

## **CONSERVATION ELEMENT – DATA AND ANALYSIS**

### **I. Introduction**

Programs, policies and standards related to environmental protection and conservation within the City of Fort Lauderdale are developed and implemented by federal, state, regional and county agencies. In addition, the City has adopted ordinances to conserve and enhance its natural amenities and resources.

The primary agencies charged with the enforcement of environmental regulations in Fort Lauderdale are the Florida Department of Environmental Protection (DEP) (DER), the South Florida Water Management District (SFWMD), the Broward County Environmental Protection Department (EDP), and the Broward County Office of Water and Wastewater Services (WWS) along with the City's Planning and Zoning, Building and Public Works Departments.

### **II. Existing Conditions and Analysis**

#### **Water Needs and Sources**

The Biscayne Aquifer serves as the primary source of fresh groundwater to meet water needs. While the Biscayne Aquifer is capable of yielding considerable amounts of water, continued urbanization within the County will eventually tax this resource

As a general measure, less than one percent of the total water demanded is for industrial use. The remaining demand in Fort Lauderdale is for potable water as there are no agricultural uses in the City.

Water is supplied from 29 wells in the Prospect/Executive Wellfield area and 24 wells in the Peele/Dixie Wellfield. These 53 wells have an existing design capacity of 107 million gallons per day (MGD), well in excess of the 51.76 MGD projected water demand in 2010.

The Broward County Board of Commissioners adopted the Wellfield Protection Ordinance (County Ordinance 84-60) in August of 1984. The purpose of the Ordinance is to safeguard public health by providing criteria for the regulation of storage, handling, use, or production of hazardous or toxic substances within the zones of influence of water supply wells. The City has an excellent record of complying with the Ordinance. Enforcement of that Ordinance by the County has reduced the possibility of future chemical contamination of wells.

The BCEPD has sixty-one groundwater monitoring stations countywide, seven of which are located in the City with one adjacent to each wellfield. While no data has been gathered from these wells in approximately 10 years, Broward County is currently performing reconnaissance of these wells and may resume sampling in the near future.

Saltwater intrusion, the encroachment of saltwater into the freshwater Biscayne Aquifer, is one of the most serious threats to wellfields. Intrusion occurs when the balance between fresh and saltwater is disturbed by manmade actions such as the large-scale withdrawal of freshwater from wellfields along the coast. Droughts also provide a situation where saltwater will intrude westward. To keep this condition from spreading, the Public Services Department is attempting to modify groundwater gradients as a means to mitigate the spread of saltwater intrusion and prevent contamination of the wells.

Another serious problem is wellfield contamination by industrial/commercial pollution. The Peele/Dixie and Prospect Wellfields contain wells contaminated by chemical pollution from industrial activities. Future contamination of wells should be curtailed by compliance with and enforcement of the Wellfield Protection Ordinance.

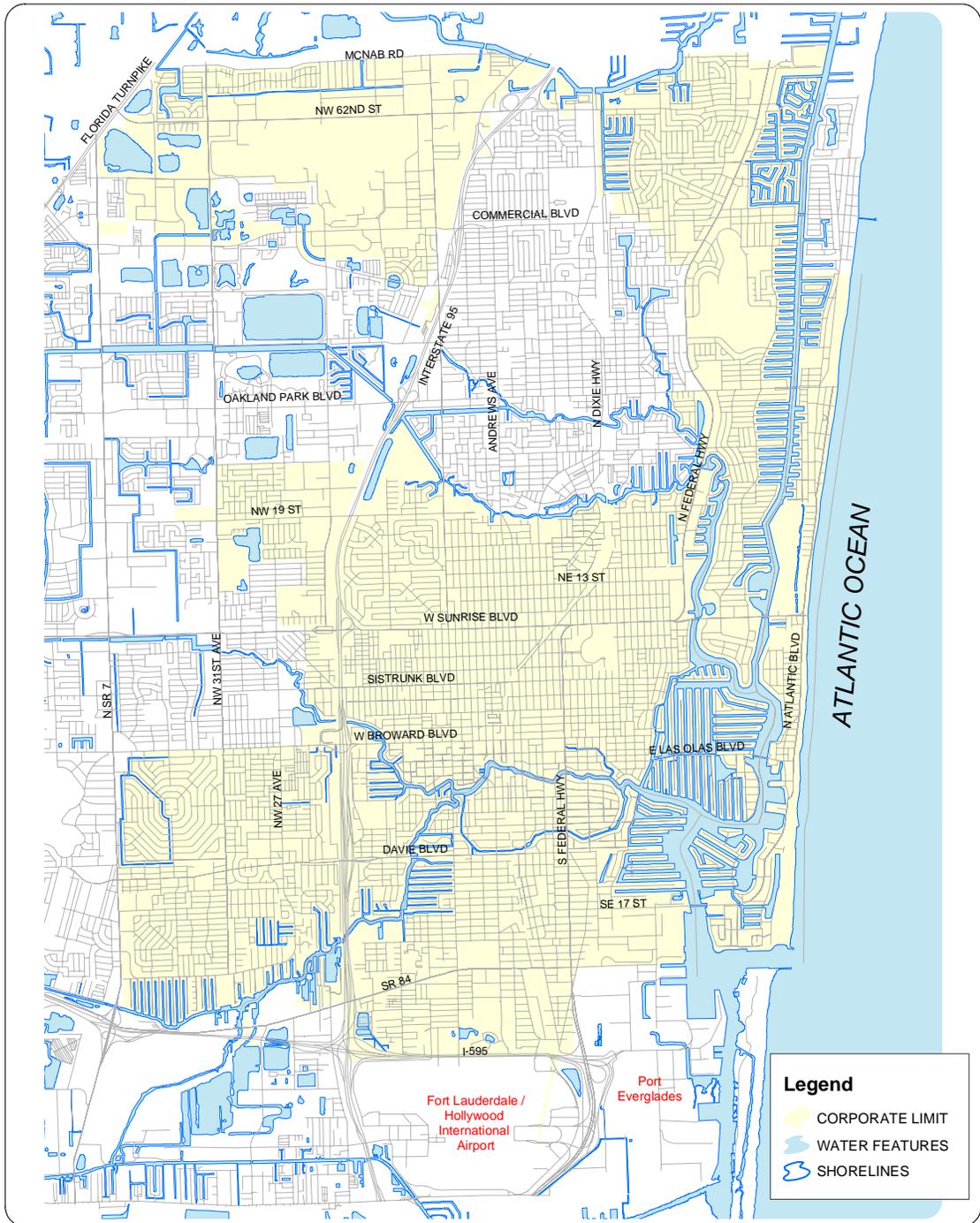
In order to contain present or possible future industrial contamination, City wellfields are continually sampled and tested. Production wells in both Prospect and Peele-Dixie wellfields are sampled quarterly for numerous parameters (160 samples per year). In order to insure an adequate lead time, should future contamination occur, monitoring wells have been drilled and are tested monthly for an additional 88 samples per year. In order to monitor saltwater infiltration at wells used for irrigation at City parks, monthly samples are taken.

In 1996 the city installed a “water conservation rate” designed to reduce per capita consumption. In an effort to identify the best means of conserving water, Fort Lauderdale had contracted for several studies in past to examine the financial and environmental feasibility of initiating a reuse water program. In all cases, the studies concluded that such a program would be cost prohibitive for the City. Accordingly, in addition to enactment and enforcement of the Water Conservation Rate Ordinance in 1996, the City has pursued development of Aquifer Storage and Retrieval (ASR) wells to store treated water below surface.

The City has also enacted laws enabling City enforcement of any restrictions relating to water shortages declared by the South Florida Water Management District. (Ordinance 28-1) Through these measures, the City will continue to conserve water and meet the intent of Broward County Future Land Use Policies 6.01.04 and 8.03.09 (City of Fort Lauderdale Conservation Element Policies 9.7 and 9.8).

### **Surface Water**

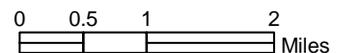
There are approximately 84 miles of navigable waterways and canals in the City. Map 1 shows rivers, bays, lakes and estuarine systems within the City. All the surface waters of the City are designated by the Florida DEP, as Class III waters. Class III waters have recreation, and fish and wildlife propagation as priority uses. All navigable rivers within the City have been channelized. These include



# BEACHES AND SHORES

# MAP 1

DATA SOURCE: CITY OF FORT LAUDERDALE GIS DATA - AUG, 2006  
 MAP SOURCE: CITY OF FORT LAUDERDALE PLANNING & ZONING DEPARTMENT- JULY, 2006



the Middle River, North and South Forks of the Middle River, New River, the North and South Forks of the New River, Tarpon River and the Stranahan River.

There are no natural estuarine marshes or freshwater lakes in Fort Lauderdale. All existing lakes were manmade, usually formed as a result of excavation. All natural estuaries were destroyed as the City developed.

The City currently uses deepwell injection for the disposal of all wastewater. No effluent is dumped into the surface waters of the City or the Atlantic Ocean. In addition, all industrial sewage is pre-treated in accordance with federal standards. Thus, City utilities do not pose a significant threat to the waters of the City under normal operating conditions.

Stormwater runoff is the principal source of pollution to surface waters in the City, and degrades water quality for recreation uses and fish and wildlife inhabiting the canals, waterways and adjacent areas. Stormwater runoff is the diversion of stormwater from both impervious surfaces such as streets and pervious surfaces such as lawns. Petroleum discharges, heavy metals, fertilizers and animal litter are among the many contaminants carried by runoff. Most homes or businesses in the City abutting waterways can be considered sources of non-point pollution.

A stormwater master plan will be completed by 2008. A list of capital projects that are the responsibility of the City will be prepared and included in the plan. The City will first address drainage problems that impact safety, health or property. The City will monitor projects by others to ensure they meet the City's level of service standard. The public works department will maintain its street cleaning program to help meet the City's levels of service for stormwater discharge quality.

The investigation of water quality necessitates a formal sampling program which must detect potential or existing problems, adequately assess damages, and identify changes that may be required to improve a specific system or waterway. The City of Fort Lauderdale Public Works Services Department conducts formal sampling in the recreational waters of Fort Lauderdale including the waters of the beach, water bodies in parks used for swimming and specific portions of the City's secondary canal system. Dependent on the type of water body and the condition under analysis, sampling occurs on a weekly to a biannual basis. Results of the sampling and analysis are then sent to the respective agency with jurisdiction over a water body or particular regulatory area for a determination of said water body's condition.

In 2006, the City executed an Interlocal Agreement with Broward County to enhance the surface water sampling within the City. The agreement authorized a water quality monitoring plan required by the City's National Pollutant Discharge

Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) permit with Florida DEP.

The City's assessment of water quality ends after the sampling and analysis functions. Agencies with evaluation and enforcement authority over waters within the City include the U.S. Environmental Protection Agency (EPA), the Florida Department of Health (DOH) and the BCEPD. The respective agency receiving the analysis then identifies waters not meeting their standards and identifies the source of the problem. Actions can range from the respective agency citing the violator to, in cooperation with either the responsible party or the City, correcting the problem.

The BCEPD derives countywide authority over water quality through Section 8.17 of the Broward County Charter. The responsibilities of the BCEPD have steadily increased over the years to now include air quality monitoring and source permitting, wastewater treatment plant monitoring and enforcement and waterway (surface water) monitoring and enforcement. BCEPD is the responsible agency for all state and federal programs concerning pollution throughout Broward County including the City.

The Water Pollution Control Section of the BCEPD implements all water quality programs and expands as new regulations are created to meet the needs of Broward County. Ongoing activities and the desire to improve the quality of the County has prompted the BCEPD to take stronger measures to regulate hazardous materials and waste, domestic and industrial sludge hauling, industrial wastewater and underground storage tanks.

The BCEPD Water Lab provides testing services in support of the BCEPD's efforts to identify and eliminate pollution sources in Broward County. The lab also conducts long-term water quality monitoring to identify trends and evaluate anti-pollution programs in general.

There are forty-four surface water-monitoring stations in Broward County at which surface water samples are collected and analyzed by the BCEPD. Nine of these monitoring stations are located in the City.

The City of Fort Lauderdale through the Environmental Laboratory Services Division of the Public Works Department has a program to maintain and recommend enhancements to the surface water quality in the City. The program encompasses environmental sampling, monitoring, and testing of the:

- 1.) Public bathing areas in the City oceanfront, and lakeshore on a weekly basis (360 samples per year).
- 2.) Non-bathing river areas, monthly (72 samples per year).
- 3.) River chloride level, monthly (144 samples per year).

Results of City environmental analyses have shown a degradation of water quality in the waters of Fort Lauderdale, especially in the Las Olas Isles area and in the North Fork of the New River. In order to fully and objectively investigate the possible sources of bacteriological degradation the City entered into an ongoing project with the University of Miami in 1997.

Concern over surface water bacteriological quality has led to a continuing investigation by the Public Works Department to ensure that the City's infrastructure is not contributing to the degradation. Sanitary sewer lines are continually surveyed and repaired, or replaced, and 20% of the stormwater system is inspected annually for illicit discharge. In 1997, a City ordinance was enacted to require liveaboard vessels to be connected to a sanitary system to prevent the possibility of discharge to the environment. Although this ordinance deals with a specific area of the City, testing will continue and the ordinance may be expanded to cover other areas.

The BCEPD also monitors surface water quality in Fort Lauderdale, and researches discharges to the environment, which are not enforceable by City staff. The City and County act as partners in investigating and addressing water quality issues.

Where water quality standards are exceeded, BCEPD will determine the source of the violation and act to assure compliance with established water quality standards. Compliance enforcement includes citations and/or corrective actions either by the responsible party, BCEPD or both.

Under section 303 (d) of the federal Clean Water Act and the Florida Watershed Act, TMDLs must be developed for all waters that are not meeting their designated uses, and, consequently, are defined as "impaired waters". A TMDL is the maximum amount of a given pollutant that a water body can absorb and still maintains its designated use. The impaired waters within the City include the North Fork of the New River, the North and South Forks of the Middle River, and the Las Olas Finger Canals. In order to comply with the Impaired Waters Rule, a Basin Management Action Plan (BMAP) must be adopted for each water body. This BMAP will identify the sources of pollution of these waterbodies, and recommend ways to reduce these sources so the water quality can improve to regulatory levels.

The North Fork New River Basin Management Plan shall summarize efforts taken and proposed by the South Florida Water Management District, Broward County, DEP, FDOT, City of Lauderdale Lakes, Lauderhill, Oakland Park, Fort Lauderdale and local community organizations to reduce fecal coliform bacteria levels in the tributaries within the North Fork of New River. This Plan is the result of interagency involvement with the purpose of: proposing, coordinating and documenting strategies being used to reduce fecal coliform levels in the tributaries of the NFNR.

## **Wetlands**

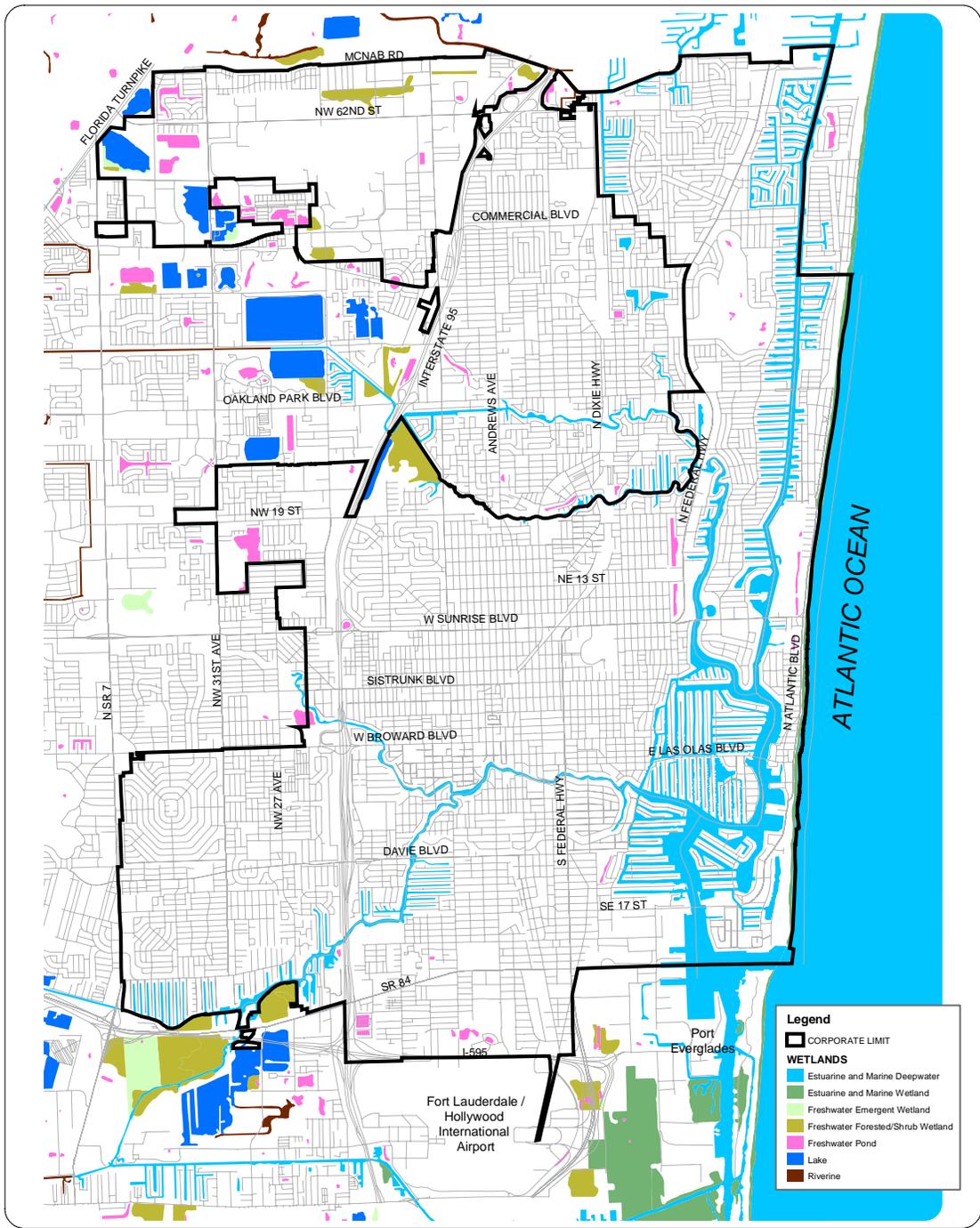
There are few remaining wetlands in Fort Lauderdale. Map 2 locates wetlands, including marshes, found within the City. Out of the eight wetland sites depicted on that map, two (sites 1 and 2) are regulated by the County's Natural Resource Area designation; two (sites 3A and 5) fall under the County's Local Area of Particular Concern designation and four (sites 3B, 4, 6 and 7) are considered environmentally sensitive lands. See the Vegetation subsection of this element for details on the significance of these designations. Development in or around wetlands should be restricted to those uses that do not disrupt or alter the natural functions of wetlands. Development must conform to BCEPD regulations and any other appropriate regulatory agency.

The most common threat to wetlands is destruction through development. For those Environmentally Sensitive Lands not regulated by either the County or other governmental entity, the City's Development Review Process will give due consideration to the status of the wetlands.

A wetland restoration master plan has been developed, by the City's Parks and Recreation Department as a guide for mitigation efforts. The intent is to coordinate separate mitigation projects into a unified approach that will eventually result in an extended, cohesive wetland system. Implementation of the plan reduces City resource costs by streamlining mitigation efforts.

The wetland restoration plan implementation is currently in progress at Mills' Pond Park. Approximately 17 acres of wetland vegetation exists north of the park administration-building east to the South Fork of the Middle River. This site encompasses at least two types of plant communities, as evidenced by both salt tolerant native plants (Mangroves, Buttonwood, Coin Vine) and fresh water native plants (Cypress, Strangler Fig, Red Bay, Pond Apple) existing there. The area, however, has been infiltrated by Brazilian Pepper, an undesirable, invasive tree, species. The area has been selected as a central site for mitigation to reestablish native wetlands, which have been destroyed in other parts of the County.

Three separate projects of mitigation, totaling 7.5 acres, are in various stages of development. Mitigation of these areas is required for development in other portions of the City that resulted in destruction of other wetland areas. Projects under mitigation include: 0.6 acres of freshwater wetland restoration resulting from the City's expansion of Field #3 at Fort Lauderdale Stadium (City responsibility); 4.0 acres of freshwater wetland restoration resulting from development of land leased from the City north of NW 65 Street, east of NW 12 Avenue (City Responsibility); and 2.9 acres of Mangrove restoration resulting from construction activities by Dania Jai-Alai (Private responsibility requiring City coordination).



# WETLANDS

# MAP 2

DATA SOURCE: U.S FISH AND WILDLIFE SERVICE - NATIONAL WETLANDS INVENTORY (NWI)  
 MAP SOURCE: CITY OF FORT LAUDERDALE PLANNING & ZONING DEPARTMENT- JULY, 2006

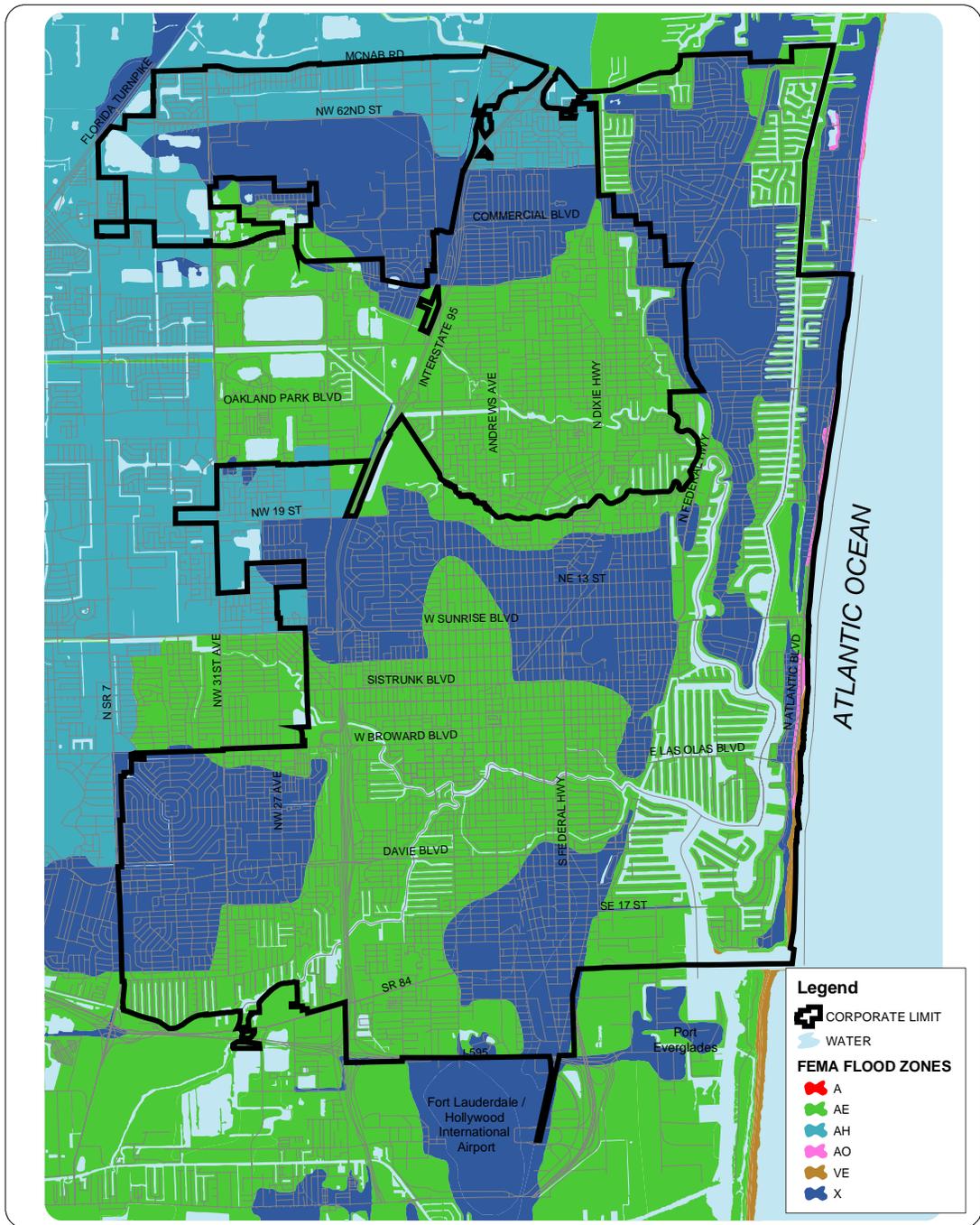


## **Floodplains**

Coastal and inland flooding are integral aspects of Fort Lauderdale's natural environment. The natural habitat reflected these conditions for decades, with wetland communities dominating the City and surrounding municipalities. As pressure for urban development increased, the natural sheetflow of floodwaters was altered through dredge, fill and canal building activities. Even with the establishment of extensive, manmade improvements, flooding may occur as a result of heavy rainfall, coastal storms, hurricane storm surge, and urban runoff from impervious surfaces. Therefore, Fort Lauderdale has become a recognized participant community in the National Flood Insurance Program (NFIP). Flood prone areas are identified by the NFIP Flood Insurance Rate Map, and all areas inundated during a 100-year flood event (A Zones and V Zones) are illustrated on Map 3.

Approximately seventy percent of the City falls within the 100-year flood event area identified by the National Flood Insurance Program as an "A" or "V" zone. "A" zones are areas of 100-year flood; "V" zones are areas of a 100-year coastal flood with velocity (wave action). The "V" zone along the coast varies in width from 650 feet to 1100 feet. Fort Lauderdale is subject to possible inundation, which may result in a loss of life and property, disruption of commerce and governmental services, extraordinary public expenditures for flood protection and relief, and impairment of the tax base.

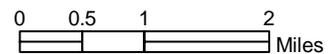
Flooding can be caused by the cumulative effect of obstructions in floodplains causing increases in flood heights, and by the occupancy in flood hazard areas by structures vulnerable to floods or hazardous to the other lands, which are inadequately elevated or otherwise protected from the flood damages.



# FEMA FLOODPLAINS

# MAP 3

DATA SOURCE: BROWARD COUNTY PLANNING SERVICES DIVISION / FEMA - NOV, 2000  
 MAP SOURCE: CITY OF FORT LAUDERDALE PLANNING & ZONING DEPARTMENT- JULY, 2006



Fort Lauderdale has provisions in the Building Code designed to:

- (1) Restrict or prohibit uses which are dangerous to health, safety and property due to water or erosion hazards, or which result in damaging increases in erosion or in flood heights or velocities;
- (2) Require that uses vulnerable to floods, including facilities, which serve such uses, be protected against flood damage at the time of initial construction;
- (3) Control the alteration of natural floodplains, stream channels and natural protective barriers, which are involved in the accommodation of flood waters;
- (4) Control filling, grading, dredging and other development, which may increase erosion or flood damage;
- (5) Prevent or regulate the construction of flood barriers which will unnaturally divert floodwaters or which may increase flood hazards to other lands.

Dune revitalization as potential flood protection for the coastal area is discussed in the Coastal Management Element.

### **Air**

The City of Fort Lauderdale's level of air quality is dependent upon the interaction of urban activity with atmospheric conditions. Automobiles continue to be the primary non-point source of pollution, accounting for 92% of the emissions from all sources. Electric power plants are the main point-source polluters. The constant off-shore winds, which tend to blow from the east to southeast, keep pollutants well dispersed. When the wind direction is from the north, west, or southwest, passing over urban development, air pollution levels tend to increase. Broward County maintains air quality monitoring stations throughout the County and publishes a daily Pollution Standards Index (PSI) rating for air quality.

Vehicular traffic continues to be responsible for the highest quantities of pollution, notably carbon monoxide (CO), but including lead, particulate matter, volatile organic compounds (hydrocarbons), and lesser amounts of sulfur oxides and nitrogen oxides. The pollutant produced in the highest quantities is CO. Although more tons per day of CO are released into the air than any other pollutant, people are less sensitive to its effects than they are to those of ozone, which is more toxic in smaller amounts. Therefore, although power plants emit fewer tons of pollutants per day than cars, their higher production of the ozone precursor nitrogen dioxide and of sulfur oxides, which are also very toxic, increases their significance as sources of pollution. The legally mandated

reductions of lead allowed in gasoline have brought about marked reductions of lead emissions into the air in spite of the steady increase of vehicles on the road.

Air quality is generally good throughout the Broward County area. The flat topography and the subtropical marine climate encourage almost constant air movement, preventing lasting air inversions and other weather patterns, which exacerbate pollution concentrations. As a result, those pollutants, which are produced locally are quickly dispersed and replaced by cleaner breezes off the ocean. The high annual rainfall - about 60 inches per year also removes particulate matter from the air through a natural scrubbing action.

According to the Department of Environmental Protection (DEP) and BCEPD, the region's major air pollutant problem in 1996 was ozone. However, it was less of a problem than it was in 1989 when the Comprehensive Plan was adopted. Levels of other air pollutants have remained fairly constant since 1989, and well within acceptable levels, with the notable exception of lead levels. These have been significantly reduced since 1989 due to the unleading of gasoline and installation of gasoline vapor traps on gas pumps. The air quality of coastal cities abutting the Atlantic Ocean such as Fort Lauderdale is generally superior to those of inland cities due to the dissipation of pollutants by Atlantic Ocean wind currents.

### **Soils**

Knowledge of soil types is essential in determining the suitability of various types of land uses. Soil surveys serve as useful general guides in managing a watershed or wildlife area or in planning engineering works, recreational facilities and community developments.

A survey conducted in Broward County by the Soil Conservation Service (BCSCS) identified the following soils in Fort Lauderdale:

- Agents-Urban land complex
- Agents-organic substratum-Urban land complex
- Basinger fine sand
- Duette-Urban Land complex
- Hallandale and Margate soils
- Immokalee fine sand
- Immokalee, limestone substratum-Urban land complex
- Margate fine sand
- Margate-Urban land complex
- Paola-urban land complex
- Pomello fine sand
- St. Lucie fine sand
- Udorthents
- Udorthents, shaped
- Urban land

The City of Fort Lauderdale does not experience any soil erosion problems. Beach erosion is addressed in the Coastal Management Element.

### **Vegetation**

Soil and vegetation help to determine the kinds of ecological community that can establish in an area. Twenty-six such communities have been identified by the BCSCS in its soil survey, seven of which are native to, but not entirely remaining, in Fort Lauderdale. While few of these communities remain intact, they are, nevertheless, identified in order to consider conservation. Additionally, such information can serve as a guide as to what species are recommended for a particular area for street trees, medians, greenbelts or parks. Original ecological communities of Fort Lauderdale included:

- South Florida Coastal Strand Plant Community
- Sand Pine Scrub Plant Community
- South Florida Flatwood Plant Community
- Tropical Hammock Plant Community
- Oak Hammock Plant Community
- Cypress Swamp Plant Community
- Mangrove Swamp Plant Community

Fort Lauderdale is an almost completely developed urban area with only three to four percent vacant land. The majority of natural vegetation and soils were altered years ago when development first occurred. In South Florida the urban environment includes a mix of native and exotic vegetation used in landscaping such as various species of hardwoods, palms, pines and shrubs.

The Broward County Board of Commissioners has designated five Local Areas of Particular Concern (LAPC's) and thirteen Natural Resource Areas (NRA) within the jurisdictional boundaries of Fort Lauderdale.

A LAPC (Vegetation Category) is an area which shows a predominance of native vegetation associated with one or more of the following ecological communities: Beach and Dune; Coastal Strand Forest; Mangrove (Saltwater Swamp/Marsh), Scrub; Pine Flatwoods; High Hammock; Low Hammock; Cypress (Freshwater Swamp) and Everglades (Freshwater Marsh).

In addition, a Local Area of Particular Concern must satisfy at least three of the following criteria:

Uniqueness - The site contains a significant sample of rare or endangered species; or the site is among a small number of sites in Broward County representing a particular ecological community.

Diversity - A significant sample of two or more ecological communities are contained within the site.

Low Level of Exotic Invasion - The degree and nature of exotic invasion on the site is such that it can be easily managed or mitigated.

Potential for Protection - Ownership patterns, development status and other factors make the resources of a site likely to be successfully protected.

Geography - The site has proximity to other resources, which would heighten its value as a LAPC (e.g., other designated sites, public parks, waterfront).

Under the County's Land Development Code, the designation of a parcel as a LAPC triggers a County review only upon application for plat approval. County staff is required to prepare an environmental impact report identifying the effects that the proposed development would have on the unique natural qualities and resources of the area. The report is to be completed within six months of the date that the application for a development permit is accepted. The County Commission may approve the plat subject to conditions, which the Commission determines to be reasonably necessary to minimize adverse environmental impact.

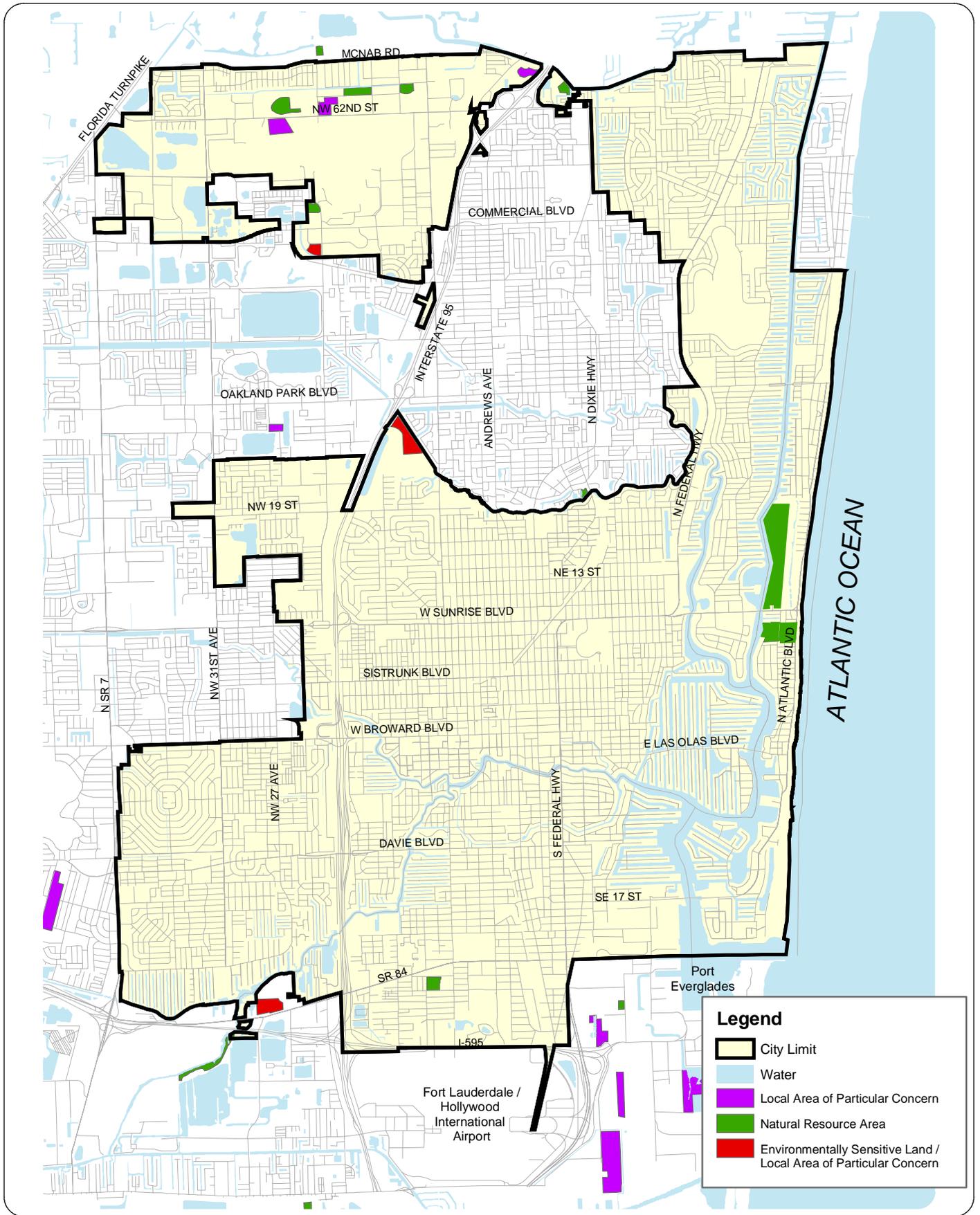
In addition, the County Commission may defer action on the application for up to twelve months from the date approval would otherwise be required, in order to arrange for acquisition of the land or some interest therein.

The LAPC designation does not prevent activities, which do not require a development permit, such as clearing of vegetation. The designation also has no effect on sites, which have already been platted. All LAPC's also fall under the NRA designation.

Broward County Ordinance 89-6 enables the designation of NRA's by the County Commission. Before a site may be designated, the Board must determine that the site contains native vegetation associated with at least one of the following ecological communities: Beach and Dune; Coastal Strand Forest; Mangrove (Saltwater Swamp/Marsh); Scrub; Pine Flatwoods; High Hammock; Low Hammock; Cypress (Freshwater Swamp); and Everglades (Freshwater Marsh).

The County Ordinance prohibits clearing of the site prior to municipal site plan or building permit approval, of those specific properties designated as Natural Resource Areas, unless otherwise noted in the ordinance.

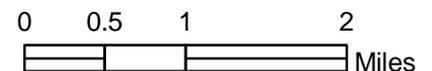
The locations of the LAPC's and NRA's within the City are shown on Map 4.



# LAPC, ESL, NRA & TREE RESOURCES

# MAP 4

DATA SOURCE: BROWARD COUNTY DEPARTMENT OF PLANNING & ENVIRONMENTAL PROTECTION  
 MAP SOURCE: CITY OF FORT LAUDERDALE PLANNING & ZONING DEPARTMENT - JULY, 2006



The City has not, to date, reviewed the environmentally sensitive lands in terms of size or viability. The City is not creating specific designations for the environmentally sensitive areas. Knowledge of these sites is useful, however, for decision-making on land use and development issues. In compliance with Broward county Land Use Policy 6.01.04, the City of Fort Lauderdale uses information about reproductive, nesting and feeding areas for animals listed as endangered, threatened or species of special concern when reviewing proposed development.

Natural reservations are areas designated for "Conservation" use on the Broward County Future Land Use Plan Map and include public lands, which are conservation areas operated by contractual agreement with or managed by federal, state, local or non-profit agencies. Birch State Park includes one such area comprised of unspoiled dunes. Bonnet House contains areas of mangrove community as well as coastal strand hammock areas. Bonnet House is also a historic resource and is managed and protected by Florida Trust for Historic Preservation. Snyder Park, a part of the City's park system, contains tropical hardwood hammock areas. The City's Land Use Plan, Map 1 of the Future Land Use Element Map Series, shows those areas designated as Conservation.

One natural area within the City is listed on the Urban Wilderness Inventory, that being Executive Airport Gopher Tortoise Preserve. Located in the northwest portion of Fort Lauderdale Executive Airport, the Preserve encompasses approximately fourteen acres of Rosemary scrub, which provides habitat for the Gopher Tortoise, a species of special concern. There currently are no plans for development of this area as it lies in a clear zone of Fort Lauderdale Executive Airport.

The Urban Wilderness Inventory is a list of natural areas proposed by the Urban Wilderness Board, a County board, for preservation as Urban Wilderness areas. The Board maintains the Inventory and makes recommendations to the Broward County Board of Commissioners on the acquisition and regulation of these areas. Preservation of an area on the Inventory is accomplished through its designation as an Urban Wilderness area, whereby, the County would acquire it and preserve it as a Wilderness Area in perpetuity.

The City of Fort Lauderdale has an established tree protection ordinance to preserve, protect, and enhance the natural environment and beauty of the City by providing regulations, which make it unlawful to remove certain trees without a permit. The ordinance spells out measures, which must be taken when protected trees are present on a site to be developed.

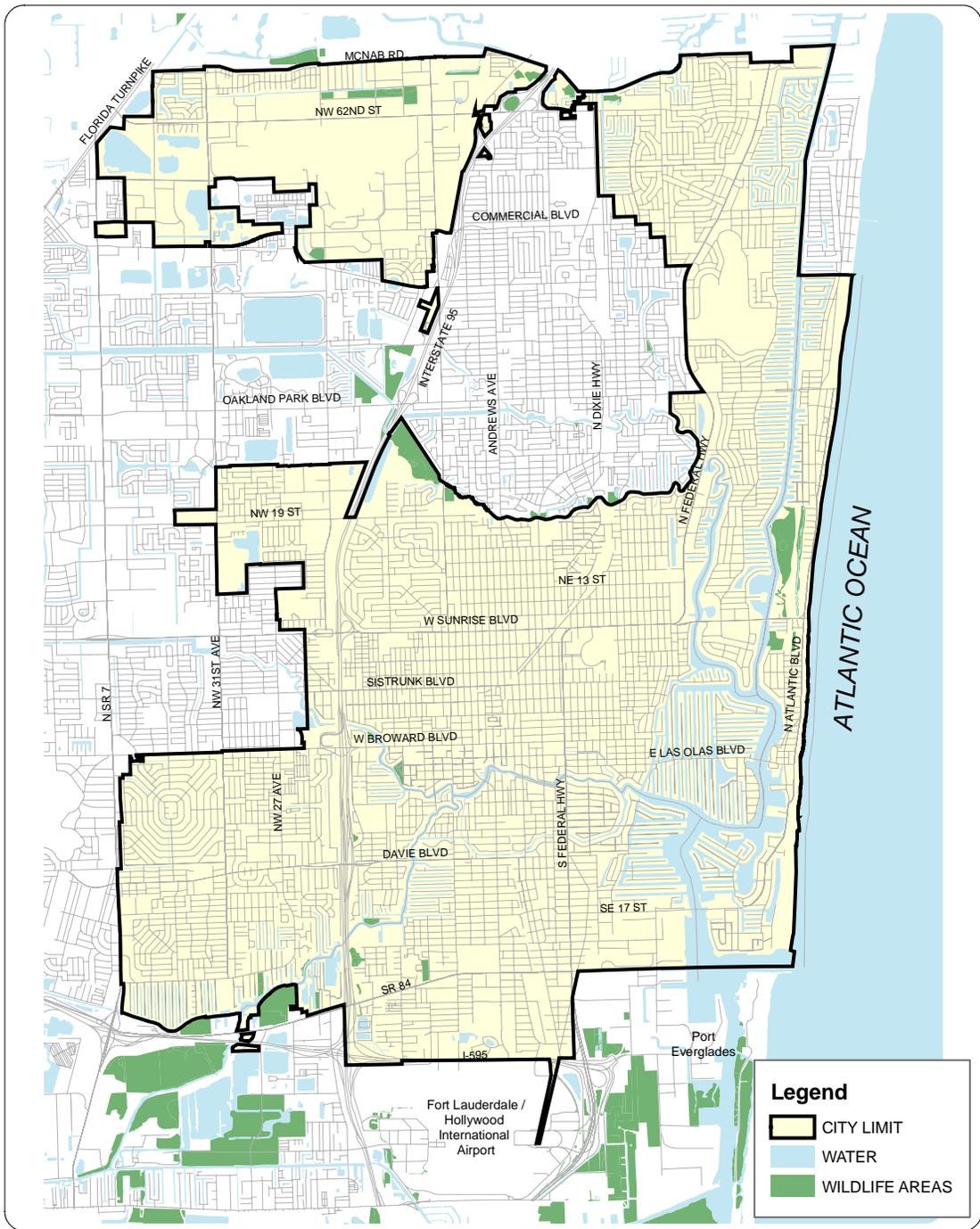
Broward County purchased a seven-acre site located within Fort Lauderdale's corporate limits. The site contains large laurel oaks, red maple, bald cypress, red bay and some of the tallest wild coffee understory remaining in the County. There is a canal bordering the southern boundary when blue herons and zebra swallowtail butterflies have been observed. The City of Fort Lauderdale's Parks Division has agreed to maintain the area for the County.

### **Mining**

In 1982, mining activities ceased in the City corporate limits.

### **Wildlife**

Certain birds and small animals are present throughout the City. The West Indian Manatee, an endangered species protected by the Endangered Species Act of 1973, can be randomly found in the waters of Fort Lauderdale. A cooling canal, which services the FP&L plant at Port Everglades serves as habitat to the manatees and has been designated a manatee Sanctuary under the Florida Manatee Sanctuary Act of 1978 (Section 370.12 Florida Statutes). While the Sanctuary is not actually located within the City, it is of significance to the City because it attracts manatees to the canal and to adjacent City waters. Map 5 shows areas of recreational or commercially important wildlife habitat.



## AREAS OF RECREATIONAL OR COMMERCIALLY IMPORTANT WILDLIFE HABITAT

**MAP 5**

DATA SOURCE: CITY OF FORT LAUDERDALE PLANNING & ZONING DEPARTMENT  
MAP SOURCE: CITY OF FORT LAUDERDALE PLANNING & ZONING DEPARTMENT- JULY, 2006



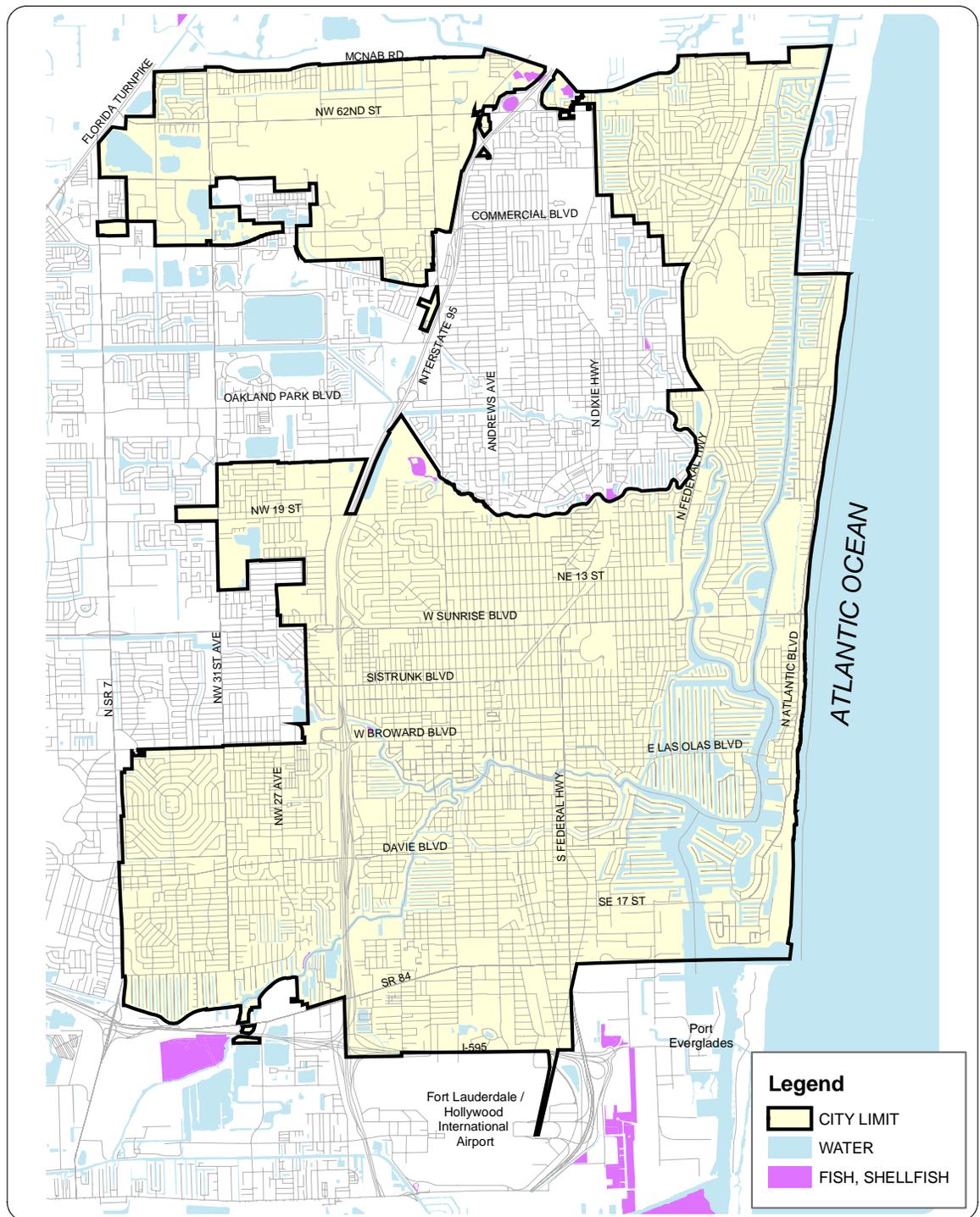
## **Marine Habitat**

While there are no commercial fisheries in Fort Lauderdale, there is a limited commercial ocean fishing industry offshore in Broward County. Major commercial species in terms of both catch and value are: swordfish, spiny lobster, mackerel, tuna and bait shrimp. The National Marine Fisheries maintains data on fish landings for Dade and Broward Counties, and reports a total catch of more than 3 million pounds of fish. Map 6 shows recreational or commercially important fish or shellfish areas.

Recreational sport fishing is more active in Fort Lauderdale and in Broward County as a whole, and is pursued by tourists and residents alike. The types of fish found in the canals and lakes of the City are Large Mouth Bass and various kinds of Brim including: Blue Gill, Red Ear/Shell Cracker, War Mouth, Spotted Sunfish, Blue Spotted Sunfish, Dollar Sunfish. There also are Seminole Killi Fish, Blue Fin Killi Fish, Mosquito Fish, and Brown and Yellow Bullhead Catfish. Exotic freshwater fish include: Spotted, Blue and Mozambique Tilapia, Walking Catfish, and Peacock Bass. Saltwater fish include: Sailfish, Dolphin, King Mackerel, Spanish Mackerel, Snapper, Grouper, Amberjack, Wahoo, Blue Marlin, White Marlin, Tuna, and Bonita. Snook and Tarpon are saltwater fish found in canals and the Intracoastal Waterway around bridges.

To preserve and enhance offshore marine resources, the Broward County EPD administers the artificial reef program. Man-made objects including derelict ships and oil platforms are submerged into the marine environment, creating additional habitat for marine life. These underwater structures provide nesting and hunting areas for marine life.

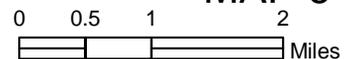
In addition to the artificial reefs there are three bands of natural coral reefs that run the entire length of Fort Lauderdale. These are coral communities on top of limestone outcrops. The first reef starts about 200 yards offshore in approximately 15 feet of water. It is made up of soft corals and sponges. The second reef is about one-half mile offshore at a depth of 45 feet of water and is made up of soft coral, sponges and some hard coral. The third reef is approximately three-quarters of a mile offshore in 60-70 feet of water. This one is the most diverse of the three coral communities with considerable hard coral/reef building coral.



## AREAS OF RECREATIONAL OR COMMERCIALY IMPORTANT FISH OR SHELLFISH

**MAP 6**

DATA SOURCE: CITY OF FORT LAUDERDALE PLANNING & ZONING DEPARTMENT  
MAP SOURCE: CITY OF FORT LAUDERDALE PLANNING & ZONING DEPARTMENT- JULY, 2006



Another program administered by the BCEPD is the Sea Turtle Conservation Program, which is required by the State of Florida wherever beach nourishment projects are being implemented. Three species of sea turtles nest in Broward County: Atlantic Loggerheads (*Caretta caretta caretta*), Atlantic Green Turtles (*Chelonia mydas mydas*), and Atlantic Leatherbacks (*Dermocheyis coreacea*). These three species are designated either as endangered or threatened. The Program involves determining major nesting areas, identifying nests, and relocating nests either to hatcheries or safer areas of the beach. Nesting can occur throughout the sandy beach area. During the hatching season, street lighting is reduced to guide the newborn in the direction of the ocean. Fort Lauderdale has one hatchery located on South Beach across from the Radisson Bahia Mar Resort.

In 2006 and 2007, the City met with the Florida Fish and Wildlife Conservation Commission (FFWCC) and the Florida Department of Transportation (FDOT) to explore ways to reduce illumination of the beach in an effort to increase nesting and decrease hatchling disorientations of sea turtles. The City has currently deenergized the City-maintained lights along A1A, as recommended by FFWCC and FDOT. FDOT has committed to retrofit all of their street lighting along SR A1A to make it compliant with FFWCC regulations, and the City is currently examining ways to do the same.