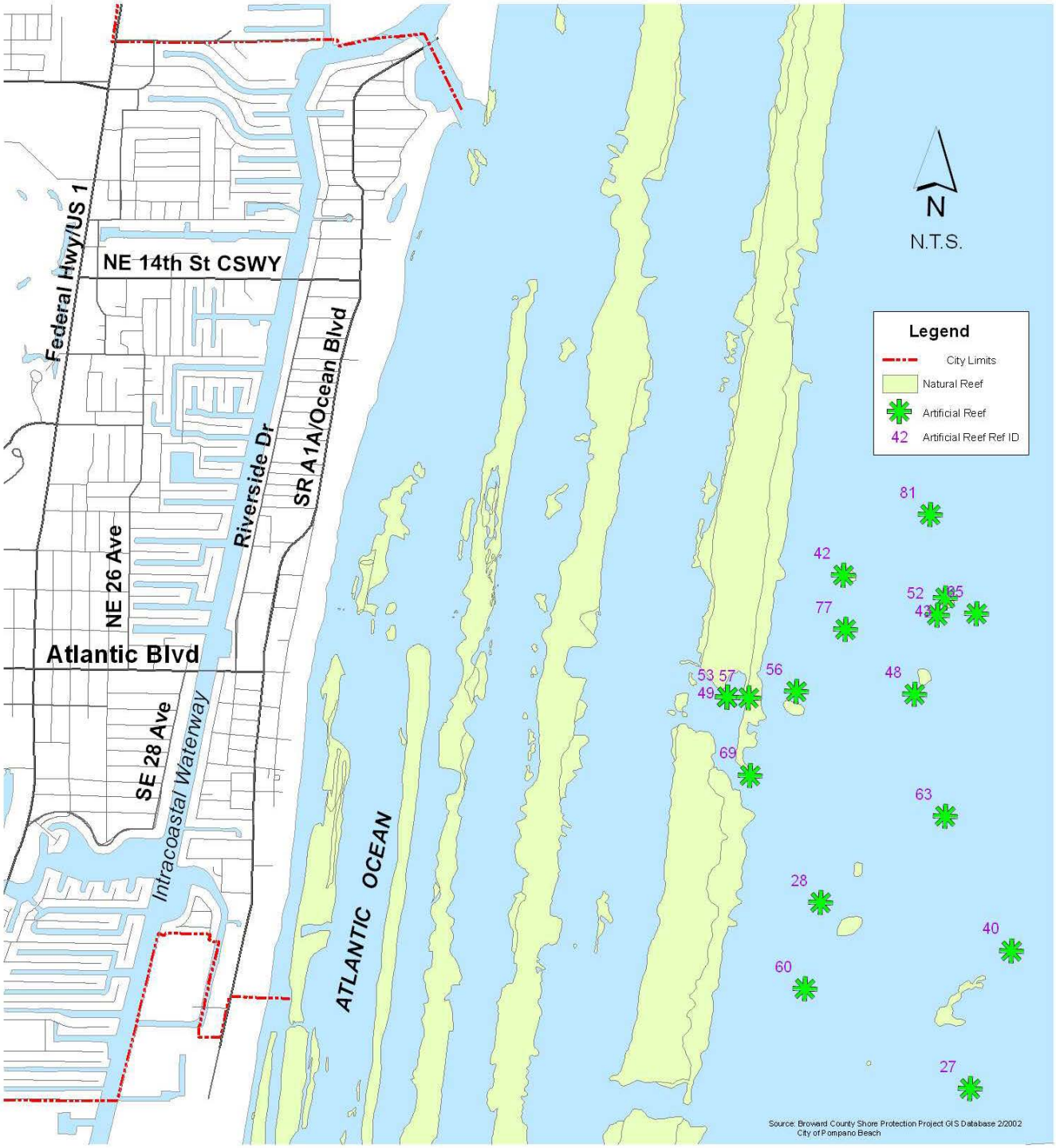
The Biological Resource Division of the Broward County Department of Environmental Protection and Growth Management Department coordinates the artificial reef program for Broward County. The program consists of sinking various large objects such as ships, barges, dredges, storage tanks and oil rigs. Generally, artificial reefs serve a dual purpose: as habitat for marine organisms, and as a recreational resource for man. The artificial reefs located offshore of Pompano Beach are shown in Figure 8. The reefs are described in Table 9, including their names, year sunk, depth of water, size of the vessel and a number of other facts.

Artificial reefs can encourage greater productivity and biomass to their location. The entire ecosystem that establishes itself on an artificial reef has its own clearly defined ecological succession (order that various organisms will become established). The pioneer stage of the colonization starts when algae and barnacles become established. After some months, the second phase of colonization occurs when soft coral, sponges and other invertebrates establish themselves. The third, mature stage of colonization is marked by community domination by hard corals. This mature, final stage occurs after approximately two years of artificial reef establishment.

Fully matured artificial reefs provide spawning and nesting areas for gamefish, provide protection for juvenile fish and baitfish, and provide habitat for crustaceans (mobile, bottom living organisms such as lobsters and crabs). Artificial reefs attract predator fish because they will have the opportunity to feed on the rich, diverse marine life at these locations.

Scuba divers and fishermen are attached to artificial reef areas because of the diversity and abundance of fish associated with the reefs. Scuba divers are somewhat limited to the number of artificial reefs that they can visit due to depth restrictions associated with decompression dives.

Figure 8 - Artificial Reefs



The size of objects used for artificial reefs vary tremendously from a 435 foot long freighter (the Lowrance) to some the size of filing cabinets. Broward County has discontinued the deployment of small artificial reefs (i.e. tote machines). Because small structures placed in shallow water can be easily moved by waves and storm surges, they are no longer used. Small structures placed in deep water do not move from their original position, but the coordination and deployment of the structures are labor intensive.

Funding for the artificial reef program can come from a number of private, corporate and governmental groups. Money to support the artificial reef program in Pompano Beach generally comes half from the Pompano Beach Fishing Rodeo (or some other organization) and half from boat registration fees collected from boat-owing citizens (as taken from the Florida Boating Improvement Program). The Pompano Beach Fishing Rodeo has donated several thousands of dollars for the artificial reef program. Donations of materials and services are all needed for the success of the artificial reef program. Donations are tax deductible. Program funding must cover the purchase, towing, cleaning and detonating (sinking) of the reef structures.

Because of the success of the program, continued support is needed to further promote the establishment of artificial reefs, to both encourage the productivity of marine life and for human interest and the indirect boost to the local marine-related businesses in Pompano Beach.

Table 9 - Broward County Artificial Reef Program

Ref. ID	Name	Lat	Long	Year	Depth	Description
27	Renegade	26.2130000	-80.0540000	1985	190	150 ft. Dutch Coastal Freighter
28	Rodeo Divers Reef	26.2215000	-80.0620000	1985	78	120 ft.Schooner
40	Corey and Chris	26.2195000	-80.0520000	1986	244	130 ft. Army Dredge "Trident"
42	Miller Lite	26.2367833	-80.0612833	1987	155	186 ft. Freighter "Principe "Maya"
43	Buddy Merritt	26.2358333	-80.0560000	1987	414	70 ft. Barge & Welded Yacht Cradles
48	Ronald B. Johnson	26.2313333	-80.0574167	1988	230	226 ft. Bulk Carrier, "Otto" Halland Built 1995
49	Jay Dorman	26.2309500	-80.0671167	1988	78	130 ft. English Schooner
52	Papa's Reef	26.2350333	-80.0563833	1989	260	170 ft. Holland Freighter "Ebbtide"
53	Alpha	26.2309500	-80.0671167	1989	78	85 ft. Riverted Schooner
56	Rodeo 25	26.2313000	-80.0635500	1990	122	215 ft. Freighter, Amsterdam 1956 "Windward Trader"
57	Capt Dan	26.2309500	-80.0660000	1990	110	175 ft. USCG Buoy Tender, "Missonship", "Hollyhock"
60	Imor	26.2174667	-80.0626667	1991	165	84 ft. Polish Trawler
63	Mariner Outboard	26.2256667	-80.0556667	1992	108	170 ft. German Freighter "Union Express"
65	Mariner II	26.2351667	-80.0543333	1993	110	110 ft. Tug "Mary St. Philip" and 130 ft. Barge
69	Fishamerica/Jim Torgerson	26.2273333	-80.0658333	1994	115	160 ft. Navy Support Boat "RSB-1"
77	Boating Mag/Wildlife	26.2342667	-80.0611000	1995	156	154 ft. Dredge Vessel "Dewitt Clinton"
81	Johnny Morris	26.2397117	-80.0568883	1996	215	237 ft. Steel Freighter, "Sucre"

Source: Broward County shore protection project - 2/2002

Diving Access

There are a number of scuba diving locations found offshore of Pompano Beach that are recommended by local dive shops. These sites include both coral reef and artificial reef areas. The artificial reefs are described in detail, and shown on Figure 6 in the Artificial Reef section of this report. Table 10 identifies local dive sites.

Table 10 – Local Dive Sites

Name	Location/Description
1. Pompano 3rd Reef Ridge	At Lat 26 - 13.66 Lon 80 - 04.17, at depth of 65', on the third reef, approximately 7,000 feet offshore, there are many animals, and currents can be very strong.
2. Copenhagen	At Lat 26-12.349 Lon 80-05.108, about 1/2 mile due east of the large blue water tower on Pompano. Scattered wreckage lies between Pompano Ledge buoys # 3& 4. The 325-ft Copenhagen ran aground in 1900 on the rock ledge. This is one of Florida's favorite historical shipwreck dives.
3. Pompano Ledge Moorings (North)	At Lat 26 - 14.05 Lon 80 - 04.95, About 1/2 mile due east of the large blue water tower on Pompano. The site is marked by 34 moorings. This large, flat, rocky reef starts just 15 feet below the surface, and drops to just over 30 feet on the outside.
4. Pompano Ledge Moorings (South)	At Lat 26 11.05 Lon 80 05.09, about 1/2 mile due east of the large blue water tower on Pompano. The site is marked by 34 moorings. This large, flat, rocky reef starts just 15 feet below the surface, and drops to just over 30 feet on the outside.
5. Suzanne's Ledge	At Lat 26 - 14.49 Lon 80 - 04.89, at a midpoint between Hillsboro Inlet and the Pompano Fishing Pier, about 1,700 feet offshore, depth only about 10-20 ft.

Source: Wet Pleasures Dive Outfitters Florida Website

Barrier Island Activities and Events

Seafood Festival

Every April for the past 25 years, the City of Pompano Beach hosts a Seafood Festival at the Atlantic Boulevard terminus and directly on the beach. Started by the Pompano Beach Fishing Rodeo and the Greater Pompano Beach Chamber of Commerce, the festival features seafood prepared in a variety of ways by numerous restaurants. Continuous musical entertainment, arts and crafts booths along a boardwalk bazaar add to the enjoyment. There is also a family “fun

zone" set up with games and features such as, a giant slide, a rock climbing wall, an obstacle course and a bounce house for the kids to enjoy. This three day family event attracts nearly 50,000 people throughout the weekend. Numerous local charities participate and benefit from the festival proceeds. The Festival is usually held the last full weekend in April. More information can be found at: http://pompanobeachseafoodfestival.com/

Holiday Boat Parade

Since its inception in 1962, the Pompano Beach Holiday Boat Parade has been shared by the cities of north Broward County and is considered the oldest continuously held boat parade in the nation. Area residents gather at public viewing areas along the Intracoastal Waterway and resident's backyards turn into holiday celebrations as there are an abundance of parties to view this holiday tradition.

The parade typically includes over 50 brightly decorated illuminated boats from the local boating community and is joined by local marine patrol boats and vessels from the U.S. Coast Guard and the Coast Guard Auxiliary. The parade starts at Lake Santa Barbara and makes its way north on the Intracoastal Waterway through Lighthouse Point and Hillsboro Beach and ends up in Deerfield Beach just past the Hillsboro Boulevard Bridge.

The annual event is brought to the community through the dedication of The Greater Pompano Beach Chamber of Commerce businesses and volunteers. There is no entry fee for participants and trophies are given out to the best decorated boats. It is usually held on the second weekend in December on the day following the Ft. Lauderdale Boat Parade.

Fishing Rodeo

The Pompano Beach Fishing Rodeo is a saltwater fishing tournament that started in 1965 and is one the oldest in the State of Florida. The tournament began as a Pompano Beach Chamber of Commerce event intending to keep winter tourist in South Florida longer than the winter months and to bring attention to the charter boat business. The tournament was named the Fishing Rodeo because it is a "roundup" of the most popular species. In 1978, the Fishing Rodeo was

incorporated as a non-profit corporation with proceeds supporting environmental initiatives that benefit recreational fishing. Over the 49 years the Rodeo has become a South Florida tradition that sets the marks which other tournaments strive to achieve. Often imitated, the Pompano Beach Fishing Rodeo welcomes all anglers, young and old who enjoy the sport. For more information visit: http://pompanofishingrodeo.com

Marine Resources

Overview

The following discussion is largely derived from Broward County's Environmental Benchmarks Report, dated October 2008 prepared by the Environmental Protection and Growth Management Department. Broward County monitors and actively manages the reefs, beaches, and listed wildlife in order to track the quality and quantity of marine resources, and to enable actions in support of protection, restoration, and enhancement of the resources.

Like Broward County, Pompano Beach's marine resources are fundamental to the City's economy, environment, and quality of life. For the purposes of these benchmarks, Pompano Beach's marine resources include:

- nearshore and offshore coral reefs;
- 2.9 miles of sandy ocean beach; and,
- the presence of endangered and threatened sea turtles and manatees.

High population density, resource use, and coastal build-out result in a number of pressures on the marine resources. These include over-fishing and large numbers of boaters; commercial maritime traffic; inlet-caused beach erosion; beachfront and waterfront development and redevelopment; nutrient-laden runoff and treated wastewater effects on ecosystems in coastal waters; and increasing numbers of residents and visitors. Add to these anthropogenic impacts the naturally occurring cycles of storms, temperature extremes, water quality fluctuations, and harmful algae blooms, and it is clear that these fragile marine resources are at risk.

Reef Resources

Coral reef communities and associated sea life of those communities are an important natural resource for recreational fishing and diving industries in Broward. The sound ecological condition of the reef community is a key indicator of the general condition of all marine resources adjacent to the Broward coast.

Relative health of stony coral colonies has been high since the benchmark was initiated in 1998. The percent of healthy colonies at all 25 sites examined rose from 98% to 100% from 2006 to 2007.

Average live coral cover on the first reef and on the third reef increased slightly but insignificantly during the 2007 survey compared to 2006, while the percent cover on the second reef decreased slightly. Octocoral and sponge density both increased between 2006 and 2007.

Recreational and commercial fishing activities exert a direct impact on our marine resources. State regulations require a saltwater fishing license to fish in marine waters. Also, residents fishing from shore do not have to purchase this license as well as others who qualify under the other types of exemptions to the Florida Saltwater Fishing License.

Between 1999 and 2004, total numbers of licenses steadily declined. Since 2005, the numbers have been relatively stable with a slight increase in 2006 due to the issuance of more fresh/salt combination licenses and an increase in the number of five year licenses issued, a decrease in 2007 in the number of one year resident saltwater licenses, and another small decrease in 2008.

Reef-building corals worldwide tolerate water temperatures between 16^{o}C and 36^{o}C, but thermal stress resulting from sustained temperatures greater than normal maximum temperatures (29^{o}C [84.2^{o}F]) can cause bleaching of corals and low temperatures can result in mortality. Bleaching results when the coral polyps expel the algae (zooxanthellae) that normally live in their tissues and give the colony color.

Bottom-dwelling cyanobacteria (primitive algae) can form prominent mats and blooms in tropical and subtropical coral reef habitats worldwide. A Lyngbya bloom on the reef tract offshore of Broward County was first noted by researchers in 2002. This bloom is a concern because it smothers octocorals and other invertebrates and negatively impacts the reef

community. Some believe blooms are caused by excess nutrients in the water, but this has yet to be determined.

The proportion of sites affected by algal blooms increased from 4% in 2002 to 72% in 2003 and then returned to 4% in 2004. Levels subsequently increased to 12% in 2005 and 2006. Within 2005 and 2006, higher frequency boom and bust cycles were observed. The cause of these cycles by water quality or population dynamics of the grazing sea hare, Stylocheilus spp. is not known. In 2007, 21% of reef mapping study sites were affected by persistent cyanobacteria coverage.

Human-related reef impacts include dredging for navigational inlet maintenance and beach nourishment, ship grounding and anchor damage, fiber optic cable installation, natural gas pipeline construction, etc. Impacts shown here include permitted direct impacts, as well as accidental direct impacts. Indirect impacts, such as turbidity and sedimentation, are not included.

From 2005-2007, a net loss of 28.1 acres of hard bottom occurred as a result of equilibration of the Broward County Segment III Beach Nourishment Project. Some of this hard bottom may be re-exposed from normal littoral sediment transport processes in the future, and this is being monitored. Hard bottom impacts resulting from the Hillsboro Inlet dredging project (2005) totaling 1.6 acres of mitigation are being completed in 2008.

The reef system along the southeast coast of Florida is ecologically dynamic and economically important. The reefs provide habitat for a diverse biological community, attract tourism and support substantial commercial and recreational fisheries estimated in 2001 to generate $2.1 billion in revenue in Broward. The close proximity of the reefs to heavily developed urban areas increase the risk of exposure to land based sources of pollution (terrestrial runoff, sewage effluent, etc.).

Bottom-dwelling cyanobacteria (primitive algae) can form prominent mats and blooms in tropical and subtropical coral reef habitats worldwide. A Lyngbya bloom on the reef tract offshore of Broward County was first noted by researchers in 2002. This bloom is a concern because it smothers octocorals and other invertebrates and negatively impacts the reef community. Blooms may be caused by excess nutrients in the water, but this has yet to be scientifically demonstrated.

In 2007, 21% of reef mapping study sites were affected by persistent cyanobacterial cover. In July 2008, a very large bloom of Lyngbya confervoides and L. Polychroa occurred at Broward Study site, JUL7, on the inner reef offshore John U. Lloyd State Park

A study was completed to census and determine seasonal dynamics of the fish assemblages on the county's natural reefs. Currently, a very large artificial reef is being constructed from limestone boulders. Monitoring of this and near shore reefs will provide comparison data which may give insight into the development of reefs that function more like natural reef systems. In 2003, the square footage of boulder reefs jumped from about 3,000 to approximately 440,000 due to the placement of 10 acres of boulders for beach re-nourishment mitigation.

Re-permitting of artificial reef sites was completed in 2008. The deployment of ships will be de-emphasized in favor of limestone based materials or modules in the future due to permitting constraints. In addition, the major funding source for artificial reef construction, the Broward Boating Improvement Program (BBIP), will no longer be available for the construction of artificial reefs due to rule changes. This will have a major impact on the artificial reef program.

The construction of mitigative artificial reefs is episodic depending on incidents, such as vessel groundings, or the issuance of coastal construction permits for projects, such as dredging, natural gas pipeline construction, or fiberoptic cable installation. Ideally, construction of a priori mitigation takes place years before impacts to allow functioning of the mitigative structures. Compensatory mitigation may take place years after impacts.

Broward County, along with local businesses, sponsors annual clean-up events. Civic organizations, school groups, and environmentally concerned citizens come together each year to help clean up our reefs and beaches. Since its inception in 1989, the Ocean Watch Foundation's annual Reef Sweep has removed more than 33 tons of harmful marine debris, collected by over 9,000 volunteers, from the reefs offshore of Broward County. Continued sponsorship for this event will educate the public about the damaging effect of marine debris on our coastal environment and help promote responsible waste management.

Approximately 5,000 pounds of trash and debris are removed from the coastal zone annually. Since 2004, the trend indicated that the amount of trash volunteers collect each year is decreasing.

Coral reefs and their associated benthic communities are an important natural resource for the fishing and diving industries. Mooring buoys have been placed to reduce the impacts associated with anchoring of boats on the reefs. Use of the mooring buoys is reducing anchor damage. A total of 122 buoys are now available to boaters when visiting the reef.

In 2008, Broward County received a grant from the National Fish and Wildlife Foundation to install new mooring buoys, update the mooring buoy use guide, and help fund the buoy maintenance program for one year. As a result, 21 new mooring buoys were placed at Suzanne's Ledge, located offshore of Pompano Beach. Broward County will continue to monitor offshore resource use as well as mooring buoy use patterns by boaters to determine the best locations for the buoys.

Shoreline - Beach Resources

The Broward County Health Department, with the State Department of Health, initiated a program in 1998 to provide scientific information on the quality of coastal beach bathing waters to the public. The program involves monitoring of enterococci and fecal coliform bacteria levels at fifteen locations along Broward County's Atlantic coast. The annual goal is to maintain the beach water quality at or above 92% of water sampled in the satisfactory/good range. Over the past four years the percentage of satisfactory/good beach water samples is averaging 95.87% with a range from 93.2% to 98.2%. The 2008 result, 97.8%, is 1.93% above the four year average. This positive gain may be the result of a dry year with few major rainfall events.

Beach Quantity

This is a measure of the ability of Broward County's beaches to provide storm protection and recreational beach area. Critically-eroded beaches are those beaches where the width at high tide is deemed inadequate to provide storm wave damage protection and/or acceptable recreational opportunities. For the purposes of this survey, the threshold width which defines a critically-

eroded beach is 75 feet. The percentage of non-critically eroded beach refers to the proportionate length of shoreline which meets the 75 foot minimum width criterion.

Broward's beaches serve two critical functions: to provide storm wave protection for upland property, structures, and infrastructure, and to drive our recreational economic engine. Vital to the beaches' storm protective function is their width. Adequate beach width allows storm waves to break and dissipate energy harmlessly; however, in so protecting the upland, storm waves cause some net erosion of beach sand. Broward County's beaches protect almost $4 billion in upland structures and property and generate more than $600 million in annual spending in the County. Maintenance of beach width adequate to protect against a moderate frequency storm event is very important. Beach acreage is a useful measure because it indicates the amount of recreational space available to beach users. As a $600 million to $1 billion annual contributor to Broward County's economy, the beaches are a foundation of our tourist economy. Our beaches also provide critical nesting habitats for several threatened and endangered species of sea turtles and adequate acreage is necessary for this purpose. We measure beach width from the shorefront reference monument (established by the State of Florida) to the water's edge. Acreage is based on 24 miles of beachfront in Broward County.

The long-term trend in beach adequacy is typically downward because of chronic beach erosion. Erosion is caused by shorefront development too close to the shoreline, thereby displacing the dunes, which are natural reservoirs of sand; stabilized inlets, which interrupt the alongshore flow of sand; and storms or high wave events, which can move large quantities of sand offshore and alongshore. The beaches south of Hillsboro Inlet and north of Port Everglades are assisted by sand bypassing at Hillsboro Inlet and by the blockage of alongshore drift at Port Everglades, but beaches along the central portion of the segment are stable to mildly erosive and too narrow to provide optimum protection or recreational space. These beaches are scheduled for restoration in 2010.

Stabilized inlets are a major cause of beach erosion, particularly in areas where sand supplies are not abundant. The reason that stabilized inlets are erosion-makers is that sand moves along the beach in response to wave action, as well as moving onshore and offshore. In southeast Florida, the predominant direction of sand movement is north to south. Stabilized inlets, which by

definition include jetties and dredged channels, interrupt the net southward movement of sand, causing a buildup on the updrift (north) side of the channel with erosion and recession on the downdrift (south) side of the channel.

Stabilized inlets are estimated to cause 80% of the erosion in the State of Florida. In order to mitigate the erosion caused by inlets, several actions can be considered: Sand Bypassing (capturing sand that would build up on the updrift beach or be lost offshore and mechanically moving it to the down drift beach); beach nourishment (obtaining compatible sand from remote sources and placement onto the downdrift beach); construction of erosion control structures along an eroding beach in order to reduce or eliminate erosion; or some combination of these methods.

At Hillsboro Inlet, sand bypassing has been ongoing since the 1950's, mainly to keep the channel clear of sand, but since the material is placed on the downdrift beaches at Pompano Beach, that shoreline benefits for several miles south. Since a beach nourishment project in 1983 restored the beaches of Pompano Beach and Lauderdale-By-The-Sea, the bypassing operation at Hillsboro Inlet has contributed to the reduction of erosion of those beaches. A renourishment of certain areas of Pompano Beach, Lauderdale-By-The Sea, and Fort Lauderdale is planned for 2010.

High waves are a major cause of sand movement along beaches. The sand moves alongshore in the direction of wave travel, moves offshore, and to a lesser extent, onshore during high wave events. This movement of sand generally results in loss of beach sand, both alongshore and offshore. Small craft advisories are a measure of high wave events, however, since regular records of these advisories could not be found, the metric of wind speed of 23 mph or greater was chosen.

Recent (2006 - 2008) data appear to point to an increase in the number of days when a small craft advisory is issued. This trend implies a general increase in the frequency of windy (greater than 23 mph) days, and consequent high waves and increased beach erosion.

While tourism is critical to Broward County's economy, tourist put pressure on the local environmental resources. In addition to the citizens of Broward County, the visitors take cruises, use the beaches, dive on the reefs, and fish in the local waters. Florida and Pompano Beach

remain a popular tourist destination. In 2007, the number of Broward County visitors rose to 10.65 million. 76% of the increase from the previous year was domestic visitors.

Overdevelopment

Overdevelopment too close to the beach along an ocean coast, especially coasts prone to hurricanes and winter northeast storms, can place lives and property at risk. Local governments, which are primarily tasked with adopting and enforcing building code and zoning ordinances, are learning to control the density of development and redevelopment, despite the strong attractions of increased tax base and tourism revenues. It is slowly being recognized that placing lives, natural resources, and high investment values at risk puts a growing burden on the taxpaying public through higher insurance rates, lower quality of life, and rising property taxes. Controlling development and redevelopment in beachfront and coastal areas leads to sustainable economies and environmental resources.

Structures located too close to the active sandy beach often replace the beach itself. In many cases, the structures are built on and replace the dunes which would otherwise provide a reservoir of sand during erosion events. Beach-adjacent structures also preclude or force seaward the vegetation which stabilizes the beach and dunes, and which help dunes grow. Finally, new or newly redeveloped structures directly adjacent to the beach are frequently high-density, and lead to increased population of the beach. This in turn can result in increased trash on the beach and further degrade vegetation and dunes. Conversely, structures in close proximity to the beach may be vulnerable to damage from storm waves and surges. Much of the rationale for maintaining a wide healthy beach is to buffer the upland structures and infrastructure from waves and storm surge. Beaches being dynamic, however, even a wide beach can erode and place structures in jeopardy if they are located too close to the active sandy beach.

While redevelopment of Broward County's shorefront continues to maintain and increase density along the coast in most municipalities, strict enforcement of the State of Florida's Coastal Construction Control Line building standards has resulted in structures that are more resilient and less prone to damage from a given frequency storm.

Beach Trash

Trash is deposited on Broward County beaches by careless people, wind transportation from upland sources, and ocean-going vessels. Weekends and holidays are exceptionally troublesome, as canisters and dumpsters are often overwhelmed by the overabundance of beachgoers. Local municipalities maintain their beaches through motorized beach rakers, numerous trash canisters, and strategically placed dumpsters. Successful as these efforts may be, sizable amount of trash remain that is not disposed of properly. Natural areas are often the final resting place for trash, as it becomes lodged in vegetation. Trash cleanup events such as the Ocean Conservancy's International Coastal Cleanup, sponsored and coordinated locally by Broward County, assist in gathering the remaining trash and specifically target areas where trash collection is infrequent. Cleanup events also serve as superb public awareness campaigns whereby residents are educated on the problems trash causes to the environment.

Trash deposited on the beach, by any means, may impact marine resources. Examples include monofilament fishing line, rope, and six-pack rings that may entangle birds, sea turtles, and other organisms. Plastic bags and other materials are also often ingested by marine organisms that mistake them for natural food sources.

Data are not available on the amount of trash regularly deposited or collected from our beaches by Broward County or local municipalities, however, the International Coastal Cleanup trash/volunteer statistics can serve as a metric for the amount of trash on Broward beaches at a specific point (3rd Saturday in September) during each year. Ocean conditions prior to the event can also have a great influence. Rough wave conditions in 2004 may have delivered more debris to the beach. Weight of debris collected in 2004 was increased due to collection of fishing lead around Anglin's Pier in Lauderdale-by-the-Sea. During the 2005 Coastal Clean-up event, 4,575 pounds of trash was collected by 2,506 volunteers. The 2006 Coastal Cleanup suffered from a lack of promotional materials normally supplied by Ocean Conservancy resulting in a diminished turnout of 1,091 volunteers. However, these volunteers collected 4021 pounds of trash without the addition of an underwater site. This amount was nearly equivalent to 2005, yielding a much higher trash/volunteer ratio. The Cleanup in 2007 took place at 13 sites along the coast and resulted in 4,503 pounds of trash being removed by 1,420 volunteers.

Sand Bypass

Sand bypassing is conducted to reduce erosion of beaches that are impacted by stabilized inlets. Sand bypassing is the act of capturing sand which would otherwise accumulate on the updrift side of a stabilized inlet or be lost into the channel and mechanically move the sand to the downdrift beach.

Sand bypassing is one of a suite of erosion-management strategies to employ in areas of high beach erosion. Sand generally moves alongshore in response to wave action, in the case of southeast Florida, from north to south. There is an active sand bypassing operation ongoing at Hillsboro Inlet, which generally moves over 100,000 cubic yards of sand from the inlet channel and deposition basin to the beach at the City of Pompano Beach.

The quantity of material bypassed at Hillsboro Inlet increased following the Hillsboro Inlet's purchase of a larger dredge in 1984. In 2002, the channel at Hillsboro Inlet was deepened and widened to increase boater safety. One outcome of the project was a change in the bypassing frequency. The annual average quantities of material bypassed is not anticipated to change appreciably in the next few years.

Beach Nourishment

Beach nourishment is defined as the acquisition of remotely located sand and its placement upon an eroding or eroded beach. The sand, which is required to be similar in grain size, composition, and color to the recipient beach, is usually dredged from offshore locations and transported or pumped to the beach. Beach nourishment is generally intended to restore a beach to its historical configuration of width and slope. Beach nourishment is performed to provide increased storm damage prevention to upland structures and infrastructure, to provide increased recreational opportunities for residents and visitors, and to restore diminishing sea turtle nesting habitat. Endangered and threatened marine turtles require adequate beach width to allow for adult female emergence, nest site selection, successful egg chamber excavation and burial, and successful sea-finding behavior by emerging hatchlings. Areas of beach that have become critically eroded will result in a measurable increase of the number of unsuccessful emergences of nesting females (false crawls) and an overall reduction in the number of nests deposited. Nourishment of these critically eroded beaches replaces nesting habitat with sand that is of similar quality (grain size, percent carbonate, etc.) as the native sand that eroded away.

In Broward County, ten beach nourishment projects have been performed since 1970, totaling almost 11 million cubic yards placed. In each case, sand was obtained from offshore of the County and pumped ashore through pipelines. The material was then spread and graded on the beach. For example, the Hallandale Beach-Hollywood-Dania Beach-John U. Lloyd Park beaches were constructed during the 2005 sea turtle nesting season between May, 2005 and February 2006. In 2004 on Hollywood Beach, there were 71 nests and 191 false crawls surveyed on that beach. During the 2005 marine turtle season (ongoing construction of the beach) there were 107 nests and 154 false crawls surveyed. The increase in nests and decrease in false crawls is attributed, in part, to augmentation of available nesting habitat. The 2006 nesting season resulted in 97 nests and 184 false crawls. This decrease in nests and increase in false crawls as compared to the previous year may be cyclical or may be due to equilibration and scarping of the newly placed beach fill. In 2007, 103 nests were laid and 149 false crawls were noted.

Economically accessible sources of sand are now scarce offshore of Broward County. Future beach erosion control efforts will need to consider more remote sources of sand, which will increase costs. In addition, alternative means of reducing erosion are being considered, such as the use of erosion control structures and sand bypassing. Traditional beach nourishment will become less frequent in Broward County, replaced by smaller, more frequent placements of "sands of opportunity." It is clear that successful beach nourishment not only provides beach area for storm damage reduction and recreational purposes, but the increase in beach area also provides more sea turtle nesting habitat.

Beach Condition

Monitoring the condition of the beach is essential to acquire an understanding of how the beach behaves over the long term. Some beaches appear to be eroding or accreting, but longer-term monitoring will show that these are not trends, but merely normal seasonal fluctuations in beach width, elevation, and slope. Monitoring consists of measuring the extent and elevation of the sand, both onshore and offshore, with land and hydrographic surveying techniques. Comparing periodic surveys can illustrate the long-term prognosis for a stretch of beach.

Broward County conducts annual monitoring of its beaches. The monitoring consists of both aerial photography and actual surveying. The aerial photography is obtained digitally and is

ortho-rectified in order to allow accurate scaling. The upland portion of the beach is measured using high-order Global Positioning System coordinates from the reference monument out to wading depth, taking position and elevation readings at intervals and at grade breaks. For the submerged portions of the beach, a hydrographic survey vessel takes position and soundings along the survey line bearing from close to the shoreline (with overlap of the upland beach survey line) generally out to 30 feet of depth. The surveys are run along pre-established lines associated with Florida Department of Environmental Protection range monuments, located approximately every 1000 feet along the shore. For 2008, the County has updated the 2001 Laser Airborne Depth Survey (LADS) of the beach and seafloor out to 150 feet of depth, yielding highly accurate bathymetric data.

Coastal Construction Control Line Program

Florida's Department of Environmental Protection (FDEP) administers the statewide Coastal Construction Control Line Program (CCCL). This regulatory program provides protection for Florida's beaches and dunes and their associated wildlife, while assuring reasonable use of private property. The State's Coastal Construction Control Line Program promulgates rules and issues permits for projects, activities, and events proposed to be located seaward of the Coastal Construction Control Line (see prior Figure 6). Such projects, activities, or events, if conducted improperly, can damage or destabilize the beach/dune system. Once destabilized, these valuable natural resources are vulnerable to being lost along with their important values for recreation, upland property protection, and environmental habitat. Broward County has no equivalent regulatory authority.

County staff serve as the local "eyes and ears" of the FDEP's CCCL program, referring prospective permittees to the proper contact points and providing information to potential developers of beachfront property regarding the state's CCCL permitting requirements. Part of the CCCL permitting review by the state includes review of the application by the Imperiled Species Section of the Florida Fish and Wildlife Conservation Commission for impacts to sea turtles and certain shorebirds. Applicants are required to avoid impacts to these animals. County staff sometimes serves as liaison between the state and the applicant in the County's role as state-permitted sea turtle conservation program administrators.

As potential developers of beachfront property become familiar with the state' s requirements, partially due to the County's efforts, instances of unallowable impacts to beach wildlife become less frequent.

Beach Clean-up Efforts

The pounds/participant/event is a measure of the quantity of litter collected per person during annual coastal cleanup campaigns. The Ocean Conservancy (formerly the Center for Marine Conservation), a nonprofit organization committed to protecting ocean environments, sponsors the International Coastal Cleanup annually on the third Saturday of September. There are twelve beach cleanup locations along the 24 miles of Broward County shoreline. The information gathered provides a snapshot in time of the types of debris being found on beaches and waterways around the world. The Ocean Conservancy then tailors their education campaigns to address reducing the most abundant types of litter found in each region.

This is a measure of the effectiveness and public involvement in litter cleanup campaigns within the County. In the past, an approaching tropical storm did impede the efforts of volunteers participating in the event. For this reason, the results were calculated to reflect an average number of pounds of debris per person combining the total of beach walkers and divers. In 2004, the Coastal Cleanup included one underwater site located at the base of a fishing pier. This site significantly increased the annual pounds collected per event per volunteer due to the removal of lead weights found near the pier.

Total weight of debris collected can vary significantly during different years for various reasons. Ocean conditions prior to the event can also have a great influence with rough wave conditions delivering more debris to the beach. Weight of debris collected in 2004 was increased due to collection of fishing lead around Anglin's Pier in Lauderdale-by-the-Sea. During the 2005 Coastal Clean-up event, 4,575 pounds of trash was collected by 2,506 volunteers. The 2006 Coastal Cleanup suffered from a lack of advertising material normally supplied by Ocean Conservancy resulting in a diminished turnout of 1,091 volunteers. However, these volunteers collected 4,021 lbs. of trash without the addition of an underwater site. This amount was nearly equivalent to 2005, yielding a much higher trash/volunteer ratio. The 2007 Coastal Cleanup had more wide-spread advertising than the previous year and targeted high school environmental

groups along with Girl Scouts and Boy Scouts. A total of 4,503 lbs. of debris were collected by 1,420 volunteers at 13 sites, including Dania Beach which had not been a site in the previous two years.

Marine Wildlife - Sea Turtles

Broward County's beaches are surveyed daily during the sea turtle nesting season, March 1 through October 31. The number of nests deposited and the Global Positioning System location of each is recorded. Those nests found at sites not amenable to successful hatchling entry into the surf are relocated to adjacent sections of beach where the ordinances designed to provide light management and thereby darker beaches are in effect.

The Broward County Sea Turtle Conservation Program was originally instituted through specific requirements of dredge and fill permits issued to Environmental Protection and Growth Management Department for beach renourishment projects. The goal of the program is to reduce the number of sea turtle nests that require relocation and maximize the survivability of nests left on the beach. It is expected the number of sea turtle nests requiring relocation will continue to decrease due to the enactment of sea turtle lighting ordinances in the Cities of Pompano Beach, Deerfield Beach, Lauderdale-By-The-Sea, Fort Lauderdale, Hallandale Beach, and Hillsboro Beach. These ordinances require shading or suspension of beach lighting from sunset to sunrise during the nesting and hatching season. Compliance will allow additional nests to be left in-situ.

The overall number of nests has decreased again from 1,902 nests in 2006 to 1,867 nests in 2007. The percent of nests left in-situ increased significantly from 2006 to 2007 (63.1 % to 71.1%).

Sea Turtle Nesting Success

Increases or decreases of the nesting success percent from year to year may be used as an indicator of the level of disturbance to nesting females on a particular stretch of beach. The average nesting success in 2000 to 2005 in Pompano Beach and Lauderdale-by–the-Sea, was 44.2%. If the habitat is reduced from beach erosion, then the number of false crawls will increase and the nesting success percent will decrease. Overall, the nesting success average percent in Broward County decreased from 48.4% in 2006 to 46.4% in 2007.

Beaches Without Turtle Friendly Lighting

Although most coastal Broward County municipalities (including Pompano Beach) have passed marine turtle-friendly lighting ordinances, most of the beach frontage has not yet complied enough to allow successful, ocean-orientated emergence of hatchlings turtles. Complete compliance with the local lighting ordinances will contribute to a possible reduction in the disorientation of adult nesting female turtles. A measure of this would be revealed if the nesting success percent were to increase beyond the average range of 45-55%.

Sea Turtle Nests Impacted by Predators

Eggs and hatchlings of marine turtle nests are preyed upon by several species of predators here on south Florida's beaches. Predator prevention measures that are employed to reduce the number of nests taken by raccoons (Procyon lotor) include placing mesh cages and screens over the area of the egg chamber. This is a successful preventative measure except in efforts to protect eggs in relocated nests. Using olfactory cues, raccoons will find the egg chambers of every relocated nest they encounter. Additional predators contributing to the take of hatchling marine turtles and eggs includes night herons (Nycticorax nycticorax), ghosts crabs (Ocypode quadrata), foxes (Vulpes vulpes), feral dogs and cats, fire ants, and people**.**

The average number of nests taken by predators in Broward County is 218 each season. The 2007 season revealed a significant reduction in the number of nests taken by predators to 175.

Sea Turtle Hatchling Disorientation

Hatchling turtles are attracted, by visual cues, to the first brightest horizon that they sense. Hatchling sea-finding disruption is an important conservation problem throughout Broward County and anywhere that artificial light interferes with that sea-finding instinct. The 2005 survey resulted in 134 hatchling disorientation reports being filed while the 2004 survey produced 161 filed reports. The permit conditions under which the program was operated during the 2006 season prohibited the use of chain-link hatchery enclosures or open-beach hatcheries. Consequently, many more nests were left in natural egg chambers than were relocated to "darker, safer" beaches. This change in conservation strategy and implementation resulted in 385

disorientation events report during 2006 and 356 hatchling disorientation events during the 2007 season.

The Sea Turtle Conservation Program (prior to 2006) was designed to minimize the conditions which produce hatchling disorientation events. This is accomplished by moving nests from areas that are too brightly lit for hatchling emergence (but were not so brightly lit that the site prevented nesting) to darker beach areas (open-beach hatcheries) or to enclosed hatcheries (limited use).

The trend will be for a significant increase in the number of disorientation events reported in the future because State and Federal agencies (Florida Fish and Wildlife Conservation Commission and United States Fish and Wildlife Service) that issue marine turtle activity permits for the 2006 nesting and hatching season are requiring a substantial reduction in the number of nests relocated because of lighting issues. This trend in increased numbers of hatchling disorientations will likely continue until compliance significantly increases with lighting ordinances in the coastal areas.

Juvenile & Adult Sea Turtle Injuries & Deaths

The Endangered Species Act requires that an official recovery plan for each threatened and endangered marine turtle species be published and updated on a regular basis. These recovery plans include tracking the fate of dead or injured specimens and determining possible preventative action to reduce the number of stranded marine turtles throughout their range. Here in Broward County, the primary cause of dead or injured adult and juvenile marine turtles is collisions with boat hulls and propellers.

The average number of stranded juvenile and adult marine turtles over the previous five years in Broward County is 48 per calendar year. The number of strandings in 2007 was 49.

Sea Turtle Nest Relocation

The recorded number of hatchlings released each year is calculated only from nests that are relocated to an enclosed chain-link hatchery at Hollywood Beach, Fort Lauderdale Beach, or Pompano Beach. Hatchlings that emerge from nests relocated to open-beach hatcheries are not counted as “released” because they are allowed to emerge and reach the surf on their own. The

goal is to continue to reduce the need for restraining hatcheries and eventually eliminate their use altogether concurrent with reducing the number of nests relocated to open-beach hatcheries. During 2006, no restraining hatcheries were utilized by the program.

Amount of Beach with Reduced Lighting

Broward's sea turtle lighting ordinances are effective from March 1 through October 31 each year. Some of the beach areas in these cities are dark enough at night to allow the successful hatch and orientation of hatchling turtles toward the ocean. These areas of beach are listed in the marine turtle permit issued to Broward County as green zone recipient areas where nests can be left in their natural egg chambers without further manipulation. Adjacent to these areas are beach segments referred to as red zones in the permit. These are beach areas where nests have a very likely chance of disorienting due to excessive artificial light or they are beaches in cities that have not yet enacted a lighting ordinance.

Red zone beaches are beaches where sea turtle nests may be relocated from and green zone beaches are areas where nests may be left in place and to where red zone nests may be relocated.

In 2005, less than 25,000 linear feet of Broward beaches were turtle-friendly, dark beach. In 2006 and 2007, the amount of linear beach with sea turtle-friendly lighting conditions increased to roughly 54,000 ft. With continued expansion of lighting ordinance enforcement, this number is expected to continue to increase in future years.

Florida West Indian Manatee Population

The manatee is an endangered species whose existence is threatened by several human activities. The goal of the state and federal government is to increase the manatee population to a point where the U.S. Fish and Wildlife Service "Multi-Species Recovery Plan for South Florida" reclassifies them as "threatened" and eventually removes them from the endangered species list. The annual statewide count is important in identifying population trends. The Florida Fish and Wildlife Conservation Commission (FWC) did not conduct the annual statewide manatee synoptic survey in the winter of 2008, due to much warmer than average weather.

Aerial surveys are not an accurate representation of the Florida West Indian manatee population. These counts vary by hundreds between surveys but may be used to demonstrate large scale trends in the population. The 2007 count is 9% lower than the previous year.

Number of Registered Marine Vessels

The number of registered vessels in the County provides an indirect measure of the fishing and diving pressures on the County's marine resources. In 2006, the total number of registered vessels increased slightly. This was mainly due to a 9.3% increase in the number of pleasure vessel registrations. In 2007, dealer vessels increased by 2.5% but pleasure and commercial vessels decreased in number. In 2008, the number of registered vessels fell in all categories.

Manatee Mortalities

The manatee is an endangered species whose existence is threatened by several human-related activities including boat and ship impacts, water control structures, habitat reduction, and water pollution. In 2005, seven manatees died in Broward County. Probable cause of four of those deaths was unknown. In 2006, twelve manatees died in this County, with watercraft related deaths doubling from the previous year from two to four. The total deaths in 2006 were the highest since 1999 when 15 manatees died here. In 2007, 4 manatees died, the lowest number since 2000. Only one of the mortalities was attributed to watercraft.

Boat slips represent a direct and indirect pressure on Broward County marine resources. Directly, slips impact the shoreline and benthic resources, such as mangrove and seagrass habitat. Slips are also associated with various pollutants including chemicals, fuel, lubricants, and

municipal waste that may wind up in County waterways and adversely impact living resources. Indirectly, slips equate to boats, which may impact and kill manatees. The number and siting of boat slips is important to ensuring the sustainability of the federally endangered Florida population of the West Indian Manatee.

Broward County had been under a marine facility permitting moratorium since 2004. With the Florida Fish and Wildlife Conservation Commission's approval in 2007 of Broward's Boat Facility Siting Plan (BFSP) component included in the Manatee Protection Plan (MPP), marine development of commercial and private facilities are again being permitted.

Manatee Protection

In November 2007, Broward County completed drafting the BFSP. The Boating Safety element of the Broward County MPP resulted in the installation of numerous speed zones throughout the County. Boater compliance to these zones is high, presumably resulting in decreased water-craft related manatee mortality. The Manatee Education and Awareness component of the Broward MPP is also in place. The efforts include regular distribution of educational materials, public forums, informational kiosks, educator toolboxes, and a manatee webpage on the Broward County website.

The BFSP identifies appropriate dock densities for particular areas of the County while providing protection for State of Florida and federally protected manatees. Conservation measures, as established in the BFSP, provide funding for monitoring efforts in critical areas, aerial surveillance and active signage. Manatee mortality in Broward County is low relative to other Florida counties. However, the fraction attributed to watercraft-related impacts is high requiring Broward to develop a MPP.

Coastal Zone Area Infrastructure

Existing and Future Roadway Facilities

Several important arterial roadway facilities are located within the coastal zone area. On the mainland side of the Intracoastal Waterway, the roadways provide access to the adjacent municipal areas and include: Dixie Highway, Cypress Road, McNab Road, Federal Highway and Atlantic Boulevard. Atlantic Boulevard and NE 14th Street include Intracoastal Waterway

bascule bridges which connect mainland to the barrier island. On the barrier island, SR A1A is the major north south roadway with connection across the Hillsboro Inlet bascule bridge to the Town of Hillsboro Beach and to the south to the Town of Lauderdale by the Sea. These coastal zone roadways are not expected to be widen or expanded in the future and no additional new corridors are envisioned. Additional description of roadway facilities, existing conditions, future traffic projections and the recommended Transportation Plan can be found in the Transportation Element of the Comprehensive Plan.

Existing and Future Sanitary Sewer Facilities

The City has a large sanitary sewer collection network with a large number of force mains, lift stations and pumping stations within the coastal zone area. The City is part of the North Broward Regional Wastewater System in that untreated wastewater is pumped to the Regional Facility for processing, treatment and discharge. Broward County operates an ocean outfall which is expected to be restricted in the future due to new Federal regulations. The Regional Wastewater Facility may need to increase deep well injection capacity in the future to compensate for restrictions in the ocean outfall discharge. The City also captures a portion of the outfall flow prior to discharge as part of the City's water re-use effort. While the City is expected to continue to provide maintenance efforts on the sanitary sewer collection system in the coastal zone area in the future, no new capacity increases are planned. Lift Station #2 is being relocated and upgraded per the Beach Master Plan. The City is planning further expansions of the water re-use program. Additional description of sanitary sewer facilities, existing conditions and future demands can be found in the Sanitary Sewer Sub-Element of the Infrastructure Element of the Comprehensive Plan.

Existing and Future Potable Water Facilities

The City has a large water distribution network with a ground storage facility in the coastal zone area. The distribution network includes four (4) crossings of the Intracoastal Waterway and one crossing of the Cypress Creek Canal. The City water treatment plant is not located within the coastal zone area and has a 2005 capacity of 40 million gallons per day. In 2005, the Plant had an average demand of 17.266 MGD. The City opened a Water Reuse Facility in 1989. The initial reuse capacity was 2.5 MGD utilizing effluent removed from the Broward County North Regional Wastewater Plan outfall pipe prior to discharge. The City recently completed an expansion of the Reuse Facility to 7.5 MGD capacity. The reuse distribution system is currently existing or planned to the mainland portion of the coastal zone area east of US 1 and west of the Intracoastal Waterway.

The City has adequate capacity to serve the anticipated demands in the coastal zone area due in part to the current plant's available capacity and the continued growth of the Reuse Facility for irrigation needs. Additional description of potable water facilities, existing conditions and future demands can be found in the Potable Water and Water Supply Facility Work Plan Sub-Elements of the Infrastructure Element of the Comprehensive Plan.

Existing and Future Drainage Facilities

The Drainage System that serves the coastal zone area is comprised of subdivision outfalls and major roadway outfall systems, primary and secondary canals and water control structures. The system is operated by the South Florida Water Management District, Broward County and the City. The Drainage System discharges excess storm water from storm events into the Atlantic Ocean via the Intracoastal Waterway. Control structures are located at the western boundary of the coastal zone area at the Cypress Creek Canal and the Pompano Canal.

The Capital Improvement Plan provides major drainage projects over the next five (5) years. The funding for these efforts are provided by the Storm Water Utility which is a pay-as-you-go program enabling the program to be financially supported. Additional description of drainage facilities, existing conditions and future needs can be found in the Drainage Sub-Element of the Infrastructure Element of the Comprehensive Plan.

Existing and Future Canal Facilities

The City of Pompano Beach has an extensive network of canals in the coastal zone area that connect to the Pompano Canal, Cypress Creek Canal and the Intracoastal Waterway. The Intracoastal Waterway connects to the Atlantic Ocean at the Hillsboro Inlet at the northeast corner of the City of Pompano Beach, where the City of Pompano Beach, City of Lighthouse Point and the Town of Hillsboro Beach converge.

The maintenance of the Pompano Canal and Cypress Creek Canal are the responsible of the South Florida Water Management District up to the salinity control structures, seaward of the salinity control structures, the City of Pompano Beach is responsible. Florida Inland Navigation District (FIND) is responsible for the maintenance of the Intracoastal Waterway. FIND owns three (3) sites in the City for the deposit of dredged materials from the Intracoastal Waterway. The City maintains lease agreements with FIND to use the sites as parks: Exchange Club Park; Alsdorf Park; and, Harbor's Edge Park.

The remaining canals were excavated by developers to construct waterfront residential lots. These "finger" canals gradually accumulated silt and other bottom materials, thereby reducing water levels necessary for recreational boating. In response to resident requests, the City has assumed the responsibility of maintaining these canals.

In 1991, the City initiated a capital project to dredge fifteen (15) canals to restore a minimum water depth of five (5) feet. A hydrographic survey of 26 miles of canals identified the problem areas. The City spent $278,000 to restore water depth. The Florida Boating Improvement Program awarded a grant of up to $187,500 to reimburse the City for project costs. A few years later, the City conducted another project to deepen additional canals with a budget of $50,000.

The City undertook a third capital project in 2002 to improve the quality of boating and alleviate water safety hazards in the canals. A consultant study found twenty-three (23) critically shoaled

canals requiring 20,500 cubic yards of material to be removed. Total cost of the project, which was completed in 2006, was $1,000,000.

Hurricane Evacuation Plan

Hurricane Characteristics and Phasing of Warnings

Hurricanes and tropical storms are potentially devastating occurrences. Broward County's coastal location, storm's unpredictable paths, intensity variations and lack of recent local experience, complicate hurricane preparations. Major hurricane characteristics are: strong winds, high-tides and flooding, excessive rain and flooding and storm surges. Hurricane season is between June 1st and November 30th.

The National Weather Service provides data on individual storms and provides official predictions and recommendations in the form of Hurricane Watches and Warnings. Based on the predicted severity of a particular hurricane, selective evacuations may be required from coastal and low-lying areas.

A Hurricane Watch is issued by the National Weather Service when hurricane conditions are a possible threat to a certain area. The Hurricane Watch is usually given 24 to 36 hours before the hurricane eye reaches landfall.

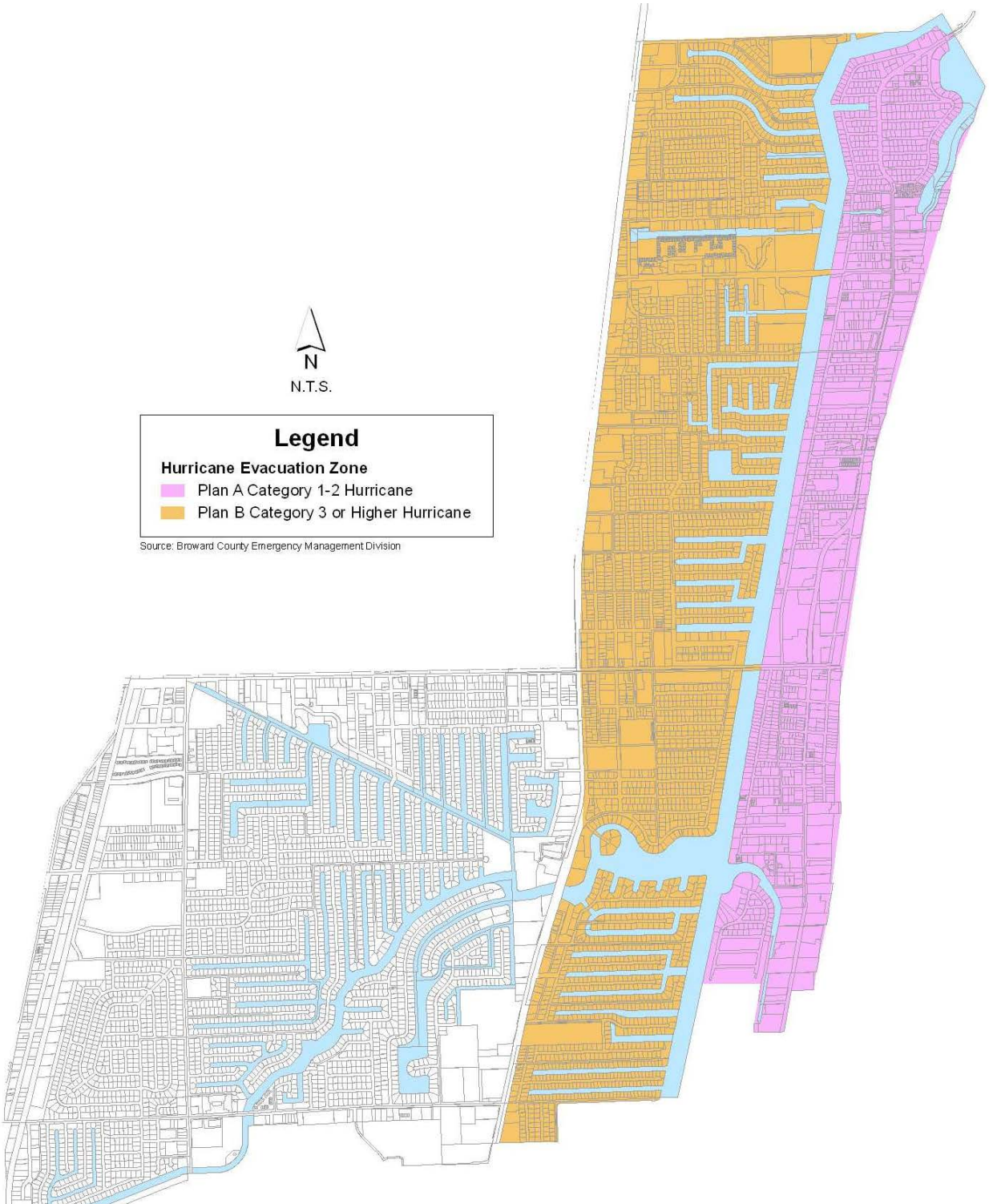
A Hurricane Warning is issued by the National Weather Service when winds of at least 74 miles per hour, high water and storm surge are expected to reach a specific area within a period of 24 hours.

Hurricane Evacuation Plan

The Broward County Hurricane Evacuation Plan contains two (2) levels for addressing a storm situation. The first instance and lowest level of action is Plan "A". This response provides for a Saffir/Simpson Category 1-2 hurricane intensity. This hurricane level would include a storm surge of four to eight feet above mean sea level with winds of ranges of 74 to 110 miles per hour. Plan "A" necessitates the evacuation of all coastal residents between the coastline and the

Intracoastal Waterway as well all mobile home residents. For Pompano Beach, the area of the City east of the Intracoastal Waterway has been identified by Broward County as part of the Coastal High-Hazard Area. A Plan "A" evacuation order would be issued 21 hours prior to hurricane landfall with evacuation operations beginning within 4 hours and continuing for 6.5 hours. Figure 9 depicts the evacuation zones within the coastal zone area.

Figure 9 – Evacuation Zones



The second level and most intense response is Plan "B". This response provides for a Saffir/Simpson category 3-5 hurricane intensity. This hurricane level would include a storm surge of seven to eighteen + feet above mean sea level with winds of ranges of 111 to 155-plus miles per hour. Plan "B" necessitates the evacuation of all coastal residents between the coastline to U.S.1 and those persons located in low lying areas or beside tidal bodies of water. Plans “B” evacuation orders would be issued 26 hours prior to hurricane landfall with operations beginning within 4 hours and continuing for 12 hours.

Broward County Evacuation Plan’s Relationship with the City

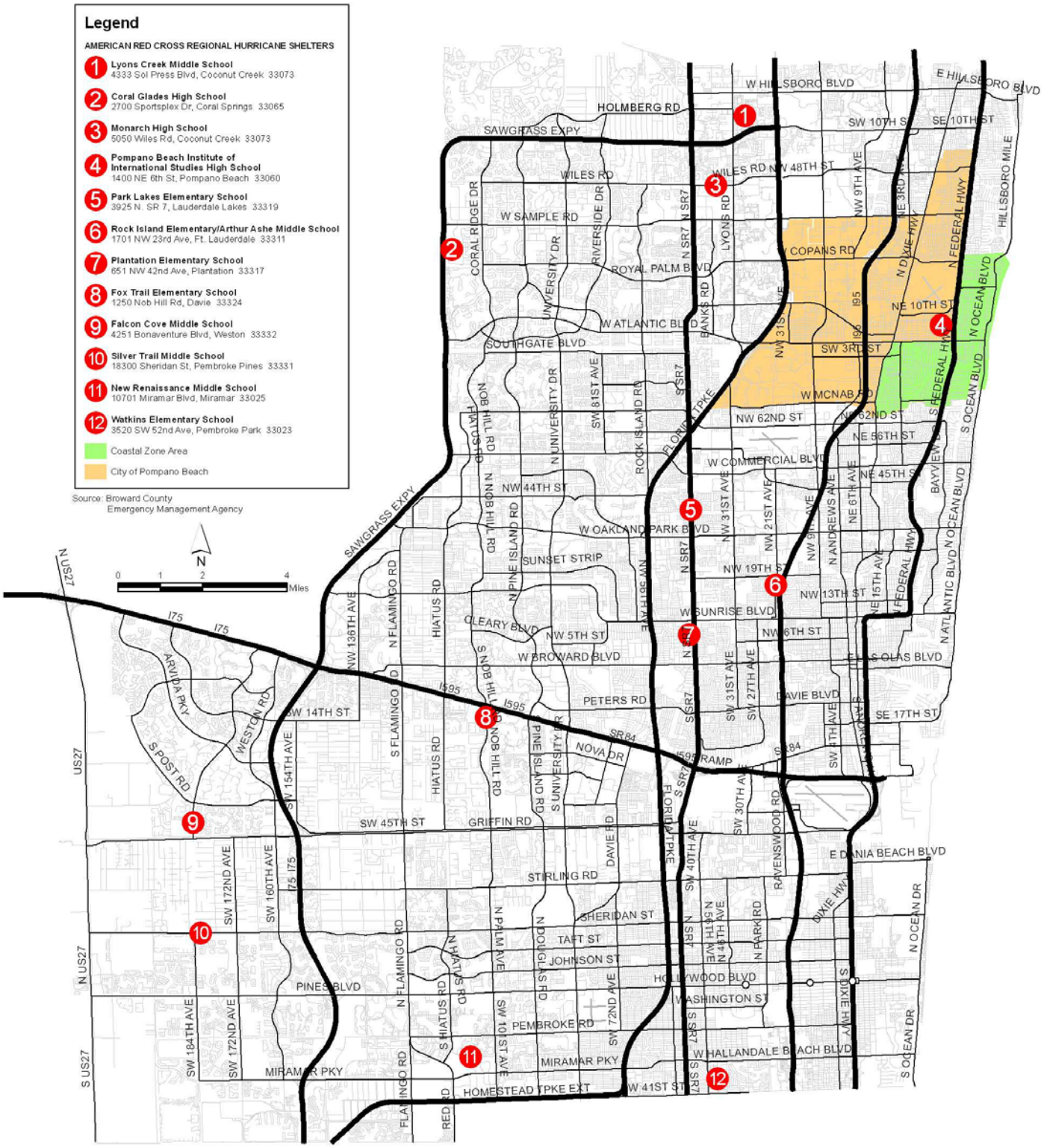
According to the Broward County Natural Disaster Component (2006), fifteen (15) percent of Broward's population requiring evacuation would seek shelter in a public refuge. With the City's 2000 coastal zone area resident population of 32,900 residents, approximately 4,900 residents would require shelter spaces in the Plan “B” evacuation. Countywide there are approximately 19,710 shelter spaces available at 12 primary shelters located throughout the County at public schools. Figure 10 illustrates the City and coastal zone area with Broward County Primary Shelter locations. Also, an additional 19,655 shelter spaces are available at secondary hurricane shelters and more public schools could be opened should more spaces be required.

The 1997 Broward County Natural Disaster Planning Component estimates that evacuation will take approximately six and one-half hours for Plan "A" and twelve hours for Plan "B". The estimated travel time includes 30 minutes for loading, 10 minutes for unloading and 15 miles per hour. It is estimated that individuals residing in coastal areas could reach public shelters within two hours. The evacuation time is dependent on the traffic conditions and the cooperation provided by the public.

The County has designated Atlantic Boulevard as a Hurricane Evacuation Route for the barrier island area of Pompano Beach. Members of the Pompano Beach Police Department (Broward Sheriffs Office) and the Florida Highway Patrol would direct traffic to ensure optimum functioning of the intersection and evacuation route traffic lanes. Figure 9 depicts other expressway and arterial evacuation roadways for the City and the locations of primary shelters.

The nearest primary shelter in the City is located at Pompano Beach Institute of International Studies High School (1400 NE 6th Street, Pompano Beach).

Figure 10 – Hurricane Shelters



City and County residents may also be transit dependent. For this segment of the population, a Mass Transit Plan has been prepared to address Broward County population segments located with evacuation areas. Transit evacuation operations begin four hours after an evacuation order, which is given 21 to 26 hours prior to the forecasted landfall of a hurricane. Plan "A" (Storm Category 1-2), necessitate the evacuation of all barrier island residents and emergency transit operations stay in effect for approximately 6.5 hours. Under Plan "B", additional emergency transit routes would be provided, with service continuing for 12 hours.

The Broward County Plan specifies that individuals with special needs requiring special transportation will have their evacuation and reentry needs addressed by their designated Paratransit Transportation contractors. The Broward County Paratransit Services Section, through the means of contract arrangements, will be responsible for the door-to-door evacuation of the elderly and handicapped persons and will also respond to telephone requests from residents or through the Emergency Operations Center. Lead agencies designated to coordinate evacuation and reentry activities would be the Broward County Community Services Department and Mass Transit Division. Support agencies include the Broward County Fleet Services Division, the Broward County School Board, the Tri-Rail Authority, the Paratransit Services Section and the Sheriff's Office.

Post Disaster Planning Concerns and Coastal High-Hazard Areas

The coastal area projected to experience the most severe damage is the velocity zone as identified in Figure 11. This area is based on FEMA flood zone elevation requirements and velocity conditions. Future land uses are expected to be a continuation of current land uses. Future development will require consistency with the regulations of the Coastal Construction Control Line (CCCL). Restoration of the beach dune and future renourishment projects are expected to have a major beneficial impact on minimizing damages from future coastal storms.

The Coastal High Hazard Area is defined as the area below the elevation of the Category 1 Storm Surge Line as established by the Sea, Lake, and Overland Surges from Hurricanes (SLOSH) computerized storm surge model. GIS information on the SLOSH Model for the City was obtained from the State of Florida Division Emergency Management's website

(www.floridadisaster.org/gis/data). The Category 1 Storm Surge Line was added to the Town's Future Land Use Map (see Figure 12). Expected tidal surges are provided in Figure 13 for various categories of hurricane events.

Figure 11 – FEMA Flood Zones

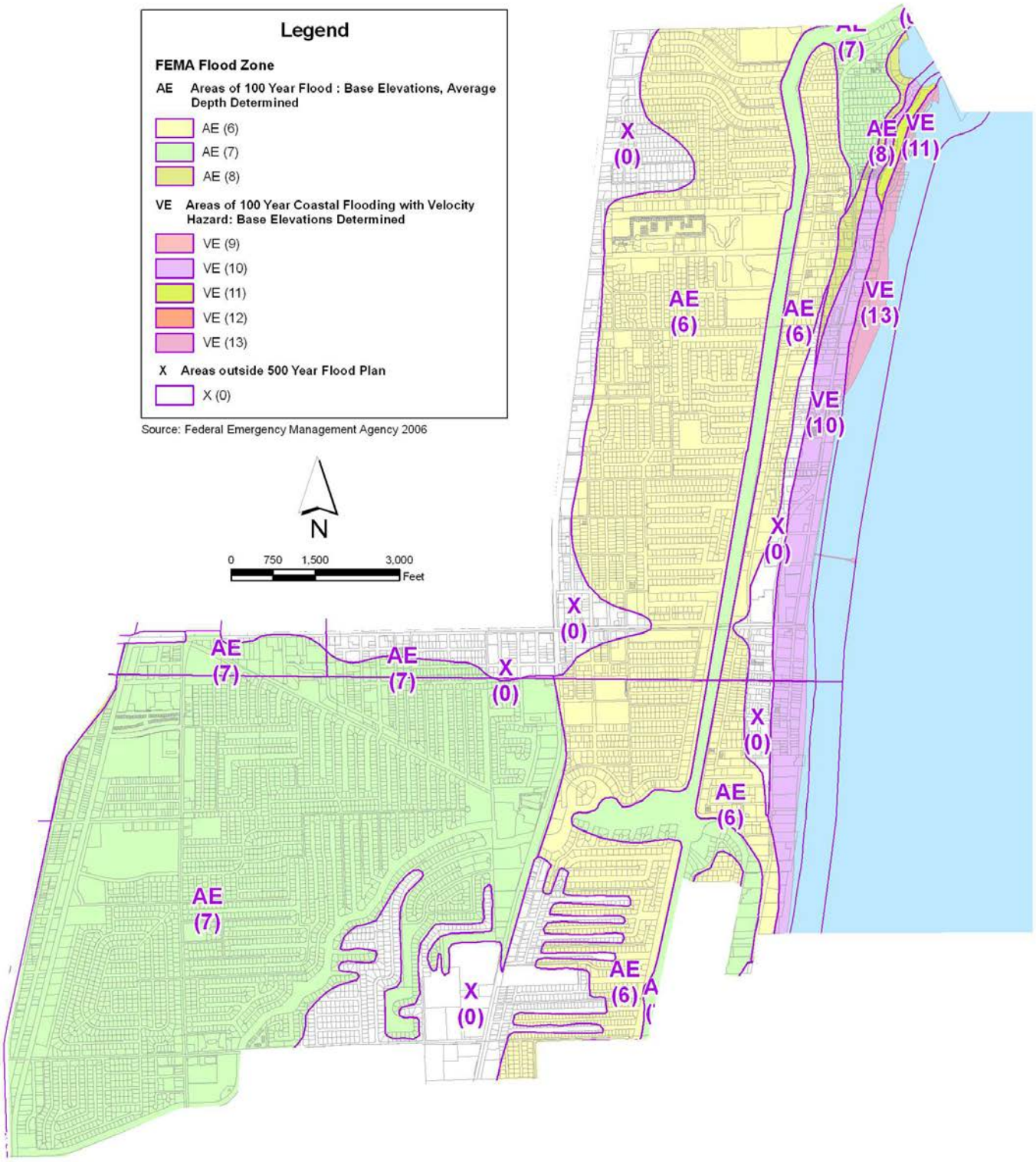


Figure 12 – Coastal High Hazard Area (New 2018 Map)

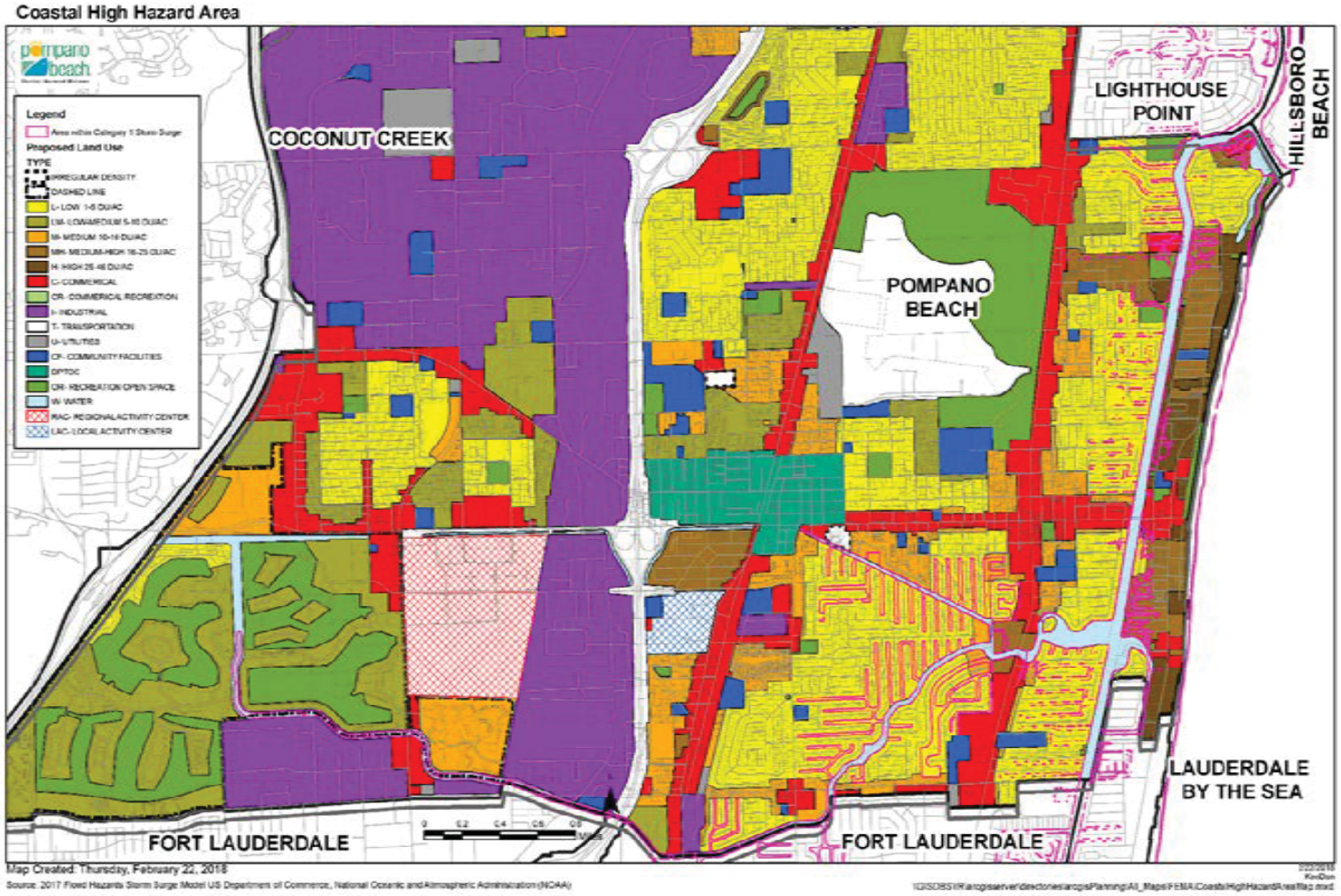


Figure 13 – Storm Surge Limits