CONSERVATION ELEMENT

PURPOSE

The purpose of the Conservation Element is to promote the conservation, use, and protection of natural resources in the City.

INTRODUCTION

The City of Pahokee is located on the eastern shore of Lake Okeechobee, a shallow, 730 square mile body of water that is second in size only to Lake Michigan for lakes that are wholly within the U.S. The lake has some of the best bass fishing in the world and supports large sport and commercial fishing industries. Although not within the City, the lake is an important and integral resource to the City. Pahokee also lies within the Everglades trough, which is the largest single body of organic soils in the world. The deep, fertile muck is used primarily for growing sugar cane and winter vegetables. Both the lake and the soils are crucial to the natural, social and economic well-being of the immediate area as well as to South Florida. The long history of settlement within the City of Pahokee has been based on these resources, which are truly unique. The conservation, protection and efficient use of these resources are the keystones to the future growth and sustainable development of the region.

NATURAL ENVIRONMENT

Climate

The ~~Southeast Regional~~ Florida Climate Center has long term climate data available that is specific for Canal Point, which is located only ten miles north of Pahokee, and is also adjacent to Lake Okeechobee. This data identifies that from 1953 to 2003 ~~2007~~, the average annual maximum temperature is 83.~~86~~ F° and the average annual minimum temperature is ~~63.1~~ 64 F°. The average annual precipitation is 48.07 ~~53.61~~ inches. Precipitation is not distributed evenly throughout the year. Precipitation ranges from an average monthly level of ~~2.04~~ 1.77 inches in December to 7.17 ~~8.04~~ inches in June. No snowfall has been reported during this recording period.

Thunderstorms are common during the summer months when the highest average monthly precipitation occurs. Hurricanes, much less frequent occurrences, have the potential to occur from June through November; heavy rainfall, high winds, and widespread flooding may accompany these storms. Long-term data specific to Palm Beach County identifies that ~~49~~ 75 hurricanes or tropical storms have passed within 60 miles of the County from 1871 through 2023 ~~2007~~. Seventeen of these storms were from the back door, meaning they traveled over land from the west coast of Florida. The most recent storm occurrence was in October 2005 when Hurricane Wilma hit from the southwest with 105 mph winds while moving quickly to the northeast. The eye of Wilma passed directly over Palm Beach County.

Soils

The general distribution of soils is shown in Map FLU-~~7~~4 Soils. ~~which is based on~~ Updated data is also provided in the ~~the soil survey of Palm Beach County conducted by the U.S. Department of Agriculture (USDA)~~ August 2023 National Cooperative Soil Survey by USDA Natural Resources Conservation Service, which is included as Appendix 5A. ~~. The survey identifies the following soil series in the City of Pahokee: Dania Muck, Pahokee Muck, Terra Ceia Muck, Torry Muck, and it also recognizes the presence of Pits, Udorthents, Arents and Urban Land. The USDA describes these features as follows:~~

~~The Dania series consists of shallow, very poorly drained, rapidly permeable organic soils in fresh water marshes or swamps on the fringes of areas of deeper organic soils. They formed in thin beds of well decomposed, hydrophytic, non-woody, plant remains. Near the type location, the mean annual precipitation is about 61 inches and the mean annual temperature is about 75 degrees Fahrenheit Slopes are less than 2 percent.~~

~~The Pahokee series consists of very poorly drained soils that are 36 to 51 inches thick over limestone. Pahokee soils formed in organic deposits of freshwater marshes.~~

~~The Terra Ceia series consists of very deep, very poorly drained organic soils that formed from nonwoody fibrous hydrophytic plant remains. They occur mostly in nearly level fresh water marshes and occasionally on river flood plains and in tidal swamps or flats.~~

~~The Torry series consists of very poorly drained soils that are more than 50 inches thick over limestone. Torry soils formed in organic and mineral deposits of freshwater marshes.~~

~~Pits are manmade, excavated borrow pits.~~

~~The Udorthents consist of unconsolidated or heterogenous geologic materials removed in the excavation of canals, lakes and ponds. It is commonly piled along banks.~~

~~Arents are nearly level or gently sloping soils made up of heterogeneous overburden material that has been removed from areas of other soils and used primarily for land leveling as fill. This material is mixed sand or fine sand and fragments from the subsoil of the soil from which the Arents were removed. Permeability and available water capacity are variable, but permeability is generally rapid and available water capacity is generally low to very low.~~

~~The map unit described as Urban Land consists of areas that are more than 70 percent covered shopping centers, parking lots, large buildings, streets and sidewalks, and other structures, so that the natural soil is not readily observable.~~

Attachment 5A is an established series by the National Cooperative Soil Survey, (https://soilseries.sc.egov.usda.gov/OSD_Docs/P/PAHOKEE.html), that provides information related to Pahokee soils.

Physiography

Lake Okeechobee lies about 30 miles west of the Atlantic Ocean and 60 miles east of the Gulf of Mexico. It extends across parts of Highlands, Charlotte, Glades, Hendry, Okeechobee, Martin, and Palm Beach counties. Lake Okeechobee is the central feature of the South Florida ecosystem, often referred to as its liquid heart. The lake is formed from a broad, shallow, relatively circular depression in bedrock and has a surface area of roughly 730 square miles.

Land levels around the lake vary from 10 feet to 15 feet above sea level and are protected by the Herbert Hoover Dike having a crest elevation of 32 to 46 feet. The City of Pahokee lies on the southeastern edge of this lake, which formed over 6,000 years ago.

The lake was the source of the Everglades "River of Grass" sheetflow which sustained the Everglades and nourished Florida Bay and coastal estuaries. Originally, water flowed south and west from the lake. However, during the last 50 years, this region has been re-engineered resulting in a much shallower and nutrient-laden lake, with a littoral zone filled with exotic species. Currently, the lake is ringed with manmade levees, with pumping stations and control structures to regulate the fluctuation of lake levels in response to drought, flood conditions and water supply demands. The major outlets are the St. Lucie Canal to the east and the Caloosahatchee Canal and River to the west. Numerous agricultural canals also release excess lake water to Water Conservation Areas south of the lake. Today, the natural vegetative communities outside the lake proper are freshwater marsh with some cypress forest wetlands and small fragments of once abundant pond apple forests that occur within the lands that have now been converted to agricultural uses.

Soil Erosion

The City of Pahokee is located within the Everglades Agricultural Area (EAA), which in general lies south of the Lake. The EAA is an area of approximately 700,000 acres of farmland, created from the drainage of the northern Everglades. It encompasses approximately thirty percent of the historic Everglades and contains deep, fertile muck soils. The deep organic soils formed when organic matter (OM) production exceeded OM decomposition because flooded conditions limited the oxygen needed by aerobic soil organisms which convert the OM to carbon dioxide and water. Since the onset of extensive drainage in the EAA, OM decomposition has been exceeding production, resulting in a loss of soil and a lowering of the surface elevations. This loss is referred to as soil subsidence, and is an ongoing concern and has been carefully documented in the EAA for nearly a century. In 2004 Professor George Snyder released the revised report titled Everglades Agricultural Area Soil Subsidence and Land Use Projections. In the report he projected a future subsidence rate of approximately 0.6 inches per year.

At this time the majority of Pahokee is Torry Muck which consists of soils that are more than 50 inches thick over limestone. Taking the future subsidence rate of approximately 0.6 inches per year, this land is estimated to be sufficiently deep for cultivation for the next 50 years. However, in the areas of the City that are Dania Muck and Pahokee Muck, soil depths are much lower.

~~The Florida Department of Community Affairs' 2007 Integration of the Local Mitigation Strategy into the Local Comprehensive Plan report makes the following recommendations specifically for Pahokee:~~

> ~~Land subsidence and the mitigation currently used for this hazard can sometimes make the community more vulnerable to other hazards. De-mucking of areas is~~

~~desirable in order to ensure the structural integrity of a building is not compromised; however it can cause the elevation of certain areas when surrounding properties continue to subside. This can cause new flooding issues for the community, due to water runoff, where flooding issues did not previously exist. Through the exploration of the City's building codes as they relate tostructures and infrastructure constructed on muck, uniform policy with regards to this hazard and its side effects can be developed. To further this effort an initiative to explore the City's current building practices with regards to land subsidence can be undertaken, taking into consideration all hazards that this situation can create including home ignition, flooding and structural compromise.~~

A comprehensive approach to land subsidence should be applied to the construction of new infrastructure or improvements to existing infrastructure such as roadways, public facilities or schools. A LIDAR (Light Detection and Ranging) study had been proposed for the areas surrounding Lake Okeechobee. By actively participating during this update process, the City can bring their priorities to the attention of those conducting the LIDAR study and can also coordinate with the National Flood Insurance Program concerning the upcoming mapping updates based on this study.

Commercially Valuable Minerals

No commercially valuable extractable minerals have been identified in the City of Pahokee.

Floodplains

The National Flood Insurance Program administered by the Federal Emergency Management Agency (FEMA) has identified the following flood zones within the City of Pahokee:

Table 5-1
Federal Emergency Management Agency Flood Zones

Federal Emergency Management Agency Flood Zones	
Zone	**Description**
AO	River or stream flood hazard areas, and areas with a 1% or greater chance of shallow flooding each year, usually in the form of sheet flow, with an average depth ranging from 1 to 3 feet. These areas have a 26% chance of flooding over the life of a 30-year mortgage. Average flood depths derived from detailed analyses are shown within these zones.
AE	The base floodplain where base flood elevations are provided. AE Zones are now used on new format FIRMs instead of A1-A30 Zones.
VE	Coastal areas with a 1% or greater chance of flooding and an additional hazard associated with storm waves. These areas have a 26% chance of flooding over the life of a 30-year mortgage. Base flood elevations derived from detailed analyses are shown at selected intervals within these zones.
X	An area that is determined to be outside the 100- and 500-year floodplains

Source: *U.S. Federal Emergency Management Agency*

~~Zone~~	~~Description~~
~~VE~~	~~An area inundated by 100-year flooding with velocity hazard (wave action)~~

~~X~~	~~An area that is determined to be outside the 100- and 500-year floodplains~~
~~X500~~	~~An area inundated by 500-year flooding; an area inundated by 100-year flooding with average depths of less than 1 foot or with drainage areas less than one square mile; or an area protected by levees from the 100-year flooding~~

~~Source: Federal Emergency Management Agency~~

Map FLU-~~8~~5 FEMA Flood Zones are identified for ~~identifies the flood zones within~~ the City. The majority of the City of Pahokee is ~~an X500~~ in AE zone which is an area that is at very high risk for flooding. It is the base flood elevation determined through flood maps and is commonly known as the 100-year flood zone. ~~inundated by 500-year flooding; an area inundated by 100-year flooding with average depths of less than 1 foot or with drainage areas less than one square mile; or an area protected by levees from the 100-year flooding. The land adjacent to the lake and into the downtown area is an X zone that is determined to be outside the 100- and 500-year floodplain. Existing land uses found within the floodplain are illustrated in the Map FLU-2 Existing Land Uses.~~

Land use – as it relates to the discharge of stormwaters – and the use of natural drainage are regulated through the South Florida Water Management District environmental resource permitting process. The Florida Building Code regulates construction as it relates to flood zones.

Air

Air quality in the City is generally good. Based upon ambient air quality monitoring, conducted by the Florida Department of Environmental Protection (FDEP) and documented in the ~~*2006*~~ *2012 Florida Air Monitoring Report*, Palm Beach County, and now all of Florida, is an attainment area for the six major air contaminants: carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO_2), Ozone (O_3), particulate matter (PM), and sulfur dioxide (SO_2). The attainment area designation indicates that the concentrations of major pollutants are within the acceptable limits set by the Florida Department of Environmental Protection and the U.S. Environmental Protection Agency. Air quality is a matter that must be addressed at a regional level requiring local, County and regional entities to coordinate air quality maintenance and improvement efforts.

Water Resources

Map FLU-~~6~~3 Natural Resources & Land Cover ~~Water Bodies~~ identifies the water bodies within the City. The City is located adjacent to and on the eastern shore of Lake Okeechobee, a shallow, 730 square mile body of water ~~that is second in size only to Lake Michigan for lakes that are wholly within the U.S~~.

LAND COVER

The City is an agricultural-oriented community. Settlement of the area dates back to the late 1800's when the land first began to be drained for agriculture. The City of Pahokee was incorporated in 1928. The deep fertile muck and semi tropical climate provide ideal year round growing conditions. Sugar cane and winter vegetables have become the primary crops with some pasture land. ~~Map FLU-4 Habitats, shows the land coverage within the City as identified and mapped by the Florida Fish and Wildlife Conservation Commission (FFWCC).~~ The tables presented below, categorized into Native Habitat, Table 5-2, and Disturbed or Developed land, Table 5-3, identify

these habits and provide the acreage of each.

Table 5-2
Native Habitats

Habitat	Acres
Rangeland Category Total	***60.85***
3100: Herbaceous (Dry Prairie)	37.7
3200: Upland Shrub and Brushland	10.78
3300: Mixed Rangeland	12.37
Wetlands Category Total	***5.27***
6172: Mixed Shrubs	0.78
6410: Freshwater Marshes / Graminoid Prairie - Marsh	4.49

Source: Florida Department of Environmental Protection June 2023

~~Cattail Marsh~~	~~9.11 acres~~
~~Dry Prairie~~	~~3.38 acres~~
~~Freshwater Marsh and Wet Prairie~~	~~25.83 acres~~
~~Hardwood Hammocks and Forest~~	~~4.04 acres~~
~~Hardwood Swamp~~	~~1.78 acres~~
~~Pinelands~~	~~0.88 acres~~
~~Sawgrass Marsh~~	~~1.03 acres~~
~~Shrub Swamp~~	~~28.92 acres~~

~~Source: Florida Fish and Wildlife Conservation Commission~~

Table 5-3
Disturbed and Developed Lands

Developed	757.59	Disturbed	2,636.91
Habitat	Acres	Habitat	Acres
High Intensity Urban	469.67	Communication	9.64
Low Intensity Urban	287.92	Cultural-Lacustrine	20.79
		Cultural-Riverine	34.87
		Exotic Plants	6.86
		Marshes	4.37
		Natural Lakes and Ponds	49.56
		Rural	162.14
		Shrub and Brushland	33.29
		Sugarcane	1,483.21
		Transportation	274.42
		Utilities	35.72
		Vineyard and Nurseries	522.03

Source: FL Cooperative Land Cover, Version 3.7 published November 2023 by the FL Fish & Wildlife Conservation Commission (FWC) and FL Natural Areas Inventory (FNAI)

Source Website: https://myfwc.com/research/gis/wildlife/cooperative-land-cover/

~~Developed 1,091.57 acres~~		~~Disturbed 2,206.02 acres~~	
~~Habitat~~	~~Acres~~	~~Habitat~~	~~Acres~~
~~High Impact Urban~~	~~426.24~~	~~Bare Soil/Clearcut~~	~~73.67~~
~~Low Impact Urban~~	~~665.33~~	~~Citrus~~	~~362.40~~
		~~Improved Pasture~~	~~16.79~~
		~~Open Water~~	~~36.37~~
		~~Other Agriculture~~	~~19.32~~
		~~Row/Field Crops~~	~~151.87~~
		~~Sugar Cane~~	~~1,542.92~~
		~~Unimproved Pasture~~	~~2.67~~

~~Source: Florida Fish and Wildlife Conservation Commission~~

Natural Habitats

~~Over 97% of the land within Pahokee (3,297.59 acres) is identified as developed or disturbed.~~ The Florida Fish and Wildlife Conservation Commission (FFWCC) has identified that 3,394 acres of

land within Pahokee is identified as developed or disturbed.~~only about 2% of the City (74.98 acres) contains any remnants of native vegetative habitats. The FFWCC has indicated that cattail marsh (9.11 acre), freshwater marsh and wet prairie (25.83 acres), hardwood hammocks and forest (4.04 acres), and shrub swamp (28.92 acres) habitats remain. These native habitats, however, are greatly fragmented and disturbed due to development, agricultural practices and the encroachment of invasive exotic vegetation.~~

It is important to note the acreage identified by the FFWCC may not match the acreage totals established in future or existing land use maps, which are parcel-based maps. The FFWCC map is not parcel-based but looks at all habitat within the municipal limits not excluding roadways and public right of way lands. An individual parcel may contain multiple habitats, such as urban, pineland and open water.

Below are excerpts from the FFWCC describing the characteristics of the vegetative communities~~that the FFWCC identified and mapped as occurring within Pahokee.~~:

> **Natural Pinelands:** This category includes all natural pine forests, excluding pine rocklands and sandhill (separate categories), and sand pine scrub (see Scrub category). Natural pine forests include mesic and hydric pine flatwoods and scrubby flatwoods. Pine flatwoods occur on flat sandy terrain where the overstory is characterized by longleaf pine, slash pine, or pond pine. Generally, flatwoods dominated by longleaf pine occur on well-drained sites, while pond pine is found in poorly drained areas, and slash pine occupies intermediate or moderately moist areas. The understory and ground cover within these three communities are somewhat similar and include several common species such as saw palmetto, gallberry, wax myrtle, and a wide variety of grasses and herbs. Generally wiregrass and runner oak dominate longleaf pine sites; fetterbush and bay trees are found in pond pine areas, while saw palmetto, gallberry, and rusty lyonia occupy slash pine flatwoods sites. Cypress domes, bayheads, titi swamps, and freshwater marshes are commonly interspersed in isolated depressions throughout this community type. Scrubby flatwoods is another pineland type that occurs on drier ridges, and on or near old coastal dunes. Longleaf pine or slash pine dominates the overstory, whereas the ground cover is similar to the xeric oak scrub community.
>
> **Dry Prairie:** Dry prairies are large native grass and shrublands occurring on very flat terrain interspersed with scattered cypress domes and strands, bayheads, isolated freshwater marshes, and hardwood hammocks. This community is characterized by many species of grasses, sedges, herbs, and shrubs, including saw palmetto, fetterbush, staggerbush, tar flower, gallberry, blueberry, wiregrass, carpet grasses, and various bluestems. The largest areas of these treeless plains historically occurred just north of Lake Okeechobee. In central and south Florida, palmetto prairies, which consist of former pine flatwoods where the overstory trees have been thinned or removed, are also included in this category. These sites contain highly scattered pines that cover less than 10 to 15 percent of an area.
>
> **Hardwood Hammock and Forest:** This class includes the major upland hardwood associations that occur statewide on fairly rich sandy soils. Variations in species composition and the local or spatial distributions of these communities are due in

part to differences in soil moisture regimes, soil type, and geographic location within the state. Mesic and xeric variations are included within this association. The mesic hammock community represents the climax vegetation type within many areas of northern and central Florida. Characteristic species in the extreme north include American beech, southern magnolia, Shumard oak, white oak, mockernut hickory, pignut hickory, sourgum, basswood, white ash, mulberry, and spruce pine. Mesic hammocks of the peninsula are less diverse due to the absence of hardwood species that are adapted to more northerly climates, and are characterized by laurel oak, hop hornbeam, blue beech, sweetgum, cabbage palm, American holly, and southern magnolia. Xeric hammocks occur on deep, well-drained, sandy soils where fire has been absent for long periods of time. These open, dry hammocks contain live oak, sand-live oak, bluejack oak, blackjack oak, southern red oak, sand-post oak, and pignut hickory. Also included in this category are cabbage palm-live oak hammocks. This class is characterized by cabbage palms and live oaks occurring in small clumps within prairie communities. These hammocks typically have an open understory which may include such species as wax myrtle, water oak, and saw palmetto. Cabbage palm-live oak hammocks are also often found bordering large lakes and rivers, and are distributed throughout the prairie region of south central Florida and extend northward in the St. John's River basin. Cabbage palms often form a fringe around hardwood "islands" located within improved pastures.

Hardwood Swamp/Mixed Wetland Forest: These wooded wetland communities are composed of either pure stands of hardwoods, or occur as a mixture of hardwoods and cypress where hardwoods achieve dominance. This association of wetland-adapted trees occurs throughout the state on organic soils and forms the forested floodplains of non-alluvial rivers, creeks, and broad lake basins. Tree species include a mixed overstory containing black gum, water tupelo, bald cypress, dahoon holly, red maple, swamp ash, cabbage palm, and sweetbay. Also included in this category are mixed wetland forest communities in which neither hardwoods nor conifers achieve dominance. The mix can include hardwoods with pine or cypress and can represent a mixed hydric site or a transition between hardwoods and conifers on hydric/mesic sites.

Freshwater Marsh and Wet Prairie: These wetland communities are dominated by a wide assortment of herbaceous plant species growing on sand, clay, marl, and organic soils in areas of variable water depths and inundation regimes. Generally, freshwater marshes occur in deeper, more strongly inundated situations and are characterized by tall emergents and floating-leaved species. Freshwater marshes occur within flatwoods depressions, along broad, shallow lake and river shorelines, and scattered in open areas within hardwood and cypress swamps. Also, other portions of freshwater lakes, rivers, and canals that are dominated by floating-leaved plants such as lotus, spatterdock, duck weed, and water hyacinths are included in this category. Freshwater marshes are common features of many river deltas, such as the Escambia, Apalachicola and Choctawhatchee, where these rivers discharge into estuaries. Wet prairies commonly occur in shallow, periodically inundated areas and are usually dominated by aquatic grasses, sedges, and their associates. Wet prairies occur as scattered, shallow depressions within dry prairie

areas and on marl prairie areas in south Florida. Also included in this category are areas in Southwest Florida with scattered dwarf cypress having less than 20 percent canopy coverage, and a dense ground cover of freshwater marsh plants. Various combinations of pickerel weed, sawgrass, maidencane, arrowhead, fire flag, cattail, spike rush, bullrush, white water lily, water shield, and various sedges dominate freshwater marshes and wet prairies. Many marsh or wet prairie types, such as sawgrass marsh or maidencane prairie, have been described and so- named based on their dominant plant species.

Shrub Swamp: Shrub swamps are wetland communities dominated by dense, low-growing, woody shrubs or small trees. Shrub swamps are usually characteristic of wetland areas that are experiencing environmental change, and are early to mid-successional in species complement and structure. These changes are a result of natural or man-induced perturbations due to increased or decreased hydroperiod, fire, clear cutting or land clearing, and siltation. Shrub swamps statewide may be dominated by one species, such as willow, or an array of opportunistic plants may form a dense, low canopy. Common species include willow, wax myrtle, primrose willow, buttonbush, and saplings of red maple, sweetbay, black gum, and other hydric tree species indicative of wooded wetlands. In northern Florida, some shrub swamps are a firemaintained subclimax of bay swamps. These dense shrubby areas are dominated by black titi, swamp cyrilla, fetterbush, sweet pepperbush, doghobble, large gallberry, and myrtle-leaf holly.

Listed and other animal species depend on native vegetative communities for refuge, foraging, nesting, and denning. Due to the limited amount of any native habitat of any appropriate size or quality, it is highly unlikely that listed animal species inhabit the City. Appendix 5-B~~A~~ Listed Animal Species identifies those federal and state listed animal species that potentially could be found within the City.

Appendix 5-C~~B~~ Invasive Pest Plant Species identifies the invasive exotic pest plant species problematic to the City. Due to the high level of developed and agricultural land and resulting disturbance, most of these pest plants have great potential to occur.

Appendix 5-D~~C~~ Native Plant Species contains a list of all native plant species having the potential to occur in the City and identifies those that are listed as either threatened or endangered by federal and state agencies. Due to limited amount of undisturbed natural ~~habits~~ habitats that remain, common landscape plants primarily represent the native plant species within the City.

Conservation Opportunities

Public lands provide recreation, open space, and conservation opportunities. The City of Pahokee currently owns and operates three active recreation areas: City Park, Dr. Martin Luther King Jr. Memorial Park, and the Community Center. Additionally, an 86-slip deep-water marina is owned by the State of Florida and leased to the City of Pahokee; the City in turn subleases the facility to a private venture.

Everglades Adventures RV & Sailing Resort, which subleases the 33-acre marina facility from the City, is a complete outdoor recreation center and full service marina and resort located 12.4 miles south of the St. Lucie Canal. The marina has a breakwater, fishing pier, 86 wet slips, four boat

ramps, convenience store, and restrooms. The campground, formally a state park, offers 76 sites immediately adjacent to the lake with playground equipment, and picnic facilities. While the central location of this facility makes it accessible to most Pahokee residents, it also serves a regional need for access to the lake. Planned activities and outdoor adventures on and along the lake include guided fishing trips; kayak, canoe, and boat rentals; airboat excursions; hiking trails; sailing classes; and eco-tours. Tent camping is permitted in designated areas and lakeside cabins are available for rent.

The Lake Okeechobee Scenic Trail is a partnership between the Department of Environmental Protection, the Florida Department of Transportation, U.S. Army Corps of Engineers, Florida Trails Association, and local partners. The 110-mile Lake Okeechobee Scenic Trail is a multi- use trail located atop the Herbert Hoover Dike that circles the lake providing scenic lakeside views. In Pahokee, the trail connects City Park and the marina/campground area to Alvin Ward Park in Glades County 36 miles away. Completed in 2004, the $13 million hiking, biking, and equestrian trail takes users through communities at the heart of Florida's agriculture industry and affords opportunities for viewing wildlife such as herons, egrets and a variety of wintering waterfowl. In 1993, portions of the trail were designated as part of the Florida National Scenic Trail, one of only eight national scenic trails in the country.

Palm Beach County does not have any parks within Pahokee. However, there are three County-run parks just outside of the City limits; these are Canal Point Park and Triangle Park just north of the City and Duncan Padgett Park just south of the City. The City and other public entities should continue to develop cooperative, compatible plans for the preservation and best utilization of their public lands.

Potable Water

The City of Pahokee currently receives its potable water from the Lake Region Water Treatment Plant (LRWTP), owned and operated by the Palm Beach County Water Utilities Department (PBCWUD). The LRWTP is an alternative water source for the Glades Region, which includes Pahokee, Belle Glade and South Bay. The LRWTP replaces the aging treatment plants that served the tri-city area and shifts the area's water supply source from Lake Okeechobee to the Upper Floridan Aquifer, a reliable and virtually drought-proof groundwater source. In the plant, the brackish Floridan water is treated using reverse osmosis to provide high-quality potable water for each of the three Cities. The plant will be capable of producing 10 million gallons of potable water per day, enough to meet the Cities' current water demands with adequate capacity for the projected future growth. The Potable Water Services Sub-Element focuses on meeting the public water supply and domestic self-supply demand for the City of Pahokee.

Palm Beach County, including the City of Pahokee, is located within the Lower East Coast (LEC) Planning Area of the South Florida Water Management District (SFWMD). The LEC planning area covers approximately 6,~~1~~500 square miles and includes essentially all of Miami- Dade, Broward, and Palm Beach counties; most of Monroe County; and the eastern portions of Hendry and Collier counties. In the LEC Planning Area, the population is expected to grow from ~~5.~~6 million in 20~~05~~16 to 7.~~3~~5 million by 20~~25~~40. Critical ecosystems within the LEC Planning Area include the Everglades, Lake Okeechobee, Florida Bay, Biscayne Bay, and the Loxahatchee River. These ecosystems coexist with large agricultural areas and urban areas that are home to 30 percent of the state's population. ~~Miami-Dade, Broward, and Palm Beach are among the State's five most populated counties. Increased population will result in a net increase of 393 millions of gallons per~~

~~day (MGD) in water demand for all use categories during the next 20 years, all or most to come from alternate sources. Agricultural land totals more than 500,000 acres, making agriculture the second largest use category in the LEC Planning Area. World renowned ecosystems, such as the Everglades, Lake Okeechobee, Florida Bay, and Biscayne Bay, are in the LEC Planning Area.~~

~~Within the LEC Planning Area traditional water sources include fresh groundwater from the Surficial Aquifer System and Biscayne Aquifer, and surface water, primarily from the Everglades and Lake Okeechobee. The SFWMD *Lower East Coast Water Supply Plan 2005- 2006 Update* (*Plan Update*) provides details on the current and projected water supply for the area. The *Plan Update* considers public water supply, domestic self-supply, commercial/industrial self-supply, recreational self-supply, thermoelectric power generation self- supply, and agricultural self-supply as components for water use in the region. Changes to Florida Statutes now require local governments to prepare and adopt a 10 year water supply facility work plan that is consistent with the appropriate water supply plan, which, for the City of Pahokee, is the Lower East Coast Water Supply Plan. The *Plan Update* suggests most future water needs will be met through the development of alternative water sources. Alternative water sources include brackish water from the Floridan Aquifer System (FAS), as well as reclaimed water and the storage of storm water captured during wet weather flows for later beneficial use.~~

~~Region-wide, public water supply withdrawal demands (raw water) are expected to increase by 375 MGD (41%) to 1,286 MGD by 2025, at which time this water supply category will represent approximately 57 percent of the region's total water demands. Agricultural water withdrawal demands (gross demands) are projected to modestly decline from 762 MGD in 2005 to 689MGD (10%) by 2025. Nevertheless, agriculture will remain the second largest use category in the LEC Planning Area. Thermoelectric power generation self-supply is a rapidly growing water use category. Future customer demand projections reflect the 103 MGD required to serve new power generation facilities planned by Florida Power & Light (FPL). During the 20-year planning period, water withdrawal demands will increase from 4.5 MGD to 103 MGD. The remaining water use categories – domestic self-supply, commercial and industrial, recreational and landscape – will also experience increased water withdrawal demands, reaching a total of 195 MGD by 2025.~~

~~The *Plan Update*, as amended in 2006, denotes public water supply demand. However, the increase in demand indicated in the projections does not exceed the plant capacity through the next planning period. By connecting domestic self supply systems to the regional utility and implementing alternative water supply projects, a majority of the water supply demand is shifted away from the Surficial Aquifer to the Floridan Aquifer.~~

Ground Water

The Floridan Aquifer System (FAS) is one of the most productive aquifers in the world and a multiuse aquifer system. The FAS contains the largest aquifers within the state and stretches 100,000 square miles beneath Florida and parts of Alabama, Georgia, and South Craolina. The Lower East Coast (LEC) Water Supply Planning Area includes Palm Beach, Broward, Miami-Dade, and parts of Monroe, Collier, and Hendry counties. ~~exists not just in the LEC Planning Area, but throughout the entire state and portions of adjacent states.~~ ~~Throughout t~~The LEC Planning Area <u>has limited freshwater resources as</u> water from the FAS is generally non-potable due to salinity and requires desalination or blending to meet potable standards.

In the LEC Planning Area, the Upper Floridan Aquifer is being considered for storage of potable water within an aquifer storage and recovery system. At the base of the Lower Floridan Aquifer

(LFA), there are cavernous zones with extremely high transmissivities collectively known as the boulder zone. Because of their depth and high salinity, these deeper zones of the LFA are ~~uses~~ used primarily for injection of treated wastewater.

Surface Water

Lake Okeechobee is a critical water supply component for virtually the entire Lower East Coast region. The Lake Okeechobee Service Area includes an extensive agricultural industry that depends on water directly from the lake, as do other users within the service area. Most lakefront communities have traditionally relied on the lake for potable water, but are now dependent on the Lake Region Water Treatment Plant which draws from the Upper Floridan Aquifer.

Lake Okeechobee, Florida's largest lake (730 square miles) has a water storage capacity of over 1 trillion gallons of water. The lake is managed jointly by the South Florida Water Management District and the U.S. Army Corps of Engineers as a multipurpose reservoir. Its multiple functions include flood control, urban and agricultural water supply, navigation, recreation, and fish and wildlife enhancement. The lake supports an extensive littoral zone (154 square miles) that provides important feeding and nesting habitat for fish, wading birds, migratory waterfowl, as well as the endangered Everglades Snail Kite. The lake's littoral zone supports significant wading bird populations and is an important waterfowl hunting area. Migratory birds and waterfowl use the littoral zone and open water areas of the lake as a resting area along the Atlantic flyway. The lake is nationally renowned for its fishing (black bass and crappie) and supports a viable commercial and sport fishing industry. Recreational and commercial fisheries are valued in multimillion dollars per year.

The Lake's health was threatened in recent decades by excessive nutrients from agricultural and urban activities in the Lake's watershed, harmful high and low water levels, and by the spread of exotic vegetation. However, n ~~N~~umerous aggressive regional programs and plans have been developed, adopted and are beginning to be implemented to address the environmental health of Lake Okeechobee, the south Florida Everglades habitat and the inter-related coastal estuary system. Located on Lake Okeechobee, within the Everglades Agricultural Area and the Everglades Basin, the City should keep apprised of the components and criteria established in these programs. The City should establish a close working coordination with the SFWMD to remain current ~~not only on the SFWMD Surface Water Improvement and Management (SWIM) Plan but of the components of the SFWMD Lake Okeechobee & Estuary Recovery (LOER) Plan, the District Water Management Plan, the components of SFWMD Everglades Program Best Management Practices, the Lake Okeechobee Protection Plan (LOPP),~~ with all District plans, including, but not limited to, the Lake Okeechobee Watershed Protection Plan/Northern Everglades and Estuaries Protection Plan, the Lake Okeechobee System Operations Manual (LOSOM), the Lake Okeechobee Protection Act and the components of the Comprehensive Everglades Restoration Program (CERP).

POLLUTANTS

The City can discourage residential source contamination by providing public information regarding the safe disposal of home chemicals and by providing information for licensing regulated materials. Waste generators, above and underground storage tanks, and dry cleaning facilities are licensed by the Florida Department of Environmental Protection (FDEP). Information on these facilities is maintained and continuously updated by the FDEP Division of Waste Management and this information is publicly accessible on their website.

There is one site in the City identified on the U.S. Environmental Protection Agency's (EPA) Federal Superfund list. This site is Chemspray Inc. located at 1550 E. 7th Street, which is currently listed as No Further Response Action Planned (NFRAP). A cleanup by the EPA on this site was completed in 1994. In addition, the EPA has archived one other site in the City. The archive designation indicates the site has no further interest under the Federal Superfund Program based on available information. The site is the Palm Beach County SWD Pahokee, a closed landfill owned by the Palm Beach County Solid Waste Authority. It is located on Rockpit Road. The EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or if new information becomes available.

The Palm Beach County Brownfield Program has included both of these sites as well as various petroleum sites in Pahokee on their Brownfield Candidate Map. Brownfields are generally defined as abandoned, idle, or underused industrial and commercial property where expansion or redevelopment is complicated by actual or perceived contamination. Brownfield redevelopment helps to recycle old property into active reuse. Use of these sites helps to clean up the environment, create jobs, and increase the tax base. The County Brownfield program shares information about State and Federal programs with municipalities, community redevelopment associations, developers, and interested parties. Coordinated through the Palm Beach Planning Division, the program is patterned after the State voluntary Brownfield program.

GREENHOUSE GAS REDUCTION STRATEGIES

Climate change is largely attributed to the buildup of carbon dioxide and other greenhouse gas (GHG) concentrations in the atmosphere. Global emissions of GHG from human activities, such as the burning of fossil fuels and deforestation, have increased by 70% between 1970 and 2004 according to ~~T~~ the American Planning Association (APA). In the 2020 Climate Change ~~April 2008~~, *Policy Guide on Planning and Climate Change*, the APA provides guidance for local governments toward the reduction of GHG emissions and on energy efficient land use decisions. The APA document indicates that effective actions to address GHG emissions should include a mix of education, incentives, subsidies, and regulation. The APA has suggested the following strategies for local governments to facilitate a reduction in GHG emissions: providing shopping, recreational and employment opportunities near residential areas, energy efficient buildings, convenient intermodal transportation systems, and the reduction of heat island effects through green spaces.

More than half of Pahokee's land area is made up of agricultural uses. Agricultural uses are expected to remain a significant part of the Pahokee landscape through the long term. While agricultural lands provide open spaces that reduce heat island effects, sustainable agricultural practices that protect the environment such as following Best Management Practices (BMPs) are encouraged by the City through the Comprehensive Plan.

In addition, the City has significant open space and landscape requirements to diminish heat island effects. The Comprehensive Plan also includes policies to educate the public on the placement of canopy trees and other landscape materials to strategically provide shade, and educating the public on home energy reduction strategies and automobile idling.

Other policies that address greenhouse gas (GHG) reduction strategies include allowing alternative, renewable sources of energy such as solar panels, encouraging development of Commercial Office, Recreation, and Entertainment (CORE) land uses to provide a center of

accessible shopping, recreation, and employment opportunities for Pahokee residents, ~~promote~~ promoting alternative forms of transportation, and ensuring development and redevelopment is transit-ready along major transportation corridors.

~~Map FLU-10 Energy Conservation Areas and Features highlights features in Pahokee that contribute to reduced energy use and greenhouse gas production: agricultural lands, parks, CORE area, transit, and the Okeechobee Scenic Trail.~~

Conservation Element
Goals, Objectives, and Policies

Goal 5.1: The natural resources of the City of Pahokee shall be preserved or managed in a manner which ensures their protection and maximizes their functions and values.

Objective 5.1.1 –The City shall continue to meet or exceed the minimum air quality levels established by DEP and establish practices to reduce greenhouse gas production ~~reduction~~.

Policy 5.1.1.1 – The City shall continue to coordinate, as appropriate with Palm Beach County to maintain and improve air quality.

Policy 5.1.1.2 – The City shall cooperate with other local and State agencies as requested and through enforcement of Federal and State air quality regulations to reduce air pollutants on a regional level.

Policy 5.1.1.3 – All proposed point sources of pollution shall present evidence of compliance with this objective prior to being approved. No proposed point source of pollution shall be approved which exceeds the level of air quality established by the State Implementation Plan.

Policy 5.1.1.4 - The City shall continue to reduce the heat island effect by supporting sustainable agricultural uses and practices within the City such as Department of Agriculture Best Management Practices.

Policy 5.1.1.5 - The City shall educate residents, business owners and farm workers on the cost and environmental effects of automobile idling.

Policy 5.1.1.6 - The City shall encourage and educate the public in the planting and maintenance of trees and provide public education on the placement of canopy trees and other landscape materials to strategically provide shade and reduce energy consumption.

Policy 5.1.1.7 ~~1.1.15.7~~ - The City shall continue to require open space and pervious surface areas in development and redevelopment.

Objective 5.1.2 – Surface and sub-surface water resources in the City shall be managed in a manner consistent with regulations promulgated by the SFWMD Lake Okeechobee Watershed Protection Plan/Northern Everglades and Estuaries Protection Plan ~~(SWIM) Plan~~ and which ensures their viability as natural habitats and utility for recreational and potable water uses.

Policy 5.1.2.1 – The City shall continue to implement land development regulations for drainage to ensure best management practices are required.

Policy 5.1.2.2. – ~~Although there are almost no wetlands existing within the City, the~~ The City shall maintain land development regulations to ensure the protection of wetland areas in the City and which require at a minimum:

a. Site plans for new development identify the location and extent of wetlands located on the property;
b. Site plans provide measures to assure that normal flows and quality of water will be provided to maintain wetlands after development;
c. Where alteration of wetlands is necessary in order to allow reasonable use of property, either the restoration of disturbed wetlands will be provided or additional wetlands will be created to mitigate any wetland destruction; and
d. Proposed developments comply with the County-wide wellfield protection program adopted by the County.

Policy 5.1.2.3 – The City shall require all developers to coordinate with the Florida DEP, SFWMD, TCRPC, and the U.S. Army Corps of Engineers to ~~i~~ ensure compliance with all regulations relating to dredge and fill permitting processes.

Policy 5.1.2.4 – A buffer zone of native upland (i.e. transitional) vegetation and littoral zones shall be provided and maintained in and around wetland and retention areas which are constructed or preserved on new development sites.

Policy 5.1.2.5 – The City shall ensure an adequate provision of potable water and sanitary sewer services for all residents and businesses within the City through the implementation of goals, objectives and policies set forth in the Infrastructure Element of the Comprehensive Plan.

Policy 5.1.2.6 – No development shall be approved which does not comply with the drainage policies put forth in the Drainage Sub-Element of this Comprehensive Plan or exceeds the level of service standards for potable water, sanitary sewer and/or drainage services as established in the Capital Improvements Element of this Comprehensive Plan.

Policy 5.1.2.7 – Although there are no designated wellfields within the City, the City shall continue to support the implementation of the County's adopted Wellfield Protection Plan.

Policy 5.1.2.8 – The City shall assist the EBWCD, the PLWCD, and the SFWMD in the implementation of a program for the regular water quality monitoring of all drainage canals within the City.

Policy 5.1.2.9 – New development encroaching into the 100 year floodplain shall incorporate elevation and flood protection measures sufficient to protect against the 100 year flood. The City shall maintain consistency with program policies of the National Flood Insurance Program and shall monitor new cost effective programs for minimizing flood damage. Such programs may include modifications to construction setback requirements or other site design techniques, as well as upgraded building and construction techniques.

Policy 5.1.2.10 – The City shall continue to coordination with the SFWMD ~~to keep apprised not only of the SFWMD Surface Water Improvement and Management (SWIM) Plan but of the components of the SFWMD Lake Okeechobee & Estuary Recovery (LOER) Plan, the District Water Management Plan, the components of SFWMD Everglades Program Best Management Practices the Lake Okeechobee Protection Plan (LOPP) and~~ on all District plans, including, but not limited to, the Lake Okeechobee Watershed Protection Plan/Northern Everglades and Estuaries Protection Plan, the Lake Okeechobee System Operations Manual (LOSOM), Lake Okeechobee Protection Act and the components of the Comprehensive Everglades Restoration Program (CERP).

Objective 5.1.3 – The City, in conjunction with the SFWMD, shall support the enforcement of provisions for monitoring and regulating water use as necessary in order to prolong freshwater availability.

Policy 5.1.3.1 – The City shall continue to work closely with the SFWMD to implement District regulations ~~the SWIM Plan~~ for water management conservation.

Policy 5.1.3.2 – ~~In accordance with section 163.3202, F.S., the~~ The City shall continue to implement land development regulations to ensure:

a. Water conservation techniques are incorporated into landscaping requirements.
b. Separate metering for irrigation and potable water.
c. A reduction in use of potable water for irrigation; and
d. A more efficient operation of irrigation systems in developed areas including the incorporation of such devices as soil water tensiometers and xeric Florida Friendly landscaping ~~where appropriate~~.

Policy 5.1.3.3 – The City shall work towards the further education of the public regarding various methods of water conservation at the household and small business level.

Policy 5.1.3.4 – The City shall continue its efforts to publicize and promote water conservation techniques and programs, including reuse programs and potable water conservation strategies.

Policy: 5.1.3.5 – The City shall assess projected water needs and sources for the long-range planning period by creating and maintaining a minimum 10-Year Water Supply Facilities Work Plan. Future water supply planning shall emphasize the efficient use of water resources and where possible and financially feasible, utilize alternative water sources.

Policy 5.1.3.6 – The City shall investigate the long-range feasibility of utilizing reclaimed water for irrigation purposes.

Policy 5.1.3.7 – The City shall support~~s~~ the South Florida Water Management District's water restrictions and conservation efforts during times of water shortages as well as year-round conservation rules.

Objective 5.1.4 – The City shall promote provisions to control soil erosion and amend and adopt land development regulations in accordance with section 163.3202, F.S.

Policy 5.1.4.1 – The City shall utilize the Palm Beach County Soil and Water Conservation District guidelines in reviewing development activities for minimization of soil erosion at time of building permits.

Policy 5.1.4.2 – The City shall continue to implement land development regulations that incorporate topographic, hydrologic, and vegetative cover factors in the site plan review approvals process.

Policy 5.1.4.3 – The City shall take into account the most current data available on and the impacts of soil subsidence when making future land use decisions and capital improvements decisions.

Objective 5.1.5 – All ecological communities, wildlife, and fisheries especially endangered and rare species and habitat, shall be identified, managed and protected.

Policy 5.1.5.1 – ~~In accordance with Section 163.3202, F.S., the~~ The City shall continue to enforce land development regulations to ensure that:

a. All endangered and threatened plant and animal populations are protected;

b. All habitat of significant value to existing populations of endangered and threatened species is preserved;

c. All Class I and II invasive exotic vegetation, as recognized by the Florida Exotic Pest Plant Council is removed by the developer at the time of development or redevelopment of a site;

d. All native woody vegetation of a significant size is preserved or replaced; and

e. A written environmental assessment is prepared for all proposed development, rezonings, and land use amendments considered by the City Commission and/or City development review boards that are currently or were previously undeveloped with urban uses. The assessment shall include, at a minimum, impacts on flora, fauna, air quality, and water quantity and quality.

Policy 5.1.5.2 – The City shall assist the SFWMD, the Florida Fish and Wildlife Conservation Commission and other local, state and federal agencies with the maintenance and enhancement of the Lake Okeechobee fisheries through compliance with and enforcement of regulations promulgated by these agencies for such purpose.

Policy 5.1.5.3 – Development orders and permits for development and redevelopment activities shall be issued only if the conservation of wildlife and natural systems is ensured consistent with the goals, objectives and policies of this Comprehensive Plan.

Objective 5.1.6 – Hazardous waste issues shall be addressed and enforced through a coordinated effort.

Policy 5.1.6.1 – The City shall work closely with the ~~PBC~~SWA to identify small quantity hazardous waste generators and develop programs to dispose of the wastes properly as required by the ~~PBC~~SWA.

Policy 5.1.6.2 – The City shall assist the ~~PBC~~SWA in implementing programs for the proper storage, collection, recycling and disposal of hazardous waste.

Policy 5.1.6.3 – The City shall amend land development regulations to require producers of

hazardous waste to coordinate with the Palm Beach County ~~Public~~ Health Department ~~Unit~~ at time of occupational license issuance and renewal and to obtain all applicable county or state licenses as required.

Policy 5.1.6.4 – The City shall coordinate with the SWA to ensure continued operation of the residential hazardous collection site in the City of Belle Glade.

All appendices are being moved from this element to the Appendices section.-