PLANNING & ZONING BOARD
STAFF REPORT
DEVELOPMENT SERVICES DEPARTMENT

100 NW 1ST AVENUE, DELRAY BEACH, FLORIDA 33444
PLANNING & ZONING DIVISION: (561) 243-7040 • BUILDING DIVISION: (561) 243-7200

Always Delray Comprehensive Plan: Conservation, Resiliency, and Sustainability Element		
Meeting: November 5, 2018	**File No.:** N/A	**Application Type:** Comprehensive Plan Amendment

Request:
Review proposed Conservation Resiliency and Sustainability Element for recommendation to the City Commission.

Recommendation:
Provide a recommendation to the City Commission regarding an amendment to the City's Comprehensive Plan to repeal and replace the Conservation Element with the proposed Conservation, Sustainability & Resiliency.

Review and Analysis:
The update to the Delray Beach Comprehensive Plan, which has been branded "Always Delray," began in 2016 with the creation of a Steering Committee, appointed by the City Commission. Committee members have met on numerous occasions to establish a plan for the City's future that reflects current and projected trends, identifies key issues presently impacting the community, and that maintains, updates, or eliminates current policies as a result of this in-depth review. Five new elements are proposed for the plan, and several existing elements have been renamed to better capture their role in plan. Community workshops were held to discuss and receive public input on each element. This input was utilized to formulate the draft elements, along with the input of Subject Matter Experts on each topic, which consisted of City Staff, consultants, and community members.

The previous "Conservation Element" was expanded to include sustainability and resiliency issues and renamed as the "Conservation Sustainability and Resiliency Element". The Conservation Sustainability and Resiliency (CSR) Element was reviewed by the Steering Committee on September 26, 2018. The purpose of the Conservation Sustainability and Resiliency Element is to set forth its environmental stewardship principles and policies. Previously, the focus of the element was the preservation and protection of endangered species and natural habitat. The expanded element adds the concepts of sustainability and resiliency to include planning concepts addressing energy use, greenhouse gas emissions, and climate change, as well as preparation for natural disasters (previously addressed in the Coastal Management Element) and planning for the impacts of sea level rise.

Staff has incorporated the recommended revisions by the Steering Committee.

Following recommendation by the Planning and Zoning Board, the Coastal Management Element will be scheduled for a Public Hearing before the City Commission for review and comment; no formal action will take place. Once all elements have been reviewed by the City Commission, final drafts will be prepared for a Transmittal Hearing of the full Always Delray Plan, which is tentatively scheduled for March 2019. The Transmittal Hearing, which is also the First Reading of the Ordinance for the adoption of the Always Delray Plan, is required prior to submittal to the Department of Economic Opportunity (DEO). The DEO review may take up to 180 days to provide comments to Staff. If comments are received, Staff will make adjustments as necessary; if no comments are provided, then the Second Hearing will be scheduled for final adoption by the City Commission.

Project Planner:	Board Review Dates:	Attachments:
Anthea Gianniotes, Principal Planner; gianniotesa@mydelraybeach.com, 561.243.7325	Planning and Zoning Board, November 5, 2018 City Commission, December 11, 2018, tentative (Public Hearing for review and comment; no formal action to be taken until February 2019.)	Conservation Sustainability & Resiliency Element • Proposed Draft Element Appendix • Florida Statutes Requirements

CONSERVATION, SUSTAINABILTY AND RESILIENCY

DATA, INVENTORY, AND ANAYLSIS

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INTRODUCTION

Section 163.3177(6)(d), Florida Statutes, requires local governments to include a Conservation Element providing for the conservation, use, and protection of natural resources within its Comprehensive Plan. The City of Delray Beach (herein referred to as "Delray Beach" or "City") has elected to create an enhanced conservation element that also addresses sustainability and resiliency strategies for a comprehensive approach to managing the natural and built environment.

Conservation, sustainability, and resiliency are discrete but overlapping disciplines. Conservation acknowledges that some resources are finite, and should be preserved. Sustainability typically addresses the interdependence of environmental, social, and economic systems through management of resources to maintain their availability for future generations. Sustainable development is typically defined as development which meets the needs of the present without compromising the ability to meet the needs of future generations. Sustainable actions are those that conserve, maintain, support, and enhance the environmental, economic, and social systems. Resilience refers to the capacity of systems to recover quickly after adverse situations such as disruptions or disasters. Resiliency strengthens systems to prepare for shocks, absorb impact, and recover from, and adapt to both persistent treats or single events.

Urban resiliency has become an important goal for many local governments with the onset of climate change impacts such as rising temperatures, extreme weather events like drought or storms, sea level rise, and large volume precipitation events. Proactive adaptation planning calls for an innovative approach which plans for ecological conditions which might not be "normal" as characterized by past trends, but looks to the future and characterizes changing conditions which may currently be underway or anticipated by the science community. Sustainable policies such as curbing greenhouse gas emissions, or reducing energy and water consumption are important actions which can contribute to larger long-term resiliency and sustainability efforts to avoid the worst impacts of climate change.

Delray Beach is committed to addressing global climate change at a local level. Development of modern society and our reliance on fossil fuels, has caused the release of excess gases (Sulfur dioxide, Methane, Nitrogen oxide, Carbon dioxide), creating a layer of gas in earth's atmosphere which allows light to pass but traps heat, preventing its escape. Models predict earth's temperature will increase over the next 100 years anywhere from a 2-10-degree Fahrenheit temperature.

For Delray Beach climate change has the capacity to cause the following impacts:

- Increased annual rainfall with higher volume rain events,
- Warmer weather with increased heat waves,
- Damage to ecological and natural systems,
- Increased algae blooming,
- Increased coastal erosion,
- Greater flood risks,
- Extreme weather events which may cause drought or coastal storm surge, and
- Sea level rise which will threaten coastal infrastructure, water supplies, ecosystems, and potentially cause the inundation of stormwater systems.

Local governmental units have large conservation, resiliency, and sustainability potential because they provide citizens with goods, resources, and basic services such as drinking water, public, transportation, and waste management. Plus, local governments are largely vulnerable to resource challenges and climate change impacts. Local governance drives the consumption of materials and energy, regional economic growth, the local production of waste, and the emission of greenhouse gases. Local decision-makers have the ability to impact the level of resource use in the community and to manage economic growth in such a way that will ensure long-term viability.

The Conservation, Sustinability, and Resiliency Element of the Delray Beach Comprehensive Plan employs a coordinated public policy and planning approach to maintain the protection and conservation of natural resources, to promote the acceptance of sustainable practices, and to proactively prepare for future disturbances by increasing community resiliency.

INVENTORY

The following section identifies the natural resources found within the Delray Beach Planning Area and is prepared to facilitate review with the requirements of Section 163.3177(6)(d), Florida Statutes.

Florida Statues provide, "[t]he following natural resources, where present within the local government's boundaries, shall be identified and analyzed and existing recreational or conservation uses, known pollution problems, including hazardous wastes, and the potential for conservation, recreation, use, or protection shall also be identified: [r]ivers, bays, lakes, wetlands including estuarine marshes, groundwaters, and springs, including information on quality of the resource available; [f]loodplains; [k]nown sources of commercially valuable minerals; [a]reas known to have experienced soil erosion problems; [a]reas that are the location of recreationally and commercially important fish or shellfish, wildlife, marine habitats, and vegetative communities, including forests, indicating known dominant species present and species listed by federal, state, or local government agencies as endangered, threatened, or species of special concern." Section 163.3177(6)(d), Florida Statutes.

Table CSR - 1 Hydrology
Surface Waters
The Intracoastal Waterway
Lake Ida (80 acres)
SFWMD Canal C-15
Lake Worth Drainage District lateral canals and equalizers
Private water bodies used primarily as water retention areas
The Atlantic Ocean
Groundwater
Surficial aquifer system, an unconfined unit, it is the primary source of the City potable water supply through municipal wells.
Intermediate Confining Unit (Hawthorn Formation)
Floridan aquifer system, a confined unit, it is currently used to supplement the Surficial Aquifer system for potable water supply and is a potential long-term water supply resource with reverse osmosis treatment.
Wetland Areas
There are no publicly-held wetlands in the Delray Beach Planning Area.

Table CSR – 2 Geology
Soil Erosion
Construction Areas: after vegetation is cleared prior to construction parcels are highly subject to wind erosion.
Canal Areas: canal banks can erode, resulting in sediment build-up in the canals. This can be caused by runoff from adjacent streets or high-speed boat traffic.
Beach and Intracoastal Area: the Delray Municipal Beach experiences erosion from the ocean's winds, waves, and storms, and is mitigated by the Palm Beach County Shoreline Protection Plan. The soil behind seawalls can erode due to poor compaction or fluctuating water table and sea level heights. This type of erosion can be mitigated by backfilling and seawall repairs.
Areas containing Sandy Soils: areas containing sandy soils in conjunction with slope and intense water runoff are erosion prone.
Source: PBS&J Report, 1989 Delray Beach Conservation Element
Commercially Valuable Minerals
No commercially valuable minerals are being mined or extracted in the Delray Beach Planning Area. Some concentrations of coquina, dolomite and sand exist below the surface but are located in developed areas.
Source: Florida Mining Atlas
Hazardous Waste Sites
No hazardous waste sites are located in the Delray Beach Planning Area. The City has one waste transfer site located at 1901 SW 4th Avenue that is leased to the Solid Waste Authority (SWA).

Table CSR – 3 Natural Environment
Native Ecosystems
Delray Oaks (24.48 acres, Low Oak Hammock)
Leon Weekes Environmental Preserve (12.37 acres, Florida Scrub)
Orchard View Park (5.94 acres)
Atlantic Dunes Park (4.64 acres, Beach Strand Community)
Hurricane Pines (0.14 acres, Florida Scrub)
Environmentally Sensitive Sites
Donnelley Tract (1.64 acres, Mangroves)
FIND Parcel MSA 645 (7.41 acres, Mangroves)
FIND Parcel MSA 650, known as Mangrove Park, (4.05 acres, Mangroves)
Hammock Reserve Preserve Area (4.86 acres, Oak Hammock)
Marine Habitat
Atlantic Ocean
Intracoastal Waterway
Continental Southwest Florida Reef Tract
Inter-tidal Habitat
Surf zone and Subtidal Habitat

Table CSR - 4 Species of Special Concern	
Plants	
Curtiss Milkweed	
Wild Cotton	
Dancing Lady Orchid	
Hand Fern	
Tropical Curly-grass	
Mammals	
West Indian Manatee	Threatened
Florida Mouse	
Sherman's Fox Squirrel	
Amphibians / Reptiles	
Loggerhead Turtle	Endangered & Threatened
Greenback Turtle	Endangered & Threatened
Leatherback Turtle	Endangered
Eastern Indigo Snake	Threatened
Florida Gopher Frog	
Gopher Tortoise	Threatened
Florida Scrub Lizard	
Birds	
Least Tern	Endangered
Scrub Jay	Threatened
Cedar Waxwing	
Burrowing Owl	
Limpkin	
Grasshopper Sparrow	Endangered
American Kestrel	
Sandhill Crane	
Short-tailed Hawk	
Black- whiskered Vireo	
Invertebrates	
Stoney Coral Species (such as *Acropora*)	Threatened
Florida Tree Snail	
Scarab Beetle	
Source: PBS&J Report, 1989 Delray Beach Conservation Element; United States Fish and Wildlife Service, *Environmental Conservation Online System*, (Last visited Sept. 9, 2018).	

PROTECT AND IMPROVE THE QUALITY OF THE CITY'S AIR RESOURCES

Clean air is a highly important natural resource which must be protected. Air pollution is known to be linked to decreased lung function, asthma, chronic bronchitis, irregular heartbeat, heart attack, and early death for those suffering from heart or lung disease. Arden Pope III, *Environmental Health Perspectives*, 2000. Certain populations are more susceptible to health risks from air pollution, such as young children and infants, the elderly, and individuals with chronic conditions. Paul Mohai *et al.*, *Environmental Justice*, 2009.

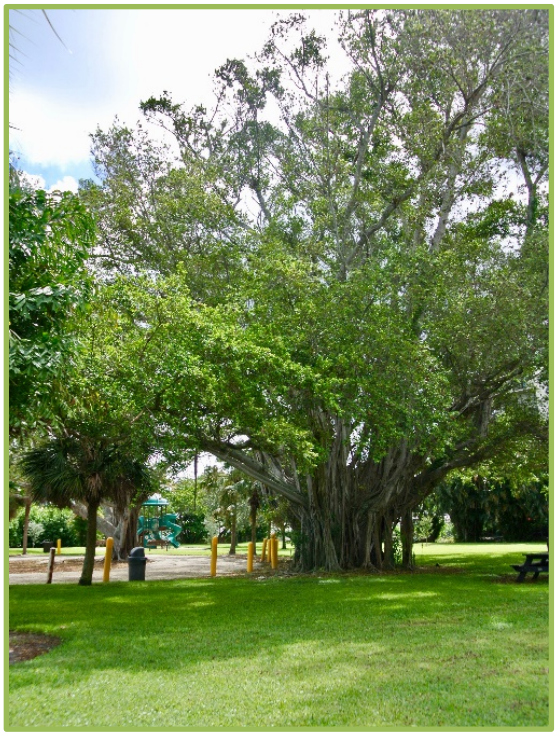
The National Clean Air Act, requires the United States EPA to set National Ambient Air Quality Standards for pollutants considered harmful to public health and the environment.

The Florida DEP maintains a comprehensive ambient air monitoring network involving over 220 monitors positioned across the state. In 2016, a monitor for particulate matter was relocated from the AG Holley site in Lantana to a site off of Congress Avenue proximate to Atlantic Avenue (AQS Site #12-099-2005). Florida DEP, *2016-2017 Annual Air Monitoring Network Plan*.

In late 1993, the Florida DEP (DEP) submitted a request to the United States Environmental Protection Agency (EPA) to re-designate the Southeast Florida Area (Dade, Broward, and Palm Beach County) from non-attainment to a maintenance area for ozone (effective 1995). The region has been in maintenance status, and continued compliance with air quality standards is anticipated. It has been achieved to date through new control methods including less evaporative gasoline, vapor controls for retail gasoline fueling, and replacement of older vehicles with less polluting ones. In addition, gasoline dispensing facilities within the City have been outfitted with vapor recovery systems, and all underground corrosive (steel) storage tanks have been replaced.

The Palm Beach County Department of Health maintains an Air Quality Index online and is responsible for programs supporting the permitting and licensing of air pollution sources; conducting inspections and enforcing air pollution regulations; encouraging effective growth management programs including transportation planning; promotion of pollution prevention and conservation; technical assistance to residents reporting indoor air pollution; control of open burning; asbestos abatement and building demolition; and monitoring molds and moistures in the atmosphere. The air quality within Delray Beach and Palm Beach County as a whole continues to comply with all National Ambient Air Quality Standards.

The National Oceanic and Atmospheric Administration through the National Weather Service has partnered with the United States EPA and provides daily air quality forecasts as part of a national Air Quality Forecasting Capability.



Palm Beach County has generally good air quality throughout the year. The City of Delray Beach is encouraged to continue to participate with regional and state efforts to maintain current air quality levels in conformance with the National Air Quality Standards.

SMOKE-FREE ENVIRONMENT

In order to protect air quality in the Delray Beach Planning Area the City has adopted a smoke-free policy on the Delray Municipal Beach, a tobacco ban for City employees, and an ordinance limiting e-cigarette or vape use to outdoor areas only. The City will continue to maintain these practices.

GREENHOUSE GAS EMISSIONS

Reducing greenhouse gas emissions within the Delray Beach Planning Area will improve air quality, contribute to broader efforts to combat climate change, and translate into energy cost savings in the community. As the City graduates to relying on cleaner energy technologies to support its existing and future capital investments community stakeholders and residents will also transition to more sustainable practices. If the growing global energy demand continues to be met mostly with fossil fuels, it is expected that earth's average temperatures and levels of atmospheric carbon dioxide will continue to increase. Delray Beach prioritizes the transition to cleaner energy technology in order to protect local air quality.

Quick Fact:
In 2015, Florida was the fourth largest carbon dioxide emission emitting State in the United States. Source: United States Energy Information Administration, *Rankings: Total Carbon Dioxide Emissions, 2015*.

Delray Beach pledged to participate in the Sierra Club Cool Cities Program in 2006, and is committed to reducing greenhouse gas at a local level by conducting a greenhouse gas emission inventory, creating a reduction plan, monitoring progress, and implementing a greenhouse gas reduction plan.

Delray Beach also committed to adopt, honor, and uphold the Paris Climate Agreement goals through the Mayors National Climate Action Agenda and the United States Conference of Mayors. Climate Mayors, *Members*, CLIMATE MAYORS, (last visited Sept. 10, 2018); The United States Conference of Mayors, Meet the Mayors (last visited Sept. 10, 2018). The Paris Climate Agreement encourages government entities to inventory, track, and curb greenhouse gas emissions. These climate initiatives represent collective action towards intensifying efforts not to exceed temperature increases of more than 1.5 degrees Celsius and to create a 21st century clean energy economy, both of which are key initiatives in the Paris Climate Agreement.

A greenhouse gas inventory is a tool which can be utilized by Delray Beach to identify its emission contribution, set reduction targets, and to develop strategies to reduce city and community-wide emissions, while tracking the progress of such strategies. A typical greenhouse gas inventory pursued by a city would include an analysis of emission sources from both city-wide operations (emissions related to facilities, vehicles, and infrastructure owned by Delray Beach) and community-wide aspects.

A community-wide inventory identifies the emissions originating from activities such as transportation and mobile sources; commercial electricity and natural gas consumption; residential electricity and natural gas consumption; water and wastewater treatment, nitrification, denitrification, and the electricity consumed from potable water and wastewater treatment; solid waste energy consumption, and fugitive emissions from natural gas distribution. A city operations inventory accounts for the same activities but from city owned and operated sources. A city operations greenhouse gas inventory is considered a subset of the community-wide inventory.

City and community-wide inventories are necessary to effectively plan to reduce emissions overtime. Delray Beach would benefit from a greenhouse gas emission forecast to understand how factors such as energy use, water use, and transportation might affect emissions under a business as usual scenario. A business as usual scenario assumes no policy or technological

changes are put in place to affect the initial greenhouse baseline inventory analysis. By comparing the business as usual forecast with a greenhouse gas inventory baseline, Delray Beach can evaluate targeted investments to reduce emissions.

To effectively support broader efforts to reduce emissions, local governments across the nation are adopting greenhouse gas reduction targets. Greenhouse gas reduction targets can be identified for City operations or community-wide activities.

REDUCTION OF FOSSIL FUEL DEPENDENCE

Improving atmospheric conditions in Delray Beach can also be accomplished through support of a diversified transportation system, promotion of compact urban design, and use of cleaner vehicles. The existing transportation network can be enhanced to further support bicycle and pedestrian traffic, public transit, and automobiles. Sustainable design includes multimodal connectivity between neighborhoods and economic centers to facilitate different modes of travel.

Increasing the use of alternatively fueled vehicles is another way to protect air quality. By promoting the use of alternative transportation modes such as buses, the Downtown Roundabout Trolley, carpools, and bikes, the Delray Beach will conserve resources, reduce traffic, and increase social equity.

Delray Beach operates a free trolley service, the Downtown Roundabout Trolley, providing public transportation throughout downtown Delray Beach. The Trolley originates at the Tri Rail station and runs north on Congress Avenue and west on Atlantic Avenue. The Trolley continues all the way east on Atlantic Avenue to the Marriot Hotel on Ocean Boulevard and A1A. Delray Beach can potentially extend the Trolley route south to Linton Boulevard. Through dialogue with the community, the City can promote increased efficiency in the system and increased ridership. The Downtown Roundabout Trolley is an excellent means of alternative transportation for Delray Beach and its possible expansion would increase community sustainability and resiliency.

Delray Beach Rail Transit

Delray Beach is currently serviced by four railway lines: the Florida East Coast Railroad, the Seaboard Coast Line Railroad, the Amtrak Passenger Rail, and the Tri-Rail commuter rail services. The Tri-Rail is currently used for transportation by many Palm Beach County residents. The Delray Beach Tri-Rail Station is located behind the South County Government Complex south of West Atlantic Ave, off of Congress Avenue. The Station has bicycle lockers, bicycle racks, parking, and has connection stops for the Palm Tran and the Downtown Roundabout Trolley.

In preparation for the planned Tri-Rail Coastal Link commuter rail service, the City recently adopted the Delray Beach Tri-Rail Coastal Link Transit-oriented Development Master Plan. The plan was a multi-agency effort led by the Treasure Coast Regional Planning Council in conjunction with the South Florida Regional Transportation Authority and the Palm Beach County Transportation Agency, funded by the Federal Transit Authority and the Delray Beach Community Redevelopment Agency. The plan identifies the location of the future station and provides

recommendations for the ½-mile area surrounding the station, including transit-oriented development techniques, and bike-pedestrian infrastructure improvements. A Tri-Rail Station in the center of downtown Delray Beach will ultimately enhance livability, expand multi-modal transportation opportunities, create enormous economic growth opportunity for local businesses, and provide regional connectivity for commuters and visitors alike. South Florida Regional Transportation Authority, *Tri-Rail Coastal Link Station Area Opportunities*, 2013, *Tri-Rail Coastal Link Transit-Oriented Development Master Plan*, 2018.

To reduce vehicle traffic within Delray Beach and protect air resources the City will continue to support rail transportation connectivity within the region.

Bicycle and Pedestrian Opportunities

Increased bicycle and pedestrian traffic within the Delray Beach Planning Area can be further enhanced by strategies promoted by the Bicycle Friendly Community Program and the Pedestrian Friendly Community Program. The Walk Friendly Community Program is a nationally recognized tool for improving walking conditions and promoting pedestrian safety. The Bicycle Friendly Community Program was established by the League of American Bicyclists which provides a roadmap for improving bicycle conditions within individual communities and participating jurisdictions receive a detailed report and community rating. LINK TO HEALTHY COMMUNITITES ELEMENT.

Multi-Modal Strategies

The Palm Beach Transportation Planning Agency completed a 2017 US-1 Multimodal Corridor Study to examine improved pedestrian and bicycle safety, and to promote the Palm Beach County Palm Tran Bus Service. The study has been converted into a corridor project which includes (short-term and long range) recommendations to improve the segment of US-1 that runs through the Delray Beach Planning Area, with new bicycle and pedestrian features. The improvements will include the addition of new bicycle lanes, converting existing bicycle lanes into buffered bicycle lanes, road resurfacing, the addition of green space and street trees with stormwater management features, and upgraded pedestrian intersection crossings. Palm Beach Transportation Planning Agency, *US-1 Multimodal Corridor Study*, 2018.

A number of multi-modal improvements are planned by the Palm Beach Transportation Planning Agency for the Delray Beach Planning Area contained in the *List of Priority Project FY 2020-2024*.

Promoting sustainable transportation modes in Delray Beach will attract new residents while meeting the needs and desires of current residents who appreciate convenient public transportation, a bicycle friendly atmosphere, and strategies to enhance transit while conserving fuel and energy.

Fuel Efficient Vehicles

Policies and programs can be employed to promote fuel-efficient vehicle use within Delray Beach and transition the City fleet to cleaner technologies. Increasing the efficiency of the City fleet not only will improve air quality and reduce greenhouse gas emissions, but the City will realize fuel-related cost savings overtime. To depart from gasoline powered vehicle, use within Delray Beach, the City could undertake an electric changing station needs assessment, City-fleet right sized vehicle study, and pursue electric vehicle infrastructure training.

Quick Fact:
Electric vehicles require substantially lower fuel cost per mile than gasoline vehicles.

The annual greenhouse gas emissions emitted by a gasoline vehicle is approximately 11,435 pounds of CO_2 equivalent; whereas, an all-electric vehicle only emits 4,664 pounds of CO_2 equivalent.

Source: United States Department of Energy, *Florida Transportation Data for Alternative Fuels and Vehicles*, (last updated Mar. 14, 2018).

Currently, the City provides three free public electric vehicle charging stations located within the Banker's Row parking lot. In addition to public infrastructure, new private development must comply with charging station requirements. Within

the Central Business District (CBD), all new parking must provide 3% as alternative fuel spaces, which accommodate both electric vehicles charging stations and an outlet for recharging golf carts.

CONSERVATION, EXISTING USE, AND PROTECTION OF WATER RESOURCES

Groundwater

Groundwater is water beneath Earth's surface, captured in soil or rock pores and fractures. Underground soils and rock formations that are saturated are known as aquifers. Aquifers are considered either confined or unconfined. Unconfined aquifers are bounded by permeable rock and recharged by soil and rock layers above from precipitation. Confined aquifers are bounded by impermeable or semi-permeable formations, where recharge from precipitation occurs from rock or formation fractures.

Florida's geology is predominantly Karst in nature consisting of carbonate rich formations that are characterized by underground streams, fissures, sinkholes, and other related connections, allowing aquifer recharge through rainfall. Because of this Karst topography, surface and groundwater in southeast Florida are closely interrelated as part of the hydrologic system—effective management of both is crucial to maintaining a safe, quality water supply.

The Surficial aquifer system, an unconfined unit, is the primary source of the City's potable water supply through municipal wells. The City's aquifer storage and recovery well taps into the Florida aquifer system, a confined unit, and can be used to store water during low water demand times to supplement the surficial aquifer system for potable water supply during high demand and is a potential long-term water supply resource which would require more expensive treatment such as reverse osmosis.

Wellfield Protection

Palm Beach County maintains a Wellfield Protection Program and has established zones of protection around wellfields which pump drinking water from the surficial aquifer. The zones are codified in the Palm Beach County Unified Land Development Code, Article 14, Chapter B, and are protected by the Palm Beach County Wellfield Protection Ordinance which regulates the existing and new nonresidential use, handling, storage, and production of hazardous and toxic materials within the zones of influence of the wellfields.

Delray Beach withdraws from 30 active Surficial aquifer system wells in four wellfields (Eastern, Morikami, Golf Course and 20-Series) and 1 Floridan Aquifer system. The City holds a water use permit (WUP) from the SFWMD, Water Use Permit No. 50-00177-W (issued Dec. 20, 2010; expires Dec. 20, 2030). The City's water use permit was first issued in 1975, having since been modified three times, and renewed six times by the SFWMD, *Water Use Permit No. 50-00177-W*. The location of all wellfields is portrayed on Map CSR-xx.

Table CSR – 5

Delray Beach Water Usage

Annual Allocation	Monthly Allocation	Daily Allocation
6,972 million gallons	654 million gallons	19.19 million gallons per day

As governed by the permit, annual groundwater allocation shall not exceed 6,972 million gallons annually, or 19.10 million gallons per day (MGD). Currently, more than 1,000 domestic wells within the Delray Beach Planning Area are mostly used for irrigation. There are no major groundwater recharge areas in the Planning Area, however, the eastern portion of Palm Beach County has been identified as a prime aquifer recharge area by the U.S. Geological Survey and the Palm Beach County Comprehensive Plan. SFWMD, *Water Use Permit No. 50-00177-W*. LINK TO PUBLIC FACILITIES ELEMENT.

The Florida DEP and the Department of Health both have responsibility for monitoring the quality of public drinking water. The Well Surveillance

Program was created by the State of Florida in1984, to ensure potentially contaminated wells are located and tested. The Palm Beach County Health Department personnel are responsible for field sampling and surveys. The City of Delray Beach does not have any ground water quality problems. However, there are several potential sources of contamination within the radius of influence of the City's wellfields. These sites are either closed, undergoing remediation, or have ongoing investigations. The point source problem identified in 1988, in the Series 20 Wellfield (Aero-Dri site), has been mitigated through the use of air scrubbers at the water treatment plant. Water quality has improved to the extent that air scrubbers are no longer in use.

To reduce the possibility of soil and groundwater contamination, the Florida Department of Environment Protection mandated the replacement of all single-wall non-corrosive underground storage tanks and piping with double-wall systems (effective Dec. 31, 2009).

The Delray Beach water supply is tested regularly for contaminants on the list of the United States EPA primary and secondary drinking water standards. The potential movement of contaminants from known pollution sources as a result of withdrawal of the permitted allocation is considered minimal. SFWMD, *Water Use Permit No. 50-00177-W*. LINK TO PUBLIC FACILITITES ELEMENT.

Water Conservation, Saltwater Intrusion, and Projected Need for Water Resources

The Florida aquifer system contains water with higher chlorides throughout southern Florida than are experienced in many other parts of the state. Saline intrusion has been a concern for Delray Beach's eastern wellfields due to the proximity to the Intracoastal Waterway and the Atlantic Ocean. To effectively move withdrawals further west, the City of Delray Beach constructed six western 20-Series wellfields. To avoid saltwater intrusion, withdrawals from eastern wellfield wells are restricted and operated on a daily rotation. Only the 20-Series (western location) wellfields are consistently in use.

Delray Beach utilizes one water treatment plant (WTP) with a potable water distributed system to provide water for users. The Florida DEP's related capacity for the WTP is 26 million gallons per day and uses lime softening for treating water from the Surficial aquifer system. The City has six emergency interconnects with neighboring municipal water systems (Boynton Beach, Palm Beach County Utilities and City of Boca). To prevent any changes in location, timing, and volume of withdrawals from the Lower East Coast Everglades Waterbodies with increased water demand, the City has replaced permitted Surficial aquifer system irrigation withdrawal systems with reclaimed water within the Delray Beach service area. The entire demand of the City will be met by withdrawals from the Surficial aquifer system.

The City projects optimizing use of the Florida aquifer system which can be accomplished without exceeding maximum concertation levels of chloride. The City will continue to: operate the eastern wellfields according to permit restrictions (effective Apr. 11, 1991), monitor wells within the Planning Area, and maintain chloride concentration data.

Between 2003 and 2016, the City installed a phase I of a reclaimed water system with a re-pump station adequate to serve the barrier island, infrastructure in the south-east service area, and approximately 20 miles of transmission and distribution lines, with a system capacity of 3.0 MGD and flow of 2.29 MGD.

The City is in the process of expanding the reclaimed water system by an additional 2.0 MGD. As of 2017, the City had 16 reclaimed water service areas with 42 existing users, and plans to add an additional 40 users within the reclaimed water service areas. The ultimate built-out capacity of this system is estimated to be 7.6 MGD. This program is projected to reduce potable water demand by 3.79 million gallons per day reducing withdrawals from the aquifer for irrigation, and deferring capital costs for alternative water resources and treatment. The City's reclaimed water system has helped stabilized the average water use to approximately 16.5 million gallons per day, despite growth.

The City has also converted its aquifer storage and recovery well in the upper Floridan aquifer to a public water supply well to supplement withdrawals from the Surficial aquifer during periods of repairs and maintenance. Withdrawals from the Floridan aquifer system are limited to 1.5 MGD in order to keep the chloride level in the blended water to within the water quality requirements.

Significant improvements to water use operations in Delray Beach have been achieved:

- Landscape Regulations are codified in the Delray Beach Land Development Regulations, Section 4.6.16. The Section provides the conservation of potable and non-potable water; the implementation of Florida-friendly landscaping principles; proper tree selection adjacent to or within utilities to mitigate damages which may be caused by trees; encouraging the creation or preservation of open space; maintaining permeable land areas essential to surface water management and aquifer recharge; encouraging the preservation of existing plant communities; encouraging the planting of site specific, native and drought tolerant plant materials; establishing guidelines for the installation and maintenance of landscape materials and irrigation systems; reducing air, noise, heat, and chemical pollution through the biological filtering capacities of trees; reducing the temperature of the microclimate through the process of evapotranspiration; and promoting energy conservation through the creation of shade. The standards are to be considered minimum standards which may be increased as applicable.
- Chapter 59, of the Delray Beach City Code of Ordinances requires the use reclaimed water for irrigation of residential and nonresidential lawns, golf courses, cemeteries, parks, landscaped areas, edible crops (as set forth in Chapter 62-610, Florida Administrative Code), highway medians, dust control, on construction sites, mixing of concrete, and cleaning of roads and sidewalks is mandatory within the City where the connection is available.
- The City Code adopts the mandatory year-round water restrictions from 40E-24 in the Florida Administrative Code. In times of crisis both the City and SFWMD may impose restrictions on the outdoor use of water (irrigation, car washing, etc.) pursuant to F.A.C. Chapter 40E-21.
- The City has adopted the Florida Building Code which requires ultra-low volume plumbing fixtures.
- Leak detection program: in 2018, the City finished migrating from an automatic meter reading system to an advanced automatic metering infrastructure metering system for over 22,000 meters. The advanced metering infrastructure can identify areas of water loss, abnormally high-water use, and reduces the duration of leaks.
- The City uses a water conserving or inverted rate structure, where water rates increase with increasing use, which encourages conservation and reduction of use.
- In 2018, the Utilities Department initiated an enhanced water conservation program with components such as public information outreach at City events, and a water conservation outreach effort to 5th grade students in City public schools.

While such efforts have been sufficient in the past, greater demands upon the area's water resources dictate that additional water conservation measures, particularly those directed toward reduction in normal consumption, irrigation use,

Florida friendly landscaping, and leak detection and repairs, should be continued by the City.

Previously, it was predicted that the demand for water use in agriculture would decrease over a ten-year period, based on the anticipation that the few remaining agricultural uses would be abandoned in favor of residential development. The Saltwater Brewery, a craft microbrewery with tasting room that opened in 2013, is one example of a local food production business that impacts water use. Local agricultural or food production activities should be monitored for their impact on water use, and sustainable practices used where feasible, in order to effectively manage demand.

The overall demand for water by commercial and industrial uses is calculated as a part of the per capita demand upon which water needs are projected. No special needs have previously been identified for industrial water through the intensification of industrial uses. The impact of new businesses on water use should be monitored in planning.

The City expects a demand of 6,752 million gallons (18.5 MGD) annually by 2030, based on an estimated population of 82,556. There are eight additional Surficial aquifer system wells proposed in the current SFWMD WUP, and because some of the existing wells have diminished capacity and water demand is starting to rise, the City plans to evaluate wellfield limits, replacing some wells, and developing alternative water resources. Per capital use rate is expected to be reduced largely due to the expansion of reclaimed water use, new leak detection technology, and potable water use for irrigation. SFWMD, *Water Use Permit No. 50-00177-W.*

Surface Water Quality

The Florida DEP and the Department of Health both monitor water quality. The Florida DEP has included Lake Ida, the E-3 and E-4 Canals, and the Intracoastal Waterway in the list of impaired waterbodies within Palm Beach County. Waterbodies on this list have been verified as impaired for a particular pollutant. Waterbodies verified as impaired are described as follows:

> *The "verified list" is the list of Florida's waterbodies that fail to attain any of its designated uses and/or meet the minimum criteria for surface waters established in the Surface Water Quality Standards (62-302, F.A.C.) and the Impaired Waters Rule (IWR, 62-303, F.A.C.). The entire state of Florida is divided into five basin groups in which each waterbody is re-assessed on a rotating basis every five years. If a waterbody is assessed as impaired, a TMDL (Total Maximum Daily Load) must be developed to determine the maximum amount of a pollutant that a waterbody can receive and remain healthy. Once a TMDL has been completed, the waterbody is removed from the verified list regardless of whether or not the waterbody meets standards.*

The Total Maximum Daily Load is the maximum amount of a given pollutant that a water body, such as a canal, river or an estuary, can absorb and still maintain its designated uses. Designated uses include; drinking, fishing, recreation, and shellfish harvesting. The purpose of a Total Maximum Daily Load, is to limit pollutant loading to water bodies that are not meeting their intended uses and therefore determined to be impaired by Rule, based on water quality monitoring. Pollutant loading reductions are placed on known pollutant sources such as drainage systems and other permitted discharges. Impaired waterbodies in the Delray Beach Planning Area are listed below in Table CSR-6.

Within the Delray Beach Planning Area, is Lake Ida the southernmost of five interconnected lakes called the Chain-of-Lakes. The Chain-of-Lakes is an integral part of the drainage system for central and southern Palm Beach County. While these waterbodies are lakes, the hydrology is atypical of a lake/watershed regime, due to the interconnection with the Central and Southern Flood Control Project, and the Lake Worth Drainage District. LINK TO STRATEGIC PARTNERSHIPS.

As part of a Chain-of-Lakes restoration project Palm Beach County has removed existing muck sediments, graded the shoreline, excavated channels to create wetland habitat, and added wetland plants and trees. Continued natural restoration activities will improve the water quality of Lake Ida.

Table CSR-6

Delray Beach Verified Impaired Waterbodies

Water Segment Name	Waterbody ID	Parameter	Comments
Intracoastal (Palm Beach County)	3226F3	Copper	This waterbody is impaired for this parameter based on planning period data and is being added to the 303(d) List. This WBID was created from the retired WBID 3226F that was on the Verified List for this parameter.
E-4 Canal	3262	Nutrients (Chlorophyll-a)	This waterbody is impaired because the annual average Chl-a value exceeded the listing threshold of 20.0 µg/L in 2002 and 2008. Based on TN/TP ratio median of 8.63, TN was identified as the limiting nutrient. New listing from cycle 2.
Lake Ida	3262A	Biology	This waterbody is impaired for this parameter based on failing bioassessments and nutrients have been determined to be the causative pollutant. This parameter is being added to the 303(d) List.
Lake Ida	3262A	Nutrients (Chlorophyll-a)	This waterbody is impaired for this parameter. The annual geometric means exceeded the nutrient criteria more than once in a three year period. This parameter is being added to the 303(d) List.
Lake Ida	3262A	Nutrients (Total Phosphorus)	This waterbody is impaired for this parameter. This parameter was assessed against the minimum nutrient criterion because corrected chlorophyll-a annual geometric means exceeded the applicable chlorophyll-a threshold. The annual geometric means exceeded the nutrient threshold more than once in a three-year period. This parameter will be added to the 303(d) list.
E-3 Canal	3262D	Nutrients (Chlorophyll-a)	This waterbody is impaired because the annual average Chl-a value exceeded the listing threshold of 20.0 µg/L in 2002, 2007, and 2008. Based on TN/TP ratio median of 10.55, TN was identified as the limiting nutrient.

Source: Florida DEP, *Comprehensive Verified Impaired Waterbodies List*, 2018.

Palm Beach County monitors and manages the Chain-of-Lakes, and periodically produces reports detailing the condition of the Chain-of-Lakes, including Lake Ida. The County also maintains the Chain-of-Lakes Water Quality Monitoring Program to protect, restore and enhance the natural resource values the lakes.

Historical and recent water quality data reveals concentrations of total nitrogen, total phosphorus, and chlorophyll-a in Lake Ida are highly variable. Delray Beach should continue Lake Ida restoration efforts and create polices to reduce overgrowth of algae biomass which can cause excessive algae and diminish the ecological functions of Lake Ida. From north to south in the Chain of Lakes, there has been an increase in pH values—8.01-8.11. High pH can be an indicator of pollution or other environmental conditions. Palm Beach County, *Palm Beach County Chain-of-Lakes Water Quality Evaluation and Analysis*, 2015.

The Florida Healthy Beaches Program of the Florida Department of Health monitors water quality at

Florida's beaches. Since 2000, the Beach Water Sampling Program has conducted periodic beach water sampling of the 30 coastal counties in Florida, with weekly water sampling since 2002. In 2016, Florida Healthy Beaches Program of the Florida Department of Health adopted new water quality criteria for the Program from the U.S. EPA 2012 Recreational Water Quality Criteria. LINK TO COASTAL MANAGEMENT ELEMENT.

Chapter 2008-232, Laws of Florida, created the Leah Schad Memorial Ocean Outfall Program, which prohibits the construction of new domestic wastewater ocean outfalls and the expansion of existing outfalls. The law requires domestic wastewater discharge through ocean outfalls to meet advanced wastewater treatment and management requirements and establish a timeline for the elimination of existing discharges except as backup. Six ocean outfalls are located along the Florida's Southeast coastline, one of which is located on the border of Boynton Beach and Delray Beach.

The South Central Regional Wastewater Treatment Facility, co-owned by the utilities of Boynton Beach and Delray Beach and operated pursuant to Interlocal Agreement, no longer regularly discharges through an ocean outfall; thus, the Atlantic Ocean and beach area do not show any indications of pollution. The South Central Regional Wastewater Treatment and Disposal Board holds the permit for the outfall located within the Delray Beach Planning Area. The irrigation quality reclaimed water plan is 10 MGD, with the entire rated capacity of the plant at 24 MGD. It is currently be expanded to a capacity of 30 MGD. The facility disposes of its treated wastewater through deep injection wells or through irrigation reuse. The City and the South Central Regional Wastewater Treatment and Disposal Board initiated a wastewater effluent reuse program for irrigation in 2003, to reduce effluent disposal to the Boynton/Delray Beach ocean outfall and as a demand management and potable water conservation measure, which helps defer more costly alternative water supply and treatment options.

The Boynton/Delray Beach ocean outfall is currently only used to handle peak flows during the wet weather, during mechanical integrity testing of its deep wells, to exercise ocean outfall pump stations, or as an emergency disposal method. Florida DEP, Division of Water Resource Management, *Implementation of Chapter 2008-232, Laws of Florida Domestic Wastewater Ocean Outfalls*, 2015.

An additional deep injection well is being designed and planned for drilling, testing and permitting within the next five years. While only small amounts of treated wastewater are disposed through the outfall and plans for to phase out all ocean discharges are ongoing, the City of Delray Beach should continue to work with the South Central Regional Wastewater Treatment and Disposal Board to ensure management plans account for increase volume participation events, sea level rise, and emergency situations which could involve power outages.

Surface Waters

Waterways in the Delray Beach Planning Area are used for swimming, boating, fishing and other recreation activities. The Intracoastal Waterway has three commercial marinas (Delray Harbor Club, Delray Beach Yacht Club, and Marina Delray) and one municipally operated marina. Three City parks, two of which provide boat launching facilities, are located along the Intracoastal Waterway. Other public access points along the Waterway are via street ends. The Delray Beach Marina maintains approximately 22 slips. Extensive boat traffic originates from marinas and waterfront properties within Delray Beach, and locations outside the City.

Lake Ida is extensively used for boating. On the west side of the lake is a regional park, and a neighborhood park is located on the east side, both are operated by Palm Beach County. North of Lake Ida Park, partially within the City of Boynton Beach, Delray Beach has acquired a small parcel that is currently not programed. Restoration of the parcel will improve lake water quality. The Palm Beach County department of Environmental Resource Management, *State of the Lakes*, report recommends monitoring the water quality, conducting aquatic management surveys, and enhancing shorelines through removal of upland and aquatic exotic vegetation, as well as establishing native wetland and aquatic plant populations (1997).

There is no commercial usage of the South Florida Water Management Canal (C-15) nor of the several Lake Worth Drainage District laterals and equalizer canals. The only recreational use of the canals is for small craft.

There is no commercial use of the private water bodies within the Delray Beach Planning Area, nor is there significant recreational use since they are used primarily as water retention areas and use is restricted by SFWMD and the Lake Worth Drainage District regulations.

There is no commercial usage along the beaches of the Atlantic Ocean within the City, except for the concessions renting cabanas and recreational equipment, and the permitted parking of Sailboats. The one and one-half miles of municipal beach are a major recreational center.

Recreational and commercial boat traffic on the Intracoastal Waterway and Lake Ida may see an increase, due to the proposed "Intracoastal Waterway Plan for Palm Beach County" and the Blueway Trail project of the Treasure Coast Regional Planning Council and Palm Beach Transportation Planning Agency. The goal of the Intracoastal Waterway Plan, is to preserve working waterfronts and build the regional economy and quality of place through improved linkages to enhanced environmental and cultural assets. Recommendations impacting Delray Beach in this context include support of the development of a marina village in Delray Beach, support for ecotourism, and a possible County-wide water taxi service and high-speed ferry service. Two water

taxi stops are proposed in or adjacent to Delray Beach.

The Blueway Trail project is one future use recommendation of the Intracoastal Waterway Plan, designed to foster eco-tourism. The Trail will provide two-way connectivity between the Chain of Lakes, Lake Worth Lagoon, Intracoastal Waterway and the Atlantic Ocean. The project will have a boat-lift and portage system. It will also include a pier at the boatlift, and refurbishment of existing natural habitats and upgrades to existing fishing piers. The boatlift will be located at Spillway Park on a canal dividing Lake Worth and West Palm Beach, and is designed to accommodate boats shorter than 23.5 feet, no more than 5.5 feet above the water line. The preliminary feasibility analysis and engineering plans were completed in 2017, but project permitting is expected to take 2 years. LINK TO STRATEGIC PARTNERSHIPS.

CONSERVATION, EXISTING USE, AND PROTECTION OF MINERAL AND SOIL RESOURCES

Commercially valuable minerals are not mined or extracted in the Delray Beach Planning Area and there is not any active or inactive mineral mining sites. There are concentrations of coquina, dolomite, and sand below the surface throughout the City.

Soil erosion is not a concern, except beach erosion, which is mitigated by the Palm Beach County's Shoreline Protection Plan Program discussed later in this document. Detailed

information can also be found in the COASTAL MANAGEMENT ELEMENT.

The non-coastal related erosion problems identified (within the 1989 Delray Beach Conservation Element) are governed by Ordinance No. 53-87. The Ordinance sets out soil erosion control methods, standards, and procedures required to be used in the Delray Beach Planning Area. The ordinance provides specific management strategies for soil erosion in connection with land development, land clearing, grading, filling and excavation, the construction of buildings and utilities, paving activities, drainage facilities demolition, and any other land disturbing process.

In 2013, Delray Beach was recognized as "Best Restored Beach" by the American Shore and Beach Preservation Association. The City was also designated as a Blue Wave Beach by the Clean Beaches Coalition, for the City's demonstrated commitment to maintaining a clean, healthy, and environmentally well-managed beach.

PROTECTION OF ENDANGERED, THREATENED, AND SPECIES OF SPECIAL CONCERN

Preservation of species and diversity is an important goal. Species of special concern include the Florida Manatee that continues to be subject to danger from boat traffic. Palm Beach County administers a State-approved Manatee Protection Plan which includes manatee data, strategies, and management actions aimed at protecting manatees. Florida is home to a subspecies of the West Indian Manatee, a federally listed endangered species and is afforded protection by the Florida Manatee Sanctuary Act of 1978. Manatees in the Delray Beach Planning Area are more abundant in the winter season in comparison to the summer season.

Boat speed restrictions have been established for the Intracoastal Waterway throughout the City. The manatee is frequently seen in the Intracoastal Waterway and the C-15 Canal. Palm Beach County ranks 10th for all manatee deaths between 1974 and 2003, and 6th for all documented watercraft-related fatalities. The Intracoastal Waterway between Delray Beach and Boca Raton (along with the Lake Worth Lagoon and Jupiter Sound) has the highest number of watercraft-related manatee deaths in the County.

Several species of sea turtles' nest on the municipal beach. The turtles are protected by the Delray Beach Sea Turtle Monitoring and Conservation Program, as well as, lighting restrictions codified in the Delray Beach Land Development Code. Section 4.6.8, involves restrictions on artificial lighting. In intensely developed coastal areas artificial lighting can deter sea turtle nesting and disorient hatchlings. The City is working to darken point source light and ambient light, turtle-friendly lighting required in a 600' zone. The Sea Turtle Monitoring and Conservation Program involves nest monitoring and protection, with data collection on nesting and hatching success. LINK TO COASTAL MANAGEMENT ELEMENT.

The 2017 Delray Beach Turtle Nesting Data resulted from a survey over the course of two hundred and forty-two days on beaches located in Delray Beach (2.8 miles). The overall total of turtle nests increased from 2016 reports. Nesting disturbances prior to hatching can be attributed to a wide range of impacts, including foxes, erosion, accretion, inundation, and storm-related events. Recent research from Florida Atlantic University has

found that sampled nests over the past few years contained 100% female turtles, raising concern that warmer temperatures are resulting in all female offspring, potentially impacting future reproduction rates. The 2015, 2016, and 2017 turtle count is provided in Table CSR-6

To increase public awareness of turtle and manatee protection, the City could seek opportunities for new informational signage and materials for residents and visitors.

The threatened or endangered wildlife species recently observed within the City include the least tern (bird), scrub jay (bird), cedar waxwing (bird), burrowing owl (bird), limpkin (bird), and eastern indigo snake (reptile). The City of Delray Beach has established a bird sanctuary within the corporate limits of the Planning Area, and therefore the take (capture or killing) of any wild bird is unlawful. Delray Beach Code of Ordinances, Sec. 91.04.

Table CRS- 6
Delray Beach Turtle Nesting Data

2017 Turtle Nesting Data

	C. caretta Loggerhead	*C.mydas* Green Turtle	*D. coriacea* Leatherback	Total Species
Total # of Nests	252	46	6	**304**
Total # of False Crawls	900	120	2	
Date of First Nest	04/23/17	05/30/17	04/13/17	
Date of Last Nest	08/19/17	08/25/17	05/11/17	

2016 Turtle Nesting Data

	C. caretta Loggerhead	*C.mydas* Green Turtle	*D. coriacea* Leatherback	Total Species
Total # of Nests	249	6	9	**264**
Total # of False Crawls	854	19	3	
Date of First Nest	4/29/16	6/20/16	3/25/16	
Date of Last Nest	8/16/16	9/12/16	6/21/16	

2015 Turtle Nesting Data

	C. caretta Loggerhead	*C.mydas* Green Turtle	*D. coriacea* Leatherback	Total Species
Total # of Nests	198	26	11	**235**
Total # of False Crawls	722	76	1	
Date of First Nest	Data not Available.	Data not Available.	Data not Available.	
Date of Last Nest	Data not Available.	Data not Available.	Data not Available.	

CONSERVATION, EXISTING USE, AND PROTECTION OF NATURAL AREAS

Delray Beach recognizes the need to protect and restore the natural communities within the Planning Area. Natural communities are groupings of plants and habitats that occur together in recurring patterns based on available resources such as soils, water, nutrients, and climate. Environmental changes associated with global warming will put pressure on the natural communities in Delray Beach. The preservation and maintenance of natural areas is important to their continued existence.

Various sections of the Delray Beach Land Development Code require the preservation of local natural features, all future and current development is required to comply with applicable codes and ordinances regarding the protection, preservation, or conservation of natural resources.

Delray Beach has committed to the policies promoted by Tree City USA since 1999. Delray Beach has retained this designation by meeting four core standards for urban forestry management: maintaining a tree board or department, having a community tree ordinance, spending at least $2 per capita on urban forestry, and celebrating Arbor Day. Trees are an extremely important resource for the City, as trees are known to reduce energy costs, stormwater run-off, and boost property values.

There are no City managed wetlands in the Delray Beach Planning Area. Privately held wetland areas within the Delray Beach Planning Area are conserved, protected, and managed according to Army Corps of Engineers and Florida DEP rules.

PRESERVATION OF PUBLICALY HELD NATURAL AREAS

Within the Delray Beach Planning Area there is a diverse park system which involves native vegetative communities, various water access points, and environmentally sensitive sites which must be protected and conserved.

The Municipal Beach area in Delray Beach is approximately three miles long. The City owns the 1-mile Municipal Beach, Palm Beach County owns and the City leases, the south 100 feet of the 500-foot-long Atlantic Dunes Park. The approximately remaining two miles of beach within the Planning Area are adjacent to private lands. The City is responsible for platting the Coastal Construction Control Line to fix the mean high-water line. The sandy beach east of the Coastal Construction line is vested in the State. Section 161.191, Florida Statues. LINK TO COASTAL MANAGEMENT ELEMENT.

Delray Beach's coastal dune is almost entirely man-made, the dune has been installed and enhanced during several projects dating back to 1973. The coastal dunes provide habitat for over two hundred plant and animal species. A total of fifty native species have been added to date, which includes several listed as endangered or threatened by the State of Florida or the U.S. Fish and Wildlife service. Natural coastal stand dunes are known to be dominated by saw palmettos, with a mix of herbaceous and shrubs species.

There is no commercial usage along the Municipal Beach, except for concessions renting cabanas and recreational equipment, and the beachside storage of sailboats for permitted vessels. The Delray Beach Parks and Recreation Department monitors beach boat storage.

The City of Delray Beach contracted with Coastal Management and Consulting in 2015, to inspect and survey the Delray Beach dune system. Coastal Management and Consulting identified exotic plant contamination in the dune system, generated maps depicting invasive species, and produced a report for with various best management principles for managing the dune system in Delray Beach.

The Delray Beach Management of Coastal Dune Plan suggests the following recommendations:

- Pioneer Zone Support: plant sea oats and dune panic grass in barren areas greater than 100 square feet.
- Dune Shrub Pruning: coordinate with Florida DEP to develop and carry out a plan for remedial reduction of the sea grape footprint, develop protocol for lateral control during regular pruning events, and review pruning methods and train staff.
- Scrub/Strand Zone Renovation: proceed with permitted dune section renovations as funding becomes available.
- Sailboat Storage: the City could review and update the Sailboat Storage Area Rules and Regulations to address specifics for securing in the designated area, and the City should continue to monitor the Sailboat Storage Area to maintain dune protection.

Barron, Coastal Management and Consulting, *Analysis and Recommendations for Management of the Coastal Dune at Delray Beach, Florida*, 2015.

There are interpretive nature trails in Atlantic Dunes Park, and at the Delray Oaks and Leon Weekes preserves. The City could enhance recreation opportunities by providing for a contiguous trail system throughout the Delray Beach Planning Area where possible. LINK TO OPEN SPACE ELEMENT.

Atlantic Dunes park is a public beach access point in Delray Beach located one block north of Linton Boulevard and beach side of A1A. The park is an elevated wooded area with a large pavilion, boardwalk, and 300-foot nature trail through the dunes. There are two parking lots with metered parking for visitors, public restrooms, and a life guard tower. The park has accessible handicap parking near the beach access point and two Surf Chairs are available for the physically challenged to enjoy the beach (located at the lifeguard tower). The Pavilion at Atlantic Dunes has been reconstructed after a fire in 2016 burnt down the original 1977 structure.

Delray Beach has managed Atlantic Dunes Park since the 1970's; the park is owned by Palm Beach County. Atlantic Dunes park represents a native coastal ecosystem with a full transverse section of Beach/Dune, Coastal Strand, and Maritime Hammock Communities. The Park is home to many native plant and animal species. More than a dozen of the native species which used to exist there have been lost, the decline in species diversity is likely due to overshadowing of exotic plants. Barron, Coastal Management and Consulting, *Analysis and Recommendations for Management of the Coastal Dune at Delray Beach, Florida*, 2015.

Delray Oaks is a 24.48 acre preserve within the Planning Area, owned by Palm Beach County. This site is managed as a countywide system of natural area and features an observation platform, as well as, paved and sandy trails. The area is protected to maintain the diversity of biological communities and species in the Delray Beach Planning Area. The Delray Oaks property represents examples of native ecosystems such as: prairie, xeric hammock ecosystems, and mesic flat woods. The tree canopy is made up of live oaks and sabal palms. Large tracts of oak hammock are unusual in Palm Beach County due to urban development and because oak hammock communities only develop in areas where fires have not occurred for at least thirty years.

Orchard View Park is a 5.94-acre neighborhood park located west of Old Germantown Road. The park was purchased by Delray Beach from the Blood Family in 2000. Prior to purchase, the land

was formally known as Blood's Hammock Groves. The park has pavilions, barbecue grills, playground area, restrooms, and a walking trail. The park is filled with berry trees and is often frequented by runners, bird watchers, and nature photographers.

The Leon Weekes Preserve is located between Linton Boulevard and Lindell Boulevard, west of Old Dixie Highway. The Preserve is named after Leon M. Weekes, who served as Delray Beach Mayor from 1978-1982. The property was purchased by the City of Delray Beach in 1988, to preserve the site's 12.37 acres of high-quality scrub and scrubby flatwood communities which includes species such as gopher tortoise, Curtiss' milkweed, common wild pine, and scrub palmetto. Florida Scrub is one of the oldest habitats in Florida, this vegetative community is specialized to live in periodically burned areas with high, well-drained, nutrient poor soils. The preserve features nature trails, a playground, gazebo, and parking area.

Water-related uses of natural areas within the Delray Beach Planning Area include docking facilities and marinas. There are three City parks that provide water-related amenities: Veterans Park (fishing and short-term dockage), Knowles Park (boat ramp facilities), and Mangrove Park (boat ramp facilities).

Veterans Park is north of Atlantic Avenue, west of the Intercostal Waterway. The park features a playground facility, gazebo, restrooms, a recreation center, and a public dock area for Atlantic Avenue visitors on the Intracoastal Water way.

Knowles Park is located at 1001 South Federal Highway, the park features parking, restrooms, and a boat ramp providing public access to the Intracoastal Waterway. The natural shoreline includes mangrove trees, sea grapes, and other vegetation which protects the park from storm damage and erosion. LINK TO OPEN SPACE ELEMENT.

The "environmentally sensitive area" designation is used for natural areas where significant flora or fauna communities have been identified and need special protection because of its landscape, wildlife, or ecological value. The Delray Beach Land Development Code has specific restrictions for development involving environmentally sensitive areas in Section 3.2.4.

Publicly-owned environmentally sensitive areas have been identified on the Future Land Use Map by an "Open Space" or "Conservation" symbol. Conservation areas include: the Donnelly Tract, and Florida Inland Navigational District (FIND) Parcels 645 and Parcel 650 (Mangrove Park). LINK TO FUTURE LAND USE.

Mangrove Park (south of Knowles Park) is a 4.05-acre environmentally sensitive site, also known as Florida Inland Navigational District (FIND) Parcel 650. This area was originally a spoil area for Intracoastal Waterway dredging. The City negotiated a long-term lease on the site to take over management developing Mangrove Park on the site. The park offers a boat ramp leading to the inter coastal, public parking, and restrooms. LINK COASTAL MANAGEMENT.

The Florida Inland Navigational District, is the local sponsor of the State and Federal navigation project for the Atlantic Intracoastal Waterway, ensuring lands are available for dredged materials removed from the waterway. Generally, FIND properties are utilized only as dredged material management sites and are not available for use by the general public, but several FIND sites have been leased to a county or municipality for passive recreational activities. LINK TO STRATEGIC PARTNERSHIPS.

Florida Inland Navigational District (FIND) Parcel 645 is a 7.41-acre mangrove site located on the east side of the Intracoastal just south of George Bush Blvd. The City will continue to negotiate with the Florida Inland Navigational District for utilization and potential ownership of Parcel 645 and Mangrove Park.

The Donnelly Tract is a small (1.64 acre) mangrove tract located on the west side of the Intracoastal Waterway approximately one-quarter mile north of George Bush Boulevard. The site is owned, preserved, and maintained by the City.

The Donnelly Tract and FIND parcel 645, are both environmentally sensitive areas, which feature densely vegetated mangrove wetlands. There are no current plans for developing these parcels. To preserve the diverse biological species in these areas the City should purse a biological assessment and habitat analysis for both parcels.

In 2015, the City of Delray Beach acquired 5-acres of undeveloped land west of Lake Ida (outside of the Delray Beach Planning Area), referred to as the Lake Ida Open Space Parcel. The City of Delray Beach has partnered with Delray Beach-based nonprofit Institute for Regional Conservation to restore the parcel's shoreline. Restoration of this area will improve overall water quality of Lake Ida and it will also offer protection for Lake Ida from stormwater run-off and pollution. There is currently no public access point to this parcel, or plans for development. LINK TO OPEN SPACE ELEMENT.

PRESERVATION OF PRIVATELY-OWNED NATURAL AREAS

Privately-owned natural areas are limited. The Hurricane Pines site was developed as part the private Heritage Club development one mile south of Downtown Delray, off of Southeast 10th Street. Three portions of the site (0.4 acres), have been preserved as part of the open space designation for the private housing development.

The oak hammock in the Hammock Reserve development has been preserved through conditions of a development order and has been set aside as a preservation area through zoning (Open Space) and platting. The Reserve includes 3 acres of broad-leafed trees, known as a hardwood hammocks ecosystem.

EXOTIC PLANTS

Preserving the natural landscape of Delray Beach is important to protect native species and water quality. Palm Beach County spends over two million dollars a year removing exotic plants from natural areas within the County, and regulates vegetation through the Palm Beach County Unified Land Development Code to limit unnecessary native vegetation removal, to promote the use of native vegetation in landscape plans, and to eradicate invasive nonnative vegetation. The main focus of the Prohibited Invasive Non-native Vegetation Removal Ordinance is to support the removal of the County's nine prohibited plant species on properties within 500-feet of publicly owned natural areas. Palm Beach County Department of Environmental Resources, *Best Management Practices for Protection of Native Vegetation*, 2009.

As part of a Chain-of-Lakes restoration project, Palm Beach County, Florida Fish and Wildlife Commission, and Florida DEP have removed exotic vegetation like Brazilian Pepper, Java Plum, and Pongam Trees from the shoreline of Lake Ida.

Federal and state laws were passed in the 1970's, to prevent the further spread or importation of weeds that pose an economic threat to agriculture and navigation. The United States Department of Agriculture and the Florida Department of Agriculture and Consumer Services, maintain individual Noxious Weed Lists that identify plants known to interfere with Florida's native ecosystems.

COASTAL HABITAT

As discussed in the Coastal Management Element, the City has numerous coastal resources. One of which is an offshore coral reef that is part of the Continental Southeast Florida Reef Tract. The natural offshore coral reef is located in approximately ¾ of a mile from the beach in about 60 feet of water. The Delray reef is home to octocorals and sponges, a complex microalgae community, stony corals (including the federally listed coral species of Acropora, and other listed coral species), and schooling fish. Coastal habitats must be monitored and protected in order to preserve the animal and plant species found in the Delray Beach Planning Area. LINK TO COASTAL MANAGEMENT ELEMENT.

HISTORIC NATURAL RESERVATIONS

Delray Beach has a rich architectural heritage with structures dating back to the late 19th Century. The City has five historic districts and twenty-six individually listed properties. Many of the historic sites within the Delray Beach Planning Area have unique natural characteristics which must be preserved and protected.

To mitigate climate change impacts to historic sites, infrastructure improvements in historic areas should be prioritized. Two locally designated Historic Districts are inherently vulnerable to climate change impacts due to their coastal location, and risk of flooding. The Nassau Street Historic District is the only historic site located on the barrier island, and the Marina Historic District boarders the eastside of the Intracoastal Waterway. These historic resources should be monitored to ensure their unique character is preserved. It is likely historic areas will need infrastructure improvements to adapt to and mitigate climate change impacts. LINK TO COASTAL MANAGEMENTELEMENT.

The historic character of Delray Beach attracts visitors supporting the heritage tourism cluster of local economy. To focus on reuse of existing buildings, the City could administer programs to assist existing buildings and historic properties with improved sustainability by promoting efficient design choices and recycling of old materials. Many building materials and practices which will never be duplicated again. Historic structures can be rehabilitated and retrofitted with sustainable building techniques. Sustainable historic

stewardship will contribute to a rich sense of place and spread local history. LINK TO HISTORIC PRESERVATION ELEMENT.

SUSTAINABLE USE AND MANAGEMENT OF RESOURCES

Delray Beach is continuously engaged in maintaining and upgrading existing assets, infrastructure, and the building stock owned and operated by the City. While the urban structure of Delray Beach cannot easily be modified, 'grey' infrastructure can be efficiently managed and retrofitted to improve performance. Grey infrastructure refers to roads, railways, buildings, street lighting, and utilities managed by the City. Sustainable strategies should guide future Delray Beach capital expenditures, acquisitions, and improvements in order to avoid misuse of resources.

As Delray Beach strives to become more sustainable the City can promote programs that help the entire community work towards increased resource efficiency and renewable energy use. By reducing resource consumption and achieving resource efficiency Delray Beach will realize cost savings and offer a better quality of life for its residents.

The concept of sustainable use of resources can be factored into City decision making. "Sustainable use" refers to the use of Delray Beach resources in a cognizant manner that improves the socio-economic wellbeing of people and does not waste unnecessary value or lead to long-term decline of the environment. "Resource" refers to raw materials such as fuels, minerals, metals, energy (oil, natural gas, coal, biomass), but also refers to food, services, water, wind, biomass, funding, knowledge, and our ecosystems, etc. Resources are consumed in many ways. Whether in the form of gasoline burning in our cars or the electricity and water used in our homes, our daily resource consumption contributes to harmful environmental impacts and the depletion of vital resources on which our lifestyles depend. Delray Beach recognizes the scarcity of natural resources poses a threat to the continued prosperity of the community and well-being of its citizens, thus conservation of resources ultimately contributes to community resiliency.

The City can develop productive and efficient ways to manage resources by monitoring production and consumption while also using an integrated resource management planning approach. Financial costs should not be the only consideration when evaluating the profitability of a potential capital improvement project or policy, social and environmental benefits must also be recognized. This is known as the "triple bottom line" of a project. Many of the policies within the Conservation, Sustainability, and Resiliency Element of the Comprehensive Plan have the ability to provide more than just economic benefit; for example, recommissioning City owned buildings with energy efficient fixtures has the capacity to enhance the indoor comfortability of buildings for staff, while also protecting air quality by decreasing greenhouse gas emissions.

ENERGY EFFICIENCY

Local governments have immense opportunity to seek solutions to current power challenges and to promote technological changes within the community. Evaluation of current energy use is the first step towards understanding potential opportunities to conserve resources, increase resiliency, and to reduce Delray Beach's contribution to global climate change. A large portion of energy consumed within the Delray Beach Planning Area can be contributed to the built environment. Existing buildings and lighting infrastructure represent two sources of energy use that can be improved by technological and policy development.

Delray Beach should pursue a baseline resource assessment to measure City performance in categories such as energy, fuel, water, and waste, by characterizing Delray Beach's electricity use, natural gas consumption, water use, fleet energy use, and energy consumed by waste management. A resource baseline assessment can be used as a starting point to identify areas where resources can be conserved and also to understand originating sources of greenhouse gases and flag opportunities to reduce consumption.

Delray Beach would benefit from tracking and reporting on utilities data (electric, water, other commodity billings). Existing City owned buildings and street lighting fixtures could be retrofitted to

increase energy efficiency which in turn would result in cost saving, a reduction in greenhouse gas emissions, and lessen wasteful practices. Delray Beach should also study the potential costs and savings associated with the installation of solar photovoltaic systems on compatible City owned buildings and the need for additional electric vehicle infrastructure.

Delray Beach can begin investigating and analyzing the performance of buildings owned or operated by the City in order to optimize performance and correct deficiencies. The City can undertake routine energy and water audits to understand usage and retro-fit potential for existing infrastructure systems and City owned facilities. The data generated by an audit can be used to determine the return on investment associated with a Citywide retrofitting program. The data can be managed in a consolidated database to monitor City progress overtime. By managing the data in a transparent manner, the City can create accountability by promoting its actions to the local community and can promote its actions to the local community.

Building recommissioning is a cost-effective sustainability strategy that improves energy and water performance, resolves maintenance problems, and improves indoor environmental comfort. Best management practices promote re-commissioning important facilities on a five-year cycle to maintain a high level of performance and to capture new performance opportunities. The City could undertake a building performance study including energy and water efficiency; HVAC upgrades and needs; automated thermostats; indoor lighting controls; interior lighting, and solar energy potential.

Delray Beach is already engaged in recommissioning existing systems and use of sustainable design techniques in new projects to become more sustainable and to save resources. Steps have been taken to install low-use lighting and more efficient cooling systems in City buildings, as wells as light-emitting diode (LED) street light replacements on West Atlantic, and use of high efficiency lights for the sports fields at Pompey Park. In conjunction with Waste Management, Delray Beach has also installed solar trash compactors at City owned sites. Delray Beach will continue this momentum by utilizing the goals, objectives, and policies defined in this Element.

SUSTAINABLE BUILDING STANDARDS

"Sustainable building" is the practice of creating structures and using processes that are environmentally responsible and resource-efficient throughout a building's life-cycle, from siting to design, construction, operation, maintenance, renovation and deconstruction.

Sustainable building practices conserve energy, materials, water, and natural land areas, and can also accomplish preservation of existing structures, and the diversion of old construction materials from land disposal sites through reuse and recycling. Additionally, Florida Statues state City-owned buildings "shall be constructed to comply with a national green building code or a sustainable building rating system." Section 255.2527, Florida Statutes.

Multiple nationally recognized guides, codes, and certification programs are available that can be used to fulfill the Florida legislature's requirement, and to encourage sustainable building in Delray Beach. The United States Green Building Council created the most widely used green building certification program in the world, the current program is commonly referred to as Leadership in Energy and Environmental Design ("LEED"). LEED certification provides a framework for creating highly efficient and cost-saving green buildings.

The International Green Construction Code is a sustainable building code created by the International Code Council that provides model language for municipalities to adopt within their Land Development Regulations to accomplish baseline sustainable building requirements. The Living Building Challenge Petal Certification is a program developed by the International Future Institute, providing building strategies to achieve net-zero or net-positive energy buildings, structures free of chemicals, and with overall lower net-energy footprint.

The Florida Green Building Coalition is a non-profit Florida corporation dedicated to improving the

built environment which offers membership to individuals, companies, and local governments. The Coalition certifies buildings (bronze, silver, and gold), according to a proprietary grading system, which considers Florida's climate and geography. The Florida Green Building Coalition is a resource for green building strategies, Delray Beach decided to pursue Green Local Government designation in 2007, and became a certified "silver" local government in 2016. The Florida Green Building Coalition Green Local Government Standard acknowledges cities and counties for outstanding environmental stewardship.

Delray Beach currently has established green building standards for proposed new construction projects in the Central Business District Zone that requires buildings 50,000 square feet or more within that Zone to be certified as Silver by the United States Green Building Council Leadership in Energy and Environmental Design standards or equivalent. Amd. Ord. 28-15 12/02/15.

To incentivize compliance, developers are required to post a performance bond to ensure construction projects within the Central Business District Zone achieve the identified green building standard. Once the project obtains the required level of certification the City refunds the value of the posted performance bond. If the developer achieves a lower certification level than required, or achieves partial certification, only a partial bond refund is offered proportional to the achieved criteria.

Delray Beach should evaluate the success of current green building practices and the Central Business District Zone performance bond. Delray Beach can then establish more rigorous standards for new City facilities and commercial development projects beyond the Central Business District Zone. The City should extend its sustainable building practices to all City facilities either through requiring participation in a prominent national rating system, or by designing their own menu of requirements, by borrowing techniques from various sustainable building codes. Adopting a green certification requirement for city-owned buildings and facilities is a nationally accepted practice.

Currently, all new development within the Central Business District is required to use reflective roofing or rooftop plantings. The reflective / green roofing is a design strategy that can improve cooling and heating energy use in buildings and benefit the urban climate. The reflective / green roof regulation should be included in new, city-wide sustainable design standards. A further discussion of reflective roofs is included in the Resiliency portion of this document addressing the Heat Island Effect.

DIVERSE ENERGY MIX

Delray Beach can promote opportunities to shift City away from fuels that generate greenhouse gases to cleaner, alternative, and renewable energy sources. By facilitating the use of renewable energy, Delray Beach can establish community and environmental leadership while furthering the goals of National and International coalitions promoting the reduction of greenhouse gas emissions (Climate Mayors Pledge and Sierra Clubs "Ready for 100" Campaign). Non-renewable sources of energy contribute to the degradation of land, water, and air, while releasing greenhouse gases into the atmosphere. There are many forms of renewable energy sources. Solar, wind, hydroelectric, biomass, geothermal power, hydrogen, are all recognized sources of renewable energy. Alternative fuels are transportation fuels other than gasoline and diesel, including but not limited to liquified natural gas, biodiesel, compressed natural gas, electricity, ethanol, hydrogen, and propane. Alternative fuels are cleaner can reduce harmful emissions and pollutants, specifically carbon dioxide (CO_2), which is a primary contributor to climate change.

Renewable energy strategies can increase community resiliency by providing alternative sources of electricity during fuel supply disruptions. Delray Beach has started to promote the transition towards renewable energy alternatives. The City became a Bronze SolSmart designee in 2017, for encouraging solar energy growth and removing obstacles to solar development in the community, making it easier for homes and businesses to go solar. SolSmart is a program by the Solar Foundation and the International City/County Management Association funded by the U.S. Department of Energy SunShot Initiative.

The City of Delray Beach currently has three free public parking electric charging stations and plans to install two more. Charging is free to the public, but there is a two-hour charging limit. Electric vehicle drivers frequently choose Delray Beach for charging due to the ample entertainment and dining options. The City now requires new private development within the Central Business District to provide 3% alternative fuel spaces.

In 2018, eight new life guard towers were installed on the Delray Municipal Beach, equipped with solar panels used to power fans or for charging purposes. The solar panels provide a comfortable work environment for the Ocean rescue staff.

Quick Facts:

- In Florida, natural gas, a nonrenewable fossil fuel, continues to be the dominate fuel source for electricity generation.
- In 2017, natural gas represented 71.6% of Florida's total utility-scale electric generation.
- In contrast, Florida's renewable energy facilities currently provide approximately only 3.8% of Florida's overall electric generation.
- Florida's three top renewable energy sources are solid biomass, solar energy, and municipal solid waste (largest source first).

Source: Florida Public Service Commission, *Review of the 2017 Ten-Year Site Plans of Florida's Electric Utilities*.

Delray Beach could purse a renewable energy and alternative energy feasibility study to understand City opportunities to transition away from fossil fuels. A feasibility study will determine the viability and cost/benefit of such transition for systems rather than a piecemeal approach. For example, solar system feasibility studies are routinely used for proposed solar projects and include a site analysis, environmental issues, financial modeling, interconnection costs analysis, permitting requirement analysis, etc. Renewable and alternative projects are often costly expenditures, and a feasibility study is the first step in transitioning the City away from fossil fuel dependence.

Promoting the use of renewable energy and alternative energy within the Delray Beach Planning area will help the community maintain a viable quality of life, assist in ensuring the reliable transmission of power, conserve environmental resources, and possibly provide a backup power supply and protect water quality.

SUSTAINABLE WASTE MANAGEMENT

The Palm Beach County Solid Waste Authority manages a countywide recycling program. Section 403.706(2)(a), Florida Statutes, requires each county to achieve the following recycling rate of solid waste: 70% by December 1, 2018, and 75% by December 31, 2020.

Quick Facts:
On September 10, 2017, Hurricane Irma knocked out power to 64% of all electricity customers in the Florida, nine days later (on September 19, 2017) about 1% or 100,000 customers remained without power.

According to the United States Energy Information Administration, Hurricane Irma caused substantially more outages than Hurricane Wilma in 2005 which impacted only 36% of Florida customers. Hurricane Irma cut power to nearly two-thirds of Florida's electricity customers.

Source: United States Energy Information Administration, *Today in Energy,* Sept. 20 2017.

The Palm Beach County Solid Waste Authority collects recyclable materials in blue and yellow bins. The following items are recycled in blue bins: aluminum cans, drink boxes, glass bottles and jars, milk and juice cartons, plastic bottles and containers, and steel cans. The following items are collected in the yellow bins: paper bags, unwanted mail, newspaper, cardboard, old paper, tissue/beverage boxes, magazines, catalogs, and telephone books. There are also multiple community drop-off locations for paper, carboard, and oil/grease within the City.

For construction and demolition materials the Palm Beach County Solid Waste Authority has an approved list of "Roll-Off Haulers," in order to ensure construction materials are disposed of legally. These haulers are required to dispose of the materials in permitted landfills or recycling facilities.

Hazardous materials placed in the waste stream can present multiple dangers. The Palm Beach County Solid Waste Authority provides for the proper disposal of chemical produces and hazardous substances at the Home Chemical and Recycling Center, at 1901 SW 4th Avenue (east) or 13400 South State Road 7 (west). County residents can also bring old outdated electronics to any of the Palm Beach County Solid Waste Authority locations. Old paints and coatings can be disposed of at Palm Beach County Authority transfer stations.

The City of Delray Beach has plans for ten textile recycling bins within the Planning Areas. Textile recycling is the process by which old clothing and other textiles are recovered for reuse or material recovery. Benefits of textile recycling include: a decrease in the amount of materials ending up in landfills, reduced consumption of energy and water, and pollution avoidance. It is important to note, natural fibers can take hundreds of years to decompose (which may also involve the release of greenhouse gases), and synthetic fiber textiles will never decompose.

Delray Beach could promote increased recycling in City managed areas, such as on Atlantic Ave, on the municipal beach, and in Pineapple Grove by providing additional recycle receptacles and educational signage.

Recycling and proper waste disposal requires a robust, multi lingual public engagement program. Delray Beach should continue to work with the Palm Beach County Solid Waste Authority and the designated waste hauler to: increase recycling rates and to promote the proper disposal of other materials, enhance community waste disposal outreach and education, collect data on waste disposal throughout the City, and maintain a centralized waste disposal database.

Tracking waste disopsal data can help the City identify new opportunities to improve sustainable waste disposal and work with its selected waste hauler. Currently, the City receives monthly data reports from the waste hauler, the data includes tonnage for garbage, recycling, vegetation, and bulk. While this allows the City to track trends, data collection could be improved by collection tonnage data by route. Such data could be

utilized to identify and target low performing areas of the City.

COMPOSTING

Compost is decomposed organic material that provides essential nutrients for plant growth. Composting programs exist throughout the Nation at the neighborhood, City, and regional levels, in urban, suburban, and rural areas.

Composting locally provides benefits such as: breeding a sustainable community culture, local job creation, improved soil composition, reduction of soil erosion, decreased need for garbage hauling, and diversion of materials from landfills, which in-turn extends the life of regional landfills.

Composting programs are categorized by source materials, such as the composting of yard trash (landscaping or land clearing debris), vegetative waste (source-separated material from non-residential sources such as fruits, vegetables & grains, including decomposable packaging), pre-consumer vegetative waste (that has not come in contact with end use or animal products / byproducts), and animal byproducts (source separated waste such as meat, fat, dairy or eggs from non-residential sources).

A Solid Waste Management Facility Permit is required by the Florida DEP to construct or operate a solid waste management facility producing compost. However, permits are not required for "disposal by persons of solid waste resulting from their own activities on their own property, if such waste is ordinary household waste from their residential property or is rocks, soils, trees, tree remains, and other vegetative matter that normally result from land development operation." Furthermore, a compost operation that produces less than 50 cubic yards of compost per year when the compost is produced and used on the property where the compost operation is located also does not require a permit. Section 403.707(2)(g), Florida Statutes.

Delray Beach can promote household composting practices and community garden composting less than 50 cubic yards, plus on-site composting of trash or yard debris associated with farming or agricultural activities. In the future, Delray Beach could explore opportunities to work with Mounts Botanical Garden of Palm Beach County, as well as, waste management agencies and haulers, to create community composting opportunities for the City.

URBAN AGRICULTURE AND COMMUNITY GARDENS

Urban agriculture is the practice of cultivating, processing, and distributing food within a local community. Urban or Suburban agriculture is an opportunity to reduce urban poverty and food insecurity, while enhancing the urban environment. The cost of supplying and distributing goods from rural areas to urban ones is rising. Similarly, "urban farming" is growing or producing food in a city or heavily populated town or municipality. Growing food within Delray Beach can help residents save money, provide access to fresh produce, and create jobs.

Backyard farming is when ordinary homeowners turn a portion of their backyard into a micro farm. Backyard farming can help families save money on food costs and enhance the natural environment of neighborhoods.

Delray Beach Ordinance Number 07-17, provides for urban agriculture such as commercial rooftop gardens, productive green walls, indoor farm facilities, urban farms, and other innovative food production in the urban area. Failure to maintain an outdoor Urban Agriculture site shall be a violation of City's Code of Ordinances. Urban farms are permitted to sell produce, flowers, and plants on site from 7:00 AM to 9:00 PM. A site plan is required for all Urban Agriculture.

Delray Beach is home to the wildly popular GreenMarket, where local businesses can sell their products. There is the Winter GreenMarket which opens on October 28th and is open every Saturday through May (at Old School Square Park on NE 2nd Avenue). The Summer GreenMarket runs from June 2nd through July 28th, and returns every Saturday (at the Tennis Center, 201 West Atlantic Avenue). The Winter GreenMarket was established in 1996, by the Delray Beach Community Redevelopment Agency. The GreenMarket hosts more than 65 premier food vendors featuring farm-to-fork produce, juice, eggs, milk, butter, cheese, jams,

baked goods, vegan and organic products, fresh cut flowers, and other unique gourmet items.

Another approach to increasing access to fresh fruits and vegetables is to encourage local production at community gardens. A "community garden" is defined as a garden space within an urbanized area that cultivated and cared for by the community. Delray Beach adopted a Community Garden Policy by Resolution 40-17 in 2017, to benefit the public health, the environment, the economy, and the quality of life in neighborhoods. The Community Garden program is intended to support the local production of fruits, vegetables, and herbs. The City neither sponsors nor organizes the community gardens in the Delray Beach Planning Area. Instead, local residents are encouraged to come together to establish their own garden by complying with the rules, regulations, laws, and ordinances of Delray Beach's program.

Community gardens are not intended to be used for commercial operation, however if organizers of a community garden wish to grow and sell produce at the community garden they can seek a permit for an Urban Farm. Community gardens are encouraged to donate surplus food to organizations that help feed less privileged members of the community. Community garden organizers are also permitted to sell the produce at the Delray Beach GreenMarket and use monies to support the garden's operating costs or to recover expenses associated with the gardening activities of its members.

Community gardens and urban agriculture present immense opportunity for enriching natural areas and cultivating a sense of community for residents. For example, in Delray Beach's Catherine Strong Park, over 300 trees have been planted to create a young orchard of leafy fruit trees. Community Greening, a Delray Beach nonprofit, brought together volunteers on Arbor Day in 2017, to plant mango, sugar apple, avocado, and guava trees. The orchard is intended to provide free fruits for community members and is an innovated example of utilizing public-private partnership for the benefit of the community. Catherine Strong Park is located at the southwest corner of Southwest 125 Terrace and Southwest Sixth Street. Community Greening is also engaged in similar projects throughout the City and County, revitalizing greenspaces and bringing the community together to learn about the long-term resiliency and sustainability benefits of green spaces.

Quick Fact:
About 150 million tons of plastic is floating in the world's oceans. World Economic Forum, *The New Plastics Economy 2016*.

GREEN IMPLEMENTATION ADVANCEMENT BOARD

Delray Beach should continue to support the activities of the Green Implementation Advancement Board. The Green Task Force was created by the City Commission 2009, and was tasked with reviewing City operations and policies and recommending strategies and projects for making Delray Beach a more sustainable community.

The Green Task Force produced *the Delray Beach Green Task Force Report* in 2009, and then became the Green Implementation Advancement Board in 2011. Projects include the installation of 138 solar trash compactors, the donation and installation of 6 electric voltaic charging stations, development of the annual Earth Day Celebration, and the expansion of water reuse infrastructure. The Delray Beach Green Implementation Advancement Board, actively produces policy and project suggestions to advance environmental conservation and reduce the production of harmful greenhouse gases within the City. Most recently the Green Implementation Advancement Board created the "Skip the Straw Initiative," a textile recycling program, and are working with local developers to update the Delray Beach green building requirements. Meetings are held in the Swinton Operation Complex, on the third Thursday of each month at 9:00 AM.

SUSTAINABLE PRODUCT USE

Delray Beach recognizes the need to encourage local businesses to use sustainable products and to incite change in today's throwaway culture. Single-use plastic products are defined as items intended to be used only once before they are thrown away or recycled. Plastics are harmful to

the environment and often end up polluting surface waters like the Atlantic Ocean, Lake Ida, and the canal system within the Delray Beach Planning Area.

Examples of single-use plastic products include:

- Plastic forks and knives,
- Plastic shopping bags,
- Plastic coffee cup lids,
- Plastic water bottles,
- Styrofoam and plastic take out containers, and
- Plastic straws.

In 2018, Delray Beach established the "Skip the Straw Initiative." The City started by engaging local businesses in the campaign and sharing information about the harmful impacts of single-use products. Public outreach is necessary in order to garner the support of the community. Participating establishments can promote the initiative by putting a "Skip the Straw" decal in their window and by educating customers on the sustainable benefits of ending plastic straw usage. The City of Delray Beach is planning on introducing an ordinance addressing single-use plastic products to first reduce and then eliminate the use of plastic straws by the businesses and restaurants in Downtown Delray Beach.

SUSTAINABLE PROCUREMENT

Delray Beach acknowledges the interrelated nature of economic, environmental, and social impacts of sustainability within City procurement and purchasing. The City seeks to create a sustainable procurement program that incentivizes the use of local, organic, environmentally friendly, re-useable, chemical free products, and vendors.

Sustainable procurement requirements are criteria that are compatible with the protection of the environment and society as guidelines for City purchasing. Sustainable procurement programs can provide cost savings, reduce waste, enhance the City's image, improve resource efficiency and drives markets for new products and services.

Delray Beach will develop a sustainable procurement plan that prioritizes energy-efficiency, renewable energy, and recycled, healthy, or environmentally preferable products. The City could promote bulk buying and reducing the variety of products purchased which can result in a net savings for the City.

Sustainable procurement also offers the dual benefit of increasing City employees' awareness of the City's sustainability goals objectives and policies. Delray Beach government might also consider the benefits of expanding City storage potential, so that left-over durable goods can be saved rather than new procurement.

GREENING CITY EVENTS

A "green" event is one that provides ample opportunities for recycling, discourages the use and sale of bottled water and other single-use plastic products, utilizes local foods/services, and even allows for public composting opportunities. Delray Beach can encourage "green" community events by developing a green event policy document with criteria to guide the planning of City sponsored events and providing incentives for privately held green events.

GREEN BLUE ECONOMY

The local Delray Beach economy and business atmosphere would benefit from the development of a sustainable business program that promotes public health, environmental conservation, and community resiliency. The program could serve as a resource for business stakeholders of all sizes, and provide assistance with implementation of resilient, environmentally friendly, energy efficient, and greenhouse gas reduction strategies. Increasing the sustainability and resiliency of Delray Beach can only be achieved through local action.

A "green" economy is commonly associated with economic growth due to sustainable practices/technologies and reduction of environmental risks. A "blue" economy specifically relates the unique range of economic sectors and activities found in coastal communities and related policies that ensure the sustainable use of oceanic resources. Typical blue economies are related to tourism, maritime, other water related activities, and coastal protection. A blue economy promotes economic growth, environmental conservation, resilient business practices, and social inclusion. Implementation of the

Conservation, Sustainability, and Resiliency Element will support the growth of a local green blue economy in Delray Beach.

The City can collaborate with organizations including, but not limited to, the Delray Beach Community Redevelopment Agency, Delray Beach Downtown Redevelopment Authority, and the Greater Delray Beach Chamber of Commerce to create a blue green business program. Creation of a blue green business program will support economic growth, resiliency, sustainability, and create employment opportunities in Delray Beach's emerging green blue economy. By fostering partnerships with the business community, Delray Beach will create an increased demand in skilled labor needed for energy efficiency retrofits, solar installation, new use for recycled materials, growing and processing of local food, and designing /maintaining the public infrastructure. Reduction of greenhouse gases and energy conservation can produce direct cost savings for local business owners. The City will engage local business stakeholders in sustainability and resiliency education, programs, and best practice strategies while promoting economic growth. LINK TO ECONOMIC PROSPERITY.

INCREASING CITYWIDE RESILIENCE TO SEA LEVEL RISE, FLOODING, STORMS AND OTHER DISRUPTIVE EVENTS

The conservation and sustainability strategies discussed in this document are integrally tied to the resiliency of Delray Beach. The incorporation of resiliency and sustainability strategies into local government planning is vital for protecting Delray Beach's infrastructure, planning for future capital improvement projects, and preparing Delray Beach for climate change impacts.

Quick Fact:
For every 1$ spent on hazard mitigation and resilience saves an average of 6$ in future disaster costs. Source: National Institute of Building Sciences, *Natural Hazard Mitigation Saves: 2017 Interim Report*.

Southeast Florida's climate naturally experiences variability in weather patterns that historically have included periods of extended droughts and water shortages; high volume rain events and associated flood threats; and, storm events such as hurricanes that bring severe wind and storm surge risks. Gainesville Climate Institute, *Florida's Climate: Changes, Variations, & Impacts*.

Delray Beach has a tropical climate with rainfall throughout the year, the average annual temperature is 74 degrees Fahrenheit. The City experiences a short dry season and receives on average 4.9 feet of rain annually. June is known as the wettest month, and December as the driest. In the coming decades, temperatures across the southeast region of the United States are expected to increase along with the number of hot days (95 degrees or hotter) during the year. Higher temperatures have the capacity to increase the intensity of hurricanes in the Atlantic and the amount of rainfall in precipitation events. Hot weather contributes to the formation of harmful air pollutants and allergens, increased algae blooms, and disease-causing agents in inland and coastal waterways. National Climate Assessment, *United States National Climate Assessment*.

The coastal location of Delray Beach, combined with a high-water table, and the variability of the Intracoastal Waterway, makes the City vulnerable to flooding, rising sea levels, and coastal erosion. While hurricanes, tropical storms, and heavy rains are part of Delray Beach's seasonal weather patterns, Palm Beach County has also experienced weather extremes in recent years. Strategic decision making is necessary to prevent and recover from severe inland flooding, annual King tides, extreme high tides – all which strain the flood control system, impact private property and public infrastructure, and disrupt essential pristine ecosystems. As the City plans for new capital improvement projects and economic development within the Delray Beach Planning Area, the variability of ecological conditions should be factored into design.

It is important to note that not only coastal areas will receive climate change impacts, but that inland areas will also be faced with the challenge of managing higher-volume and frequency rain

events that will stress drainage and other infrastructure. Interior portions of the City may become vulnerable with the diminished drainage capacity of the regional system. As a result, swales may have to be widened or deepened, stormwater pipes may need upgrading, and the wastewater systems may need additional capacity to handle increased water table heights.

Delray Beach has annually experienced flooding in low lying areas near the Intracoastal Waterway during seasonal high tides or during the raining season. "Nuisance flooding" refers to low levels of stormwater inundation that can cause standing water throughout a community which may disrupt routine daily activities. Canals which drain into the Intracoastal Waterway utilize gravity, thus when sea levels are experiencing a seasonal high the water control gate on the seaward side of the system is unable to effectively drain. Flooding can also result from the rising water table in the region. During rain events, the rain saturates the ground as the water table rises, as a result, retention areas within Delray Beach will have less capacity to hold runoff.

Areas impacted by King Tides and the rainy season include:

- Marina Way,
- Veteran's Park, low lying areas on either side of the Intracoastal, and
- Marina Historic District.

Source: Delray Beach Rising Waters Task Force and ESA Associates, *Elevating the Discussion of Rising Waters*, 2017.

As storm events strengthen, and the average temperatures in the Atlantic Ocean become warmer, the magnitude of storm surge is predicted to increase. Storm surge will largely impact the barrier island areas of the City and will likely cause mainland systems to become inundated.

Saltwater intrusion of the Biscayne aquifer is closely monitored throughout the region. As sea levels rise and freshwater is pulled from the aquifer, the head of pressure that keeps the saltwater at bay may become compromised. It is important for Delray Beach to continue to balance the demand and supply of drinking water for the community. As mentioned previously, to avoid saltwater intrusion the City of Delray Beach constructed six western wellfields and withdrawals from eastern wellfield wells are restricted and operated on a daily rotation. Palm Beach County's 2015 Capital Improvement Plan suggests $210 million should be spent by 2020 on the southern portion of the County focusing on water and wastewater infrastructure.

Delray Beach will have the opportunity to build back better in ways which mitigate and adapt to climate change impacts. When new developments and redevelopment projects are proposed within the Planning Area, the City can utilize best practice mitigation strategies to reduce flood risks and increase resiliency.

Delray Beach shall continue to work with the SFWMD, the Southeast Regional Climate Change Compact, the Southeast Palm Beach County Micro-Regional Group, and the Lake Worth Drainage District to address these future hydrological challenges. A few key strategies include: reduce and avoid development in flood prone areas, strengthen building requirements for new buildings and infrastructure, increasing the base-flood elevation of structures, reduction of impervious surfaces, and informational multi-lingual outreach to educate residents.

ADAPTING TO SEA LEVEL RISE WITH THE SOUTHEAST REGIONAL CLIMATE CHANGE COMPACT

In 2010, Southeast Florida Regional Climate Compact (the "Compact") was formed by Broward, Miami-Dade, Monroe, and Palm Beach Counties to establish unified climate change mitigation and adaptation strategies across the four counties. In support of the Southeast Florida Regional Climate Compact and the Regional Climate Action Plan, Delray Beach signed onto the Mayor's Climate Action Pledge in January 2014.

The Compact created the Regional Climate Action Plan in 2012, which outlines recommendations to advance climate adaption and mitigation techniques throughout Southeast Florida. The Regional Climate Action Plan ("RCAP") was updated in 2017, to RCAP version 2.0 and includes three new goal areas (regional economic resilience, social equity, and public health). RCAP provides a framework for local and regional implementation of resiliency strategies.

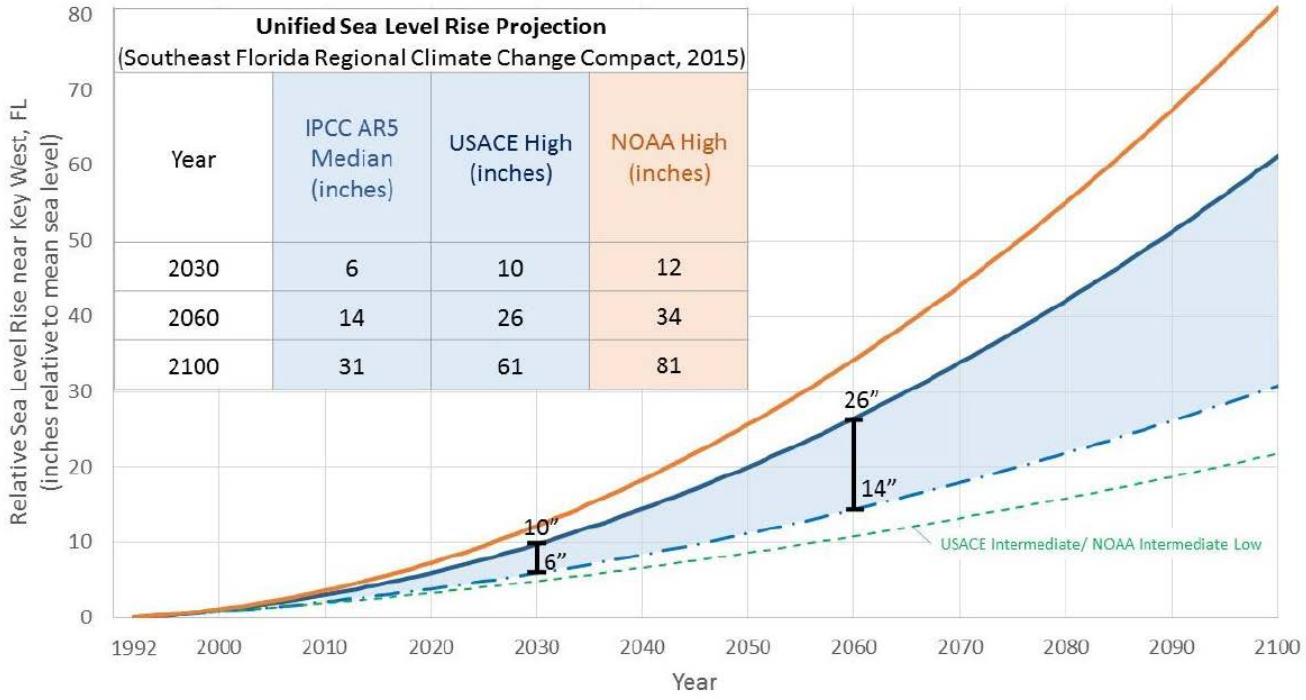
The Compact developed a baseline range of sea level rise projections as a basis for developing risk informed adaptation strategies. The Unified Sea Level Rise Projection was updated in 2015, and incorporates newly observed and published sea level rise data into one coherent model for the region. The *2015 Unified Sea Level Rise Projection* projects sea level rise of 6 to 10 inches by 2030, and 14 to 26 inches by 2060, and 31 to 61 inches by 2100.

Sea level rise projections for South Florida are based on historic tidal information from the following sources: (1) tidal gauge in Key West, and in dependent sea level rise models by the (2) United States Army Corps of Engineers, (3) the National Oceanic and Atmospheric Administration, (4) Intergovernmental Panel on the Climate Change, (5) the World Meteorological Organization.

Planning for sea level rise demands planning for variable conditions. The Compact has been and will continue to be instrumental in planning for future sea level rise projections and climate mitigation strategies in the region. The City of Delray beach should continue to participate in the Compact as a city-member, by pursuing Delray Beach specific scientific data, projections, and strategies. LINK TO STRATEGIC PARTNERSHIPS.

Unified Sea Level Rise Projection
(Southeast Florida Regional Climate Change Compact, 2015)

Year	IPCC AR5 Median (inches)	USACE High (inches)	NOAA High (inches)
2030	6	10	12
2060	14	26	34
2100	31	61	81



SOUTHEAST PALM BEACH COUNTY MICRO-REGIONAL GROUP

The Southeast Palm Beach County Micro-Regional Group, also known as the "inlet-to-inlet collaborative" originated in 2017, and is focused on addressing environmental and sustainability issues from the inter-jurisdictional perspective of the municipalities that share the Intracoastal waterway from Boca Raton to Boynton Beach.

Delray Beach is a founding member and the Collaborative includes: Boca Raton, Highland Beach, and Boynton Beach. In the future this partnership will be used as a vehicle to implement the Southeast Regional Climate Change Compact's Regional Climate Action Plan 2.0 and develop micro-regional solutions related to climate change. LINK TO STRATEGIC PARTNERSHIPS.

NATIONAL FLOOD INSURANCE PROGRAM AND FLOOD PRONE AREAS

Flood zones identified by the Federal Emergency Management Agency (FEMA) are identified on Map CSR-xx. The FEMA flood zone categories are described in the Table CSR-xx.

Delray Beach has adopted and enforced floodplain management ordinances to reduce future flood damage. National Flood Insurance Program rates depend on flood maps created by the National Flood Insurance Program. These maps are periodically updated, new maps for Palm Beach County went into effect March 2017. This is the first map revision since the 1980s.

Most of the area east of the Intracoastal Waterway is Zone AE, and the areas between the Intracoastal Waterway and I-95 are predominately Zone X, with areas of Zone AE and X500. Specific flood zone boundaries are identified on FIRM Community Panel Number 12099C0979D, effective 10/05/2017. The City has a flood damage protection program which is certified by FEMA.

National Flood Insurance Program flood maps are based off of historic flooding data and do not incorporate expected changing ecological conditions such as sea level rise, increase water table heights, and participation variability. Therefore, the National Flood Insurance Program maps are not adequate for planning future economic development or City capital improvement expenditures that may be necessitated by level rise impacts.

Table CSR-7
Federal Emergency Management Agency
Flood Zone Descriptions

Zone	Description
AE	Areas subject to inundation by the 1-percent-annual-chance flood event determined by detailed methods. Base Flood Elevations (BFEs) are shown. Mandatory flood insurance purchase requirements and floodplain management standards apply.
VE	Areas subject to inundation by the 1-percent-annual-chance flood event with additional hazards due to storm-induced velocity wave action. Base Flood Elevations (BFEs) derived from detailed hydraulic analyses are shown. Mandatory flood insurance purchase. requirements and floodplain management standards apply.
X	Areas of 0.2-percent-annual-chance floodplain, areas of 1-percent-annual-chance (base flood) sheet flow flooding with average depths of less than 1 foot, areas of base flood stream flooding with a contributing drainage area of less than 1 square mile or areas protected from the base flood by levees. No BFEs or depths are shown in this zone and insurance purchase is not required, and; Areas outside the 0.2-percent-annual-chance floodplain. No BFEs or depths are shown in this zone, and insurance purchase is not required.
X500	Same as Zone X, however this zone is between the 100 and 500-year flood zone.

Source: Federal Emergency Management Agency (FEMA)

The Community Rating System is a voluntary program for National Flood Insurance Program participating communities. Delray Beach has received a level 8 Community Rating Score. Federal Emergency Management Agency, *Community Rating System Communities and their Classes*, 2017.

The Community Rating System includes 10 classes, with Class 1 being the highest. For Community Rating System participating communities, flood insurance premium rates are discounted in increments of 5% [i.e., a Class 1 community would receive a 45% premium discount, while a Class 9 community would receive a 5% discount (Class 10 is for non-participating Cities which receive no discount)].

Delray Beach residents currently receive 10% premium discount for the City's participation in floodplain management Community Rating System activities. The City could further improve its score by pursuing climate, future conditions, and sea level rise activities within the Community Rating Manual. There are at least ten different areas within the Community Rating System where credits can be gained for efforts such as a City-wide vulnerability assessment, or accounting for sea level rise in stormwater master planning. Improving the rating through these activities would provide greater insurance discounts and an added incentive for residents to purchasing flood insurance.

Similar to the Southeast Regional Climate Change Compact's sea level rise projections, the Community Rating System has adopted the National Oceanic Atmospheric Administration Intermediate-High projection as its minimum sea level rise standard. National Flood Insurance Program, *Community Rating System, Coordinator's Manual, FIA- 15/2017*.

VULNERABILITY ASSESSMENT

Vulnerability assessments can be used to integrate the topography and critical assets of Delray Beach with sea level rise scenarios, increased water table heights, and storm surge projections. A vulnerability assessment is used to identify and assess critical City controlled infrastructure, systems, and identify the vulnerability of areas or segments of the community in order to properly plan for the life of structures, improvements, and upgrades.

Climate change impacts will be felt throughout the Delray Beach Planning Area and not just along the coast or Intracoastal Waterway. Delray Beach would benefit from a City-wide vulnerability assessment that identifies City-owned buildings, water and wastewater treatment plants, pumping stations, stormwater systems, roads, railways, bridges, transportation infrastructure, power generating facilities and transmission lines, at-risk populations, hospitals, historic sites, and designated Palm Beach County Emergency Shelters.

It is imperative for the City to obtain and track data pertaining to the vulnerability of City assets, roads, and critical facilities, in order to better plan capital improvement projects and define supporting policies for highly vulnerable areas within the Delray Beach Planning Area.

The City's 2018 Stormwater Management Master Plan Update includes assumptions for sea level rise based on 30-year and 75-year projections identified in the City of Delray Beach Intracoastal Waterway Water Level & Infrastructure Vulnerability Study, conducted in 2018. The Stormwater Management Master Plan Update identifies stormwater management challenges due to impacts of sea level rise and localized flooding. These issues coupled with a rising groundwater table will impact primary and secondary drainage systems, ultimately reducing the capacity of these systems which can result in flooding of street, buildings and natural systems.

The Stormwater Management Master Plan Update will provide current data on elevations of structures and their projected future impact which provides the City with additional tools for evaluating future projects. The goal of the Stormwater Management Master Plan Update is to create a plan to address water resource issues and problems, including but not limited to, drainage problems, street flooding, tidal flooding, inadequate infrastructure, stormwater quality and recharge as well as other stormwater related issues or problems. The Update also evaluates the

adequacy and condition of the drainage facilities, determines the level of service for flood protection for the City's sub-watersheds and identifies solutions. The Update will address the current and future needs of the City based on growth and climatological changes that have and will continue to impact the City's stormwater management system.

SHORELINE PROTECTION, SEAWALL RESTORATION, AND LIVING SHORELINES

The beach and dune system are Delray Beach's first line of defense against storm surge and waves. The dune system provides a rich coastal environment full of natural resources. The beach is heavily used for recreational activities. Delray Beach has 2.8 miles of oceanfront shoreline, all of which are deemed critically eroded by the state. The beach is 100% accessible and 51% of the frontage is contained within two the Municipal Beach and Atlantic Dunes Park.

Coastal dunes stabilize the beach and provide important storm protection. The sandy dune provides habitat for over two hundred plant and animal species. The City recognizes the importance of exotic species removal, the protection of the beach dunes as resiliency features, and as a natural resource which must be preserved.

The Florida DEP maintains the Coastal Construction Control Line, a regulatory program to protect Florida's beaches and dunes while ensuring reasonable enjoyment of private property. The program minimizes new man-made structures proposed beyond the Coastal Construction Control Line.

Erosion, coastal development, and the rising sea levels can impact the ability of waterfront infrastructure to rebound after storm impacts. The City's response to erosion should utilize a holistic strategy that will ensure a resilient coastline, shoreline reconstruction, and beach management.

Quick Fact:
In 2018, the City added two feet to the seawall protecting Veteran's Park to provide flood protection.

The City should continue to work with the Palm Beach County Department of Environmental Resource Management to coordinate the protection and management of Lake Ida, the Municipal Beach, shared natural areas, and shorelines. See STRATEGIC PARTNERSHIPS ELEMENT.

The City should also continue to coordinate with the Palm Beach County Department of Environmental Resource Management, as well as State and Federal agencies on beach nourishment projects and implementation of the Palm Beach County Shoreline Protection Plan. To date Delray Beach has participated in eight nourishment projects since the initial nourishment in 1973. Periodic nourishment is provided every five years, and occasional storm damage repair projects are used as a response to losses from the hurricane season. For detailed information See COASTAL MANAGEMENT ELEMENT.

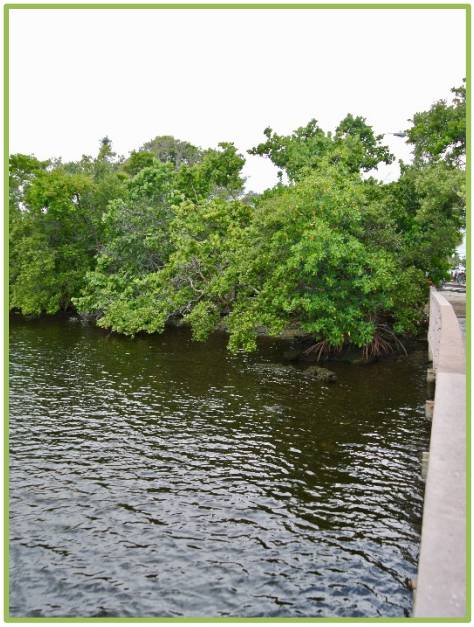
The City of Delray Beach Intracoastal Waterway Water Level & Infrastructure Vulnerability Study, conducted in 2018, to assess existing seawalls and outfalls along the intracoastal waterway. The assessment included a survey of current conditions. Backflow devices have been installed on select outfalls and future updates have been identified and will be implemented by the Public Works Department.

The Intracoastal Waterway Level & Infrastructure Vulnerability Study inventories current conditions

and develops recommendations to reduce the risks of high tide flooding for both public and private properties. Sea level projections from the Southeast Florida Regional Climate Compact served as the basis for the Study's identification of vulnerable areas. Target elevations are identified for future sea wall design standards. Case studies are summarized for implementation of seawall retrofitting programs.

Adaptation techniques promoted by the Southeast Regional Climate Change Compact include evaluating sea walls and other critical shoreline infrastructure present within the community and planning for updates using best available climate change data. The City may pursue updating its current sea wall criteria for existing or newly constructed seawalls, as well as, policy relating to living shorelines.

A "living shoreline" is a management practice that provides erosion control benefits; protects, restores, or enhances natural shoreline habitat; and maintains coastal processes through the strategic placement of plants, stone, sand, and other structural organic materials. National Oceanic and Atmospheric Administration, *A Guide to National Shoreline Data and Terms*, 2016. Living shoreline projects incorporate a variety of materials such as wetland plants, sand, wood, oyster shell, coir fiber logs, and native rocks. Living shorelines can be a great tool to armor the shoreline while stabilizing natural coastal habitats. Living shorelines cannot be used in every location and have proven to be most useful in natural areas where there is not already a "hard" sea wall in place. Living sea walls are considered restoration activities and not a technique for mitigation.



SECONDARY IMPACTS OF CLIMATE CHANGE

Climate change impacts causing flooding throughout Delray Beach also have the capacity to cause vector-borne diseases or increased blue-green algae blooms. Sitting water or shallow puddles that fail to drain are the ideal environment for mosquitos that can spread water-borne illnesses and viral diseases, like the Zika Virus.

Stormwater run-off from intense storms can carry fertilizers into drainage areas and canals. Warm weather, mixed with the slow-moving character of the canals or lakes creates favorable conditions for algae growth. Algae-blooms can be harmful to the natural ecological systems, particularly within Delray Beach, and can impact human health through emitted toxins.

Green-blue algae blooms are expected to increase with climate change due to high volume precipitation events and warmer weather. The City could monitor and consider such impacts during policy development and adaptation planning.

HEAT ISLAND EFFECT

The "heat island effect" refers to earth's altered surface climate caused by commonly used building materials such as concrete and asphalt, which absorb the sun's energy and releases heat. During the hot summer months, urbanized areas experience higher temperatures than rural communities because built structures and surfaces have replaced the natural vegetated landscape. The built environment takes time to cool down once the sun sets.

The United States EPA began studying the heat island effect in 1998, in the Urban Heat Island Pilot Project. The project concluded the hottest spots within a built environment are often large rooftops and the coolest areas were those covered with vegetation. There is significant potential to address the heat island affect with mitigation strategies focused on roofs, improving the City's tree canopy coverage, and preserving existing greenspaces.

The heat island effect has negative consequences such as:

- Increased energy consumption required for air-conditioned buildings
- Increased air pollution
- Negative health impacts for the public population. Those most susceptible to heat island include pregnant woman, young children, the elderly, people who work outdoors, and people with certain preexisting conditions.
- Increased stress on City-wide natural ecosystems
- Increased water consumption
- Economic impact to local tourism

Communities across the nation are taking actions to reduce urban heat islands using five strategies: (1) increasing tree and vegetative cover, (2) installing green roofs, (3) installing reflective roofs, (4) using cool pavement, and (5) utilizing smart growth practices that constrain building footprint and parking spaces. United States EPA, *Heat Island Colling Strategies.*

"Green roofs" refer to roofs that have been covered with plants or host a garden. Green roofs can be expensive, but unlike reflective roofs, green roofs have the added benefit of managing stormwater runoff, which can prove useful in the rainy season in low lying areas.

Trees and plants cool the environment and are the most useful mitigation strategy for the heat island effect. The City of Delray Beach would benefit from a tree canopy analysis that would determine the number of trees within the community providing shade when viewed from above. The City can then adopt specific goals for tree canopy cover to help reduce the heat island effect and enhance the built environment.

Reflective roofs are a way to conserve energy. Specifically, a "reflective roof" or a "cool roof" is one that has been designed to reflect more sunlight and absorb less heat than a standard roof. Reflective roofs utilize some type of paint, sheet covering, or highly reflective tiles or shingles. Reflective roofs and green roofs can provide energy savings, improve indoor comfort, reduce local air temperatures, and reduce greenhouse gas emissions associated with energy consumption.

"Cool Pavement" refers to solar reflective pavements that stay cooler in the sun than traditional pavements. Like conventional dark roofs, dark pavements absorb 80-95% of sunlight, which directly warms the local air and radiates heat into the atmosphere. Cool pavement techniques are currently utilized in California, and related benefits include energy savings, emission reductions, and increased comfort and health.

By conserving natural areas within the Delray Beach Planning Area and promoting cool or green roofs in building design, the City will protect human health, conserve energy, and preserve the natural environment. All new development within the Central Business District is required to use reflective roofing or rooftop plantings in order to lower the temperature of local atmosphere in the downtown area. Due to the built character of the City, strategies to reduce the heat island effect should be used in future capital improvement projects and integrated into existing development plans.

CONSERVATION, SUSTAINABILITY, AND RESILIENCY PUBLIC OUTREACH

The conservation, sustainability, and resiliency, of Delray Beach depends on the widespread understanding of the critical relationship between resource use and environmental degradation. Public involvement is the foundation for a sustainable democracy. Delray Beach's greenhouse gas emission largely result from community activities; thus, it is imperative to encourage community buy-in to support Delray Beach's conservation, sustainability, and resiliency goals. Delray Beach can create opportunities for individuals and institutions to design, develop, and apply sustainability and resiliency practices into their lives and operations.

Information about conservation, sustainability, and resiliency can be made readily available in various formats to empower residents with knowledge regarding energy conservation, renewable energy opportunities, environmental conservation, and the steps Delray Beach's government has taken to green the local community.

Delray Beach sustainability and resiliency civic engagement will be inclusive of all members of the community, particularly neighborhoods and groups of individuals struggling with economic stability or vulnerable populations with less access to vital necessities. Public outreach strategies can include identification of socially vulnerable populations at risk from aging infrastructure or lack of economic capacity and develop strategies that are individualized to fit the needs of those areas

In 2017, as part of the City's effort to educate residents about climate vulnerability and adaption, the Delray Beach Office of Sustainability organized the 2nd Annual King Tide presentation on green and gray shoreline strategies. Delray Beach Office of Sustainability can maintain and enhance these public outreach efforts. The City can engage in community-wide dialogue regarding flooding, sea level rise, weather-related events, and emergency management to support community-wide preparedness for climate change impacts.

In 1998, the Sandoway Discover Center opened in Delray Beach. The Sandoway Discovery Center is a coastal ecosystems and marine life center, that is open to the public. The Center presents educational exhibits and programs for locals, tourists, and visitors of all ages. The Center currently hosts field trips and offers educational outreach programs related to sea level rise, climate change, coral reefs, amphibians and birds, insects, plants and seeds, sea turtles, and reptiles. The Center represents early beach-front living, the lawn is thick with natural local beach dune vegetation.

The Sandoway House Nature Center is a historic home built in 1936, where one can experience Delray's rich history through a self-guided tour. Palm Beach County owns the property and leases it the City of Delray Beach, who in turn, subleases the property to the Friends of Sandoway Nature Center, inc. The City could coordinate with the Friends of Sandoway House to create and coordinate public education programs. LINK TO HISTORIC PRESERVATION ELEMENT.

As part of community outreach the City can develop a youth-component to engage young people in learning about conservation, sustainability, and resiliency, and to provide a forum for sharing their ideas about improving their environment.

The Office of Sustainability and the City's Education Coordinator have already begun reaching out to Atlantic High School, Carver Middle School, and several Elementary Schools to enrich their curriculum with sustainability concepts and provide learning opportunities for the students. These activities should continue. Delray

Beach would benefit from developing long term strategic partnerships with institutions of higher learning such as Florida Atlantic University, Digital Media Arts College, Keiser University, Palm each Atlantic University, Nova Southeastern, Lynn University, and Palm Beach State College. Academic partnerships can yield the City a wealth of resources, students, administration, and professors can get involved with Delray Beach's sustainability and resiliency goals and assist with implementation.

SUSTAINABILITY AND CLIMATE ACTION PLAN

The purpose of creating a Delray Beach Sustainability and Climate Action Plan is to link the status quo of the City with economic health, sustainability strategies, resiliency techniques, and community support. By integrating efforts into a plan, improving the sustainability and resiliency of Delray Beach will become a transparent process allowing for dialogue between the City, community members, and business stakeholders.

Methods for promoting conservation, sustainability, and resiliency in the community should range from passive informational strategies, to active involvement with targeted community groups.

Delray Beach can foster stakeholder partnerships with the public and private sectors through informational programs, public outreach, and other initiatives. To advance sustainability goals, the City should develop a Sustainability and Climate Action Plan that benchmarks current conditions, identifies opportunities, and measures successes.

RECOMMENDATIONS

The Conservation, Resiliency and Sustainability Element goals, objectives, policies, performance measures, and strategies reflect the following needs and recommendations suggested by the community:

The City recognizes that collecting data related to air quality may be outside of the purview of City operations and regulatory authority, but there is an opportunity with monitoring and tracking the City's greenhouse gas emissions. Such inventorying of the City's fuel and energy use support multiple benefits such as reducing operating costs as well as reducing transportation-related greenhouse gas emissions.

Protection Air Resource Recommendations:

- Develop a greenhouse gas inventory to better link transportation and air quality improvements
- Implement City operations and assets in a manner that reduces greenhouse gas emissions, fuel use and saves the City in operating costs over time.

The City already has a proactive utility and programming aimed at improving water quality and water conservation for the benefit of the resource. Continuing to adapt those policies will meet growing populations' needs while protecting water quality.

The City's highest priorities should be on the use of landscaping, sound development principles and elimination of septic systems.

Conserve and Protection Water Resources Recommendations:

- The City should improve data collection to identify and reduce water quality impacts to improve water resources for recreation, swimming and environmental benefits.
- The City should continue aggressive water conservation efforts and development of new regional water supply resources.
- Continuing to partner on water quality, monitoring and water resource improvement should continue to be a priority for the City.

Conserve and Protect Minerals and Soils Recommendations:

- Converting septic systems to centralized wastewater should continue to be a goal of the City's infrastructure programming.
- Utilizing strong principles of streetscaping and shoreline protection should be a priority to protecting mineral and soil resources.

Protect Land for the Benefit of Habitat and Species Recommendations:

- The City should continue to protect critically designated conservation, recreation and open space properties for the benefit of the habitat and species that rely upon them.
- The City should develop funds to maintain specially designed properties to keep them in a natural state and avoid habitat transitions or exotic infestation.
- The City should protect key wetlands habitat and continue to require wetlands preservation and enhancement for public and private lands.
- Regional collaboration with the County or other municipalities shall continue to be a focus to protect extra-jurisdictional natural resources.

Promote Energy Efficiency and Diversify the Energy Mix Recommendations:

- Energy efficiency and renewable energy shall be new priorities for the City in terms of facilitating more projects on City infrastructure, assets and buildings as well as private property installations.
- The City should commit to building its own assets to the most energy efficient standards possible to save costs on future asset operations.

Support Sustainable City Operations and Practices that Increase the Triple Bottom Line Recommendations:

- The City should create a baseline of existing sustainability practices and identify opportunities to improve those through development of a Sustainability and Climate Plan.
- Outreach and education opportunities are critical for residents and business owners to see sustainability initiatives in practice to improve the cultural identification with green initiatives.
- A priority shall be to increase facilitating sustainability strategies that will promote green businesses and the green economy.

Support Sustainable Waste Management, Urban Agriculture and Food Programs Recommendations:

- Water management programs in partnership with the City's waste hauler and the County's Solid Waste Authority should focus on more innovation in recycling and repurposing materials.
- Engagement of commercial businesses, particularly the restaurant industry, should be a priority to increase opportunities for composting and recycling.
- Education and outreach to residents and business owners is an important goal to improve recycling, composting and increasing urban agriculture.
- The City can and should facilitate opportunities for residents to participate in community gardens and individual urban agriculture.

Increase Citywide Resiliency to Sea Level Rise and Weather-Related Events Equitably for all City Residents Recommendations:

- Data collection is critical for the City's resiliency strategies and the City must invest in accurate data to make informed planning decisions about future flood risk.
- The City must make climate adaptation and sea level planning a cornerstone of all planning efforts for infrastructure, habitat and development.
- Harmonizing current efforts, such as seawall vulnerability and stormwater management planning, should serve as a foundation for creation of a City Sustainability and Climate Plan.
- Green infrastructure projects should be increased to passively manage precipitation, flooding and water resource recovery.
- Reducing vulnerability must be a key goal of capital planning projects.
- The City should continue its partnerships and involvement in regional and micro-regional planning efforts to exchange information and learn about successful climate planning case studies for projects and programs.

Emergency Preparedness Recommendations:

- Emergency planning shall be coordinated among departments citywide and in conjunction with County efforts.
- The City must calibrate emergency management planning with future flood risk and capital improvements shall consider these impacts.
- Education and outreach regarding individual preparedness and business continuity are critical to reducing recovery intervals and the City shall link such efforts with its floodplain management programming.

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CONSERVATION, SUSTAINABILITY AND RESILIENCY

Location of Native Ecosystems and Conservation Areas [MAP CSR-1]

- Location of Native Ecosystems
- Open Space (OS) Future Land Use District
- Conservation (OS-C) Future Land Use Districts
- Environmentally Sensitive Sites
- Delray Beach Boundary
- Planning Area
- Palm Beach County Jurisdiction

NATIVE ECOSYSTEMS	ACRES
DELRAY OAKS NATURAL AREA	24.48
LEON M. WEEKES ENVIRONMENTAL PRESERVE	12.37
ORCHARD VIEW PARK	5.94
ATLANTIC DUNES PARK	4.65
HURRICANE PINES	0.14
TOTAL	**47.57**

ENVIRONMENTALLY SENSITIVE SITES	ACRES
DONNELLY TRACT	1.64
FIND PARCEL MSA 645	7.41
FIND PARCEL MSA 650 (MANGROVE PARK)	4.05
HAMMOCK RESERVE PRESERVE AREA	4.86
TOTAL	**17.96**

0 0.5 1 Miles

City of Delray Beach
Planning & Zoning Division

Print Date: 10/2/2018

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CONSERVATION, SUSTAINABILITY AND RESILIENCY

Coastal Areas Subject to Flooding [MAP CSR-2]

FEMA Flood Zones

Effective October 5, 2017
Source: Palm Beach County Information Services

SPECIAL FLOOD HAZARD AREAS
SUBJECT TO INUNDATION BY THE
1% ANNUAL CHANCE FLOOD (100-YEAR)

ZONE AE - Base Flood Elevations determined.

ZONE VE - Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

ZONE X - Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

Areas determined to be outside the 0.2% annual chance (500-Year) floodplain.

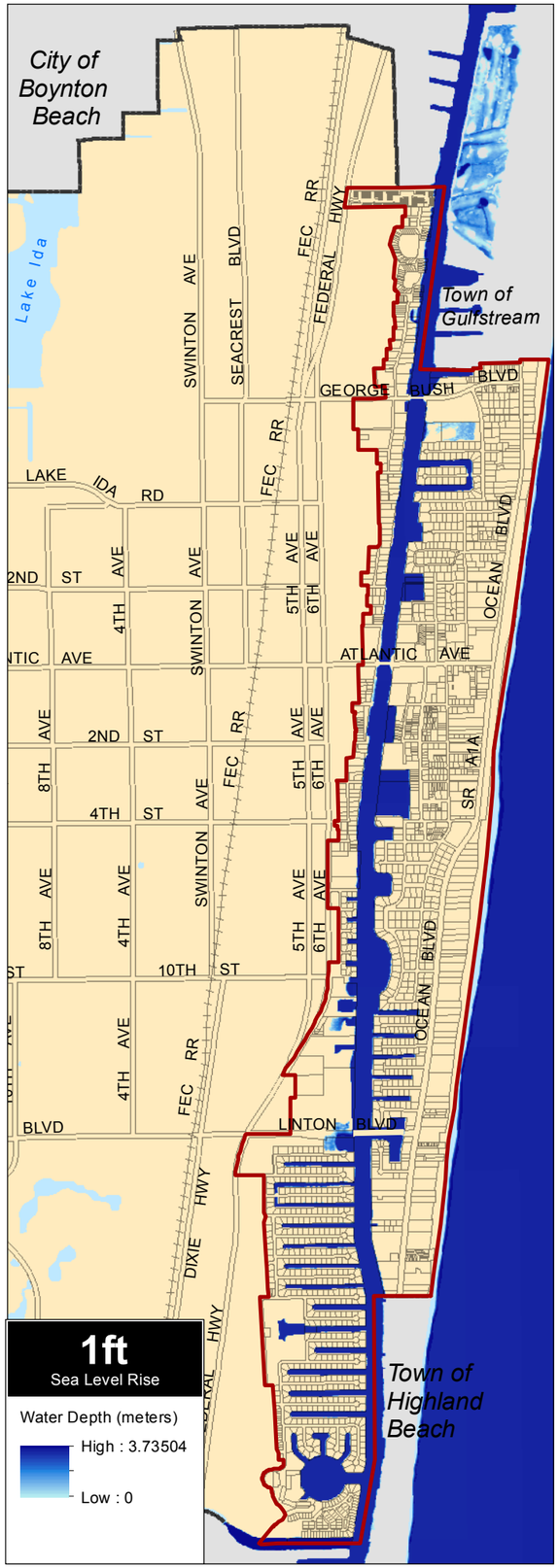
Coastal Planning Area

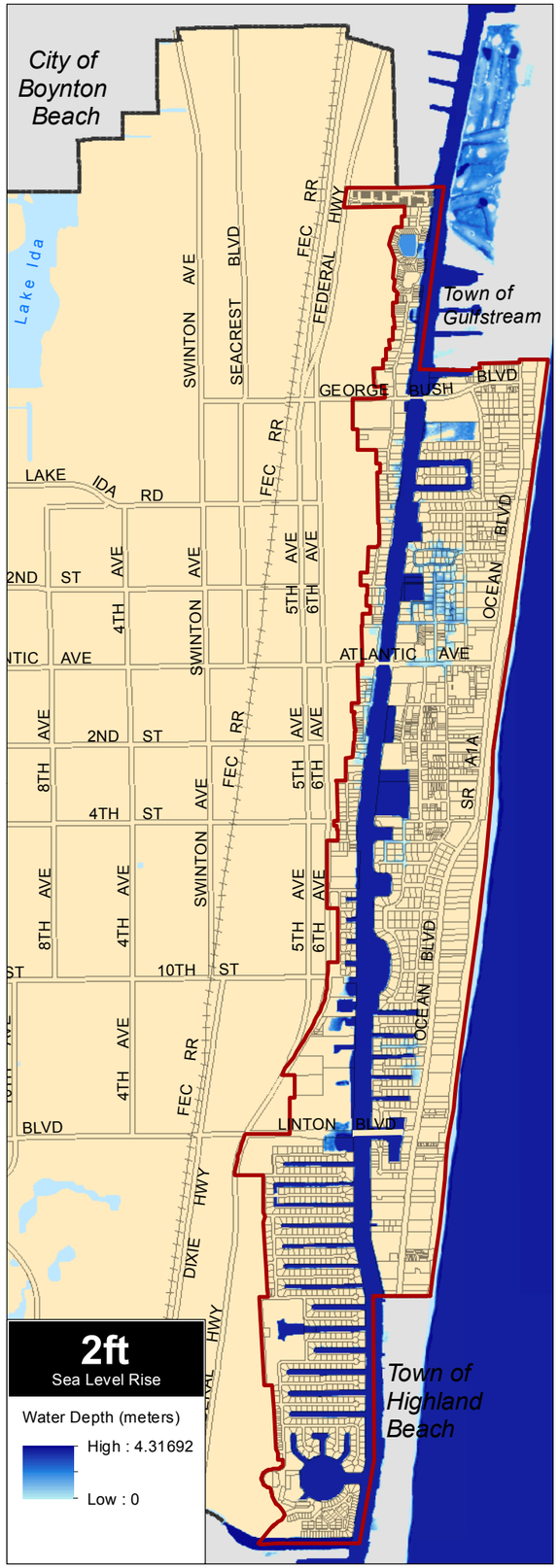
0 0.5 1 Miles

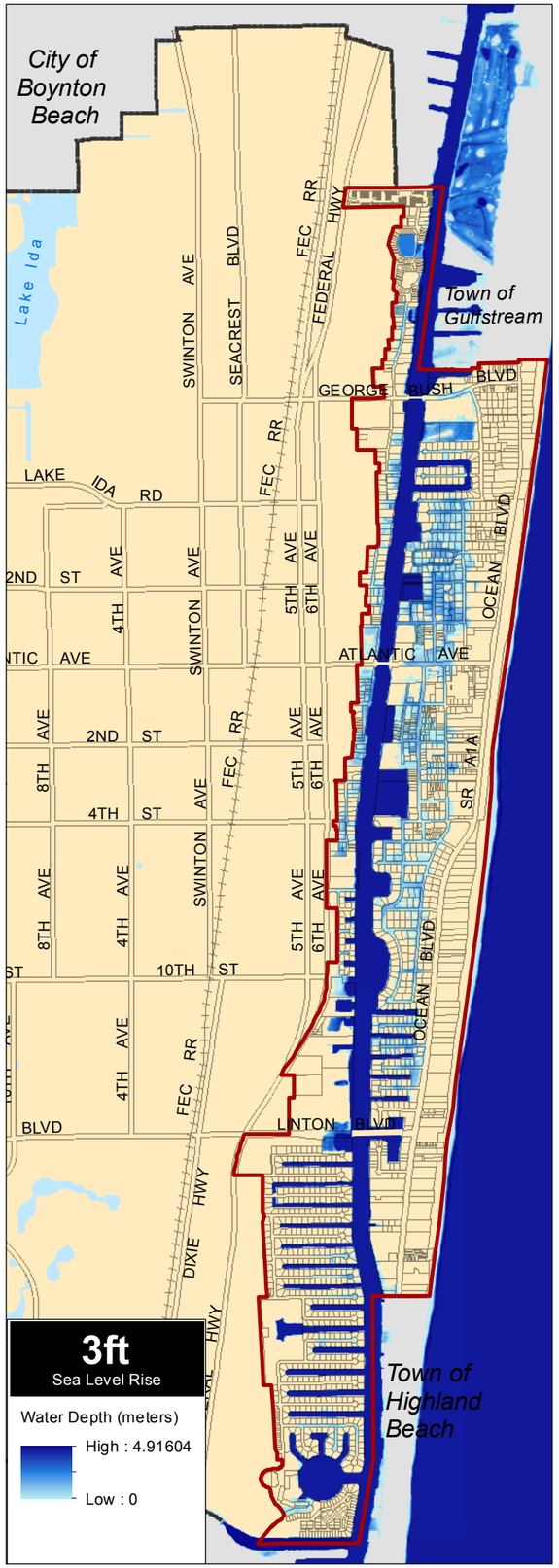
City of Delray Beach
Planning & Zoning Division

Print Date: 10/30/2018

Palm Beach County







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CONSERVATION, SUSTAINABILITY AND RESILIENCY

Potential Coastal Inundation from Sea Level Rise [MAP CSR-3]

Coastal Planning Area

Source: National Oceanic and Atmospheric Administration (NOAA) Office for Coastal Managment. NOAA Coastal Services Center Sea Level Rise Data (2013).

0 0.5 1 Miles

City of Delray Beach
Planning & Zoning Division

Print Date: 10/30/2018

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CONSERVATION, SUSTAINABILITY AND RESILIENCY

Wellfield Protection Areas [MAP CSR-4]

City of Boynton Beach

Town of Gulf Stream

Palm Beach County

City of Boca Raton

Town of Highland Beach

Atlantic Ocean

MILITARY TRL
BARWICK RD
LAKE IDA RD
ATLANTIC AVE
LOWSON BLVD
LINTON BLVD
HOMEWOOD BLVD
CONGRESS AVE
CSX RR
I-95
SWINTON AVE
SEACREST BLVD
FEC RR
FEDERAL HWY
DIXIE HWY
GEORGE BUSH BLVD
OCEAN BLVD
2ND ST
4TH ST
5TH AVE
6TH AVE
8TH AVE
10TH AVE
12TH AVE

- Zone 1
- Zone 2
- Zone 3
- Zone 4

- Delray Beach Boundary
- Planning Area
- Palm Beach County Jurisdiction

Source: Palm Beach County Environmental Resources Management

0 0.5 1 Miles

City of Delray Beach
Planning & Zoning Division

Print Date: 10/30/2018

CONSERVATION, SUSTAINABILTY AND RESILIENCY

GOALS, OBJECTIVES, AND POLICIES

LIVE

WORK

PLAY

GROW

GOAL CSR 1	Protect Air Resources
GOAL CSR 2	Conserve and Protect Water Resources
GOAL CSR 3	Conserve and Protect Minerals and Soils
GOAL CSR 4	Protect Lands for the Benefit of Habitat and Species
GOAL CSR 5	Promote Energy Efficiency and Diversify Energy Mix
GOAL CSR 6	Support Sustainable Waste Management, Urban Agriculture and Food Programs
GOAL CSR 7	Support Sustainable City Operations and Practices that Increase the Triple Bottom Line
GOAL CSR 8	Increase Citywide Resilience to Sea Level Rise and Weather-Related Events Equitably for All City Residents
GOAL CSR 9	Emergency Preparedness

Conservation, Sustainability and Resiliency

WHAT IS THE CONSERVATION, SUSTAINABILITY AND RESILIENCY ELEMENT?

Preparing for the future is a key component of City services and policy making and the Conservation, Sustainability and Resiliency Element is the City of Delray Beach's approach for expanding its environmental stewardship more broadly beyond just marine and terrestrial natural resources. This approach also incorporates the concepts of energy use; air quality that factors in greenhouse gas emissions; the energy-water nexus; considering the sustainability of City operations and preparing for climate change and sea level rise.

Conservation, Sustainability and Resiliency is an enhanced Element that incorporates the new principles of Sustainability and Resiliency that are interrelated to other elements of the Comprehensive Plan. Beyond the statutorily required components of the Conservation Element to protect and maintain air, natural, water and marine resources, concepts of Sustainability and Resiliency are cross-disciplinary to focus on preparation for climate change and sea level rise. This approach allows the City to identify vulnerabilities to these impacts as well as mitigate exposure by becoming a more resilient community. The City will reduce its contribution to climate-altering greenhouse gas emissions and simultaneously prepare for its impacts with "no regrets" strategies based on best available data. Through this cross-disciplinary approach, the City will also realize operational cost savings, reduce heat island effects and improve the overall health of the community.

The inter-disciplinary planning effort includes goals, objectives and policies to acquire and manage best, continue and enhance partnerships, incorporate new considerations into operational and capital planning decisions and include both internal and external outreach and education mechanisms to increase staff and public support, sensitive to the social aspects of vulnerability and resiliency to promote equity. Finally, in this Element, linkages to the Coastal Management, Mobility, Capital Improvements and Strategic Partnerships Elements, among others, are critical to maintain seamless implementation.

CONSERVATION, SUSTAINABILITY AND RESILIENCY GOALS.

GOAL CSR 1	**AIR QUALITY** PROTECT AND IMPROVE THE QUALITY OF THE CITY'S AIR RESOURCES.
GOAL CSR 2	**CONSERVE AND PROTECT WATER RESOURCES** PROVIDE A SUSTAINABLE WATER SUPPLY BY PROTECTING, CONSERVING, AND REUSING THE CITY'S WATER SUPPLY, BY MAINTAINING AND IMPROVING THE CITY'S WATER QUALITY, AND BY EDUCATING THE PUBLIC ABOUT THEIR ROLE IN THESE EFFORTS.
GOAL CSR 3	**CONSERVE AND PROTECT MINERALS AND SOILS** CONSERVE, PROTECT, AND PROVIDE FOR THE APPROPRIATE USE OF AREAS SUITABLE FOR THE EXTRACTION OF DESIRABLE SOILS AND MINERALS.
GOAL CSR 4	**PROTECT LANDS FOR THE BENEFIT OF HABITAT AND SPECIES** CONSERVE, ENHANCE, REGENERATE, MAINTAIN AND PROTECT WETLANDS, NATURAL RESERVATIONS AND SENSITIVE LANDS, WHICH PROVIDE HABITAT FOR THE PROTECTION OF FISHERIES WILDLIFE AND ENDANGERED OR THREATENED SPECIES OR CONTAIN NATIVE VEGETATION VITAL TO THE ENVIRONMENTAL QUALITY OF THE CITY.
GOAL CSR 5	**PROMOTE ENERGY EFFICIENCY AND DIVERSIFY ENERGY MIX** CONSERVE ENERGY RESOURCES BY PROMOTING ENERGY EFFICIENCY AND DIVERSIFY THE MIX OF ENERGY RESOURCES THROUGH INCREASING RENEWABLE ENERGY USE.
GOAL CSR 6	**SUPPORT SUSTAINABLE WASTE MANAGEMENT, URBAN AGRICULTURE AND FOOD PROGRAMS** THE CONSERVATION OF NATURAL RESOURCES SHALL BE ENCOURAGED THROUGH CITY SUPPORT OF WASTE MANAGEMENT RECYCLING, URBAN AGRICULTURE AND FOOD DELIVERY POGRAMS.
GOAL CSR 7	**SUPPORT SUSTAINABLE CITY OPERATIONS AND PRACTICES THAT INCREASE THE TRIPLE BOTTOM LINE** BECOME MORE SUSTAINABLE THROUGH ADOPTION OF POLICY AND IMPLEMENTATION OF SUSTAINABLE PRACTICES. THE CITY ALSO, WHEN APPLICABLE, WILL IMPLEMENT POLICIES AND PROGRAMS THAT PROVIDE ENVIRONMENTAL, ECONOMIC AND SOCIAL BENEFITS TO RESIDENTS, BUSINESSES, VISITORS AND OTHER GOVERNMENTAL AGENCIES TO STRENGTHEN DELRAY BEACH'S POSITION AS A MODEL OF SUSTAINABLE PRACTICES.
GOAL CSR 8	**INCREASE CITYWIDE RESILIENCE TO SEA LEVEL RISE AND WEATHER-RELATED EVENTS EQUITABLY FOR ALL CITY RESIDENTS** SUPPORT INCREASED RESILIENCE TO SEA LEVEL RISE, FLOODING, STORMS AND OTHER DISRUPTIVE WEATHER EVENTS.
GOAL CSR 9	**EMERGENCY PREPAREDNESS** DAMAGE TO PUBLIC FACILITIES AND DISRUPTION OF SERVICES TO THE PUBLIC DUE TO NATURAL OR OTHER DISASTERS WILL BE MINIMIZED BY PRE-DISASTER FACILITIES PLANNING.

CSR 1 PROTECT AIR RESOURCES

PROTECT AND IMPROVE THE QUALITY OF THE CITY'S AIR RESOURCES.

Performance Measures: Success in addressing Objectives and Policies of **Goal CSR 1** shall be measured utilizing the following performance indicators:

- Completion of a greenhouse inventory with reduction targets.
- Reductions in vehicle miles traveled.
- Increase in the number of City vehicles using clean fuels and charging station infrastructure projects.
- Increase the mileage of safety features for cycling and paths.
- Increase in percentage of tree canopy coverage

Objective CSR 1.1 Air Quality

Protect and improve the air quality throughout the City to meet the National Ambient Air Quality Standards (NAAQS) and other air quality requirements either individually or through partnerships.

Policy CSR 1.1.1
Participate in any regional or statewide effort to attain satisfactory air quality at a condition equal to or better than state and federal air quality standards.

Policy CSR 1.1.2
Provide data to, and coordinate with, the Department of Health, U.S. EPA and other relevant agencies to monitoring air quality impacts.

Policy CSR 1.1.3
Ensure that all Prevention of Significant Deterioration (PSD) permits, Non-Attainment Area New Source Review (NAA-NSR) permits, Title V General permits, Title V Permits for Paper and Allied Products sources, Chemicals and Allied Products sources and Cane Sugar sources are issued by the FDEP or Department of Health before permits are issued by the City for construction and operation.

Policy CSR 1.1.4
Cooperate with Florida Department of Environmental Protection (FDEP), Department of Health and other appropriate agencies in assessing air quality impacts associated with the waste transfer station located in Delray Beach.

Policy CSR 1.1.5
Cooperate with the National Weather Service and Palm Beach County Environmental Resources Management to develop and implement a rapid response mechanism to notify the public of air pollution episodes that endanger public health.

Objective CSR 1.2 Manage and Reduce Greenhouse Gas Emissions

Reduce greenhouse gas emissions both in City operations and communitywide to achieve improved air quality and lower the City's contribution of emissions resulting in climate change.

Policy CSR 1.2.1
Conduct an inventory of City operations and communitywide greenhouse gas emissions within two (2) years, establish appropriate reduction targets in the inventory and continue with updates every (five) 5 years thereafter.

Policy CSR 1.2.2
Develop greenhouse gas reduction strategies that strive to reduce the largest sources of emissions for City operations and communitywide

Policy CSR 1.2.3
Include policy considerations into capital planning procedures for projects, and procurement requirements, which reduce greenhouse gas emissions to meet reduction targets, increase energy efficiency and renewable energy, decrease vehicle miles traveled and increase use of alternative modes of transportation to reduce vehicle use.

Objective CSR 1.3 Reduce transportation-related emissions through a diversified transportation system

Develop a diversified transportation system that reduces reliance on fossil fuel consumption through infrastructure and program improvements that decrease vehicle miles traveled and enhance walking, cycling and transit opportunities. Objective Mobility xx.

Policy CSR 1.3.1
Implement transportation, mobility, and capital improvements plans that promote compact mixed-use development patterns accessible through multi-modal transportation options.

Policy CSR 1.3.2
Focus high density and intensity land uses around existing and planned rail service.

Policy CSR 1.3.3
Implement the recommendations of Delray Beach Tri-Rail Coastal Link Station Master Plan,

Policy CSR 1.3.4
Work with the Palm Beach Transportation Planning Agency and other local governments to develop a baseline estimate of vehicle miles traveled and non-automobile mode share countywide, and downscale to the City level, in order to adopt short, mid-range and long-term goals for vehicle miles reduction.

Policy 1.3.5
Analyze and identify barriers to multimodal connectivity and work to eliminate those barriers through studies, plans, and capital investments. [Complete 202X]

Policy CSR 1.3.6
Increase non-automobile transportation mode share by 5% with more walking, biking and transit use in priority areas throughout the City. [Complete 202X]

Policy CSR 1.3.7
Improve neighborhood connectivity by connecting sidewalks and multi-use paths that lead to City parks and require new development and redevelopment to accommodate bicycle and pedestrian facilities and connections to existing development through the use of striped or buffered/marked bicycle lanes, cycle-tracks, parallel off-street paths and/or other dedicated facilities.

MBL Policy

Policy CSR 1.3.8
Achieve recognition as a Bicycle-Friendly Community or Walk-Friendly Community OR achieve an average community Walk Score or of 70 or higher.
[Complete 202X]

Policy CSR 1.3.9
Assist in the coordination of programs that implement employer-option transportation control measures that reduce peak-hour vehicle use, such as flexible work hours, employer based car-pooling, and compressed work weeks.

Policy CSR 1.3.10
Support maximizing options to relieve congestion through trolleys, shuttles, transportation modalities that augment Palm Tran and Tri-Rail Services and operate with the cleanest fuels possible.

Objective CSR 1.4 Reduce vehicle-related emissions

Promote the use of fuel efficient, hybrid, and alternatively fueled vehicles and implement operational enhancements that support reductions in transportation-related vehicle emissions.

Policy CSR 1.4.1
Complete a Right-Size vehicle fleet analysis with increased fuel economy (and acquisition plan) to determine the most optimal mix of pooled, sized and assigned vehicle with most efficient fuel sources. Seven or more years of age should be a considered vehicle replacement standard. Ensure technician training and the installation of electric vehicle support equipment (EVSE) are considered.
[Complete 202X]

Policy CSR 1.4.2
Consider the costs and benefits of City fleet vehicles powered by alternative fuels or engine design, such as hybrid or electric vehicles, and higher mileage vehicles as part of the City's capital purchasing process for new motor vehicles

used in transportation and life and safety maintenance operations. (Objective C-1 carried forward)

Policy CSR 1.4.3
To reduce fuel costs and reduce municipal greenhouse gas emissions, research and adopt a City-vehicle idling policy with corresponding educational materials.
[Complete 202X]

Policy CSR 1.4.4
Continue to require a percentage of off-street parking to be alternative fuel parking spaces within the Central Business District. Develop a needs assessment for alternatively fueled vehicle spaces throughout the City.
[Complete 202X]

Policy CSR 1.4.5
Work with major private sector companies that have large fleets to co-locate or strategically site clean fuel support infrastructure such as fueling stations.

Policy CSR 1.4.6
Research and develop outreach materials to increase awareness of the relationship between prolonged vehicle idling, particularly for heavy duty trucks, and related greenhouse gas emissions.

Policy CSR 1.4.7
Collaborate with other local governments to evaluate the feasibility of increasing alternative fuel sources such as biofuel, methane, electric, and or solar in government and/or private sector fleet vehicles.

Policy CSR 1.4.8
Balance traffic flow, speed, and street design, accounting for location-specific goals, such as continuing to implement the complete streets policy.
MBL Policy

Objective 1.5 Air Quality

Implement City operations in a manner to improve air quality where possible.

Policy CSR 1.5.1
Continue to implement policies related to air quality and tobacco such as Smoke Free/Tobacco Free Work Place and maintain designated "No Smoking Areas" on the beach.

Policy CSR 1.5.2
Continue to enforce prohibitions on burning trash and debris. The City shall partner with the Palm Beach County Health Department where necessary to enforce requirements for open burning operations related to residential land clearing and land clearing for commercial purposes.

Policy CSR 1.5.3
Ensure demolition permits mitigate air quality impacts.

Policy CSR 1.5.4
Before permitting any demolition involving asbestos renovation projects or demolition of structures subject to the National Emission Standards for Hazardous Air Pollutants (NESHAP), the City shall ensure that written approval is obtained from the Health Department consistent with Chapter 11, Article II, Section 11-20 (a) (5)-(6) of the Palm Beach County Code (§ 4, Ordinance No. 78-5, as amended).

CSR 2 CONSERVE AND PROTECT WATER RESOURCES

PROVIDE A SUSTAINABLE WATER SUPPLY BY PROTECTING, CONSERVING, AND REUSING THE CITY'S WATER SUPPLY, BY MAINTAINING AND IMPROVING THE CITY'S WATER QUALITY, AND BY EDUCATING THE PUBLIC ABOUT THEIR ROLE IN THESE EFFORTS.

Performance Measures: Success in addressing Objectives and Policies of **Goal CSR 2** shall be measured utilizing the following performance indicators:

- Increase in the availability and use of reclaimed wastewater.
- Increase in the number of new developments using reclaimed wastewater.
- Number of pollutants and pollutant levels detected in < Lake Ida? >.
- Change in number of new cases of saltwater intrusion in public wellfields.
- Change in the number of water bodies meeting state water quality standards.
- Number of substandard stormwater management systems retrofitted.

Objective CSR 2.1 Water Resource Contamination

Focus on detecting and eliminating water resource contamination and instituting preventative measures to protect water supply sources. (Objective A-1 carried forward)

Policy CSR 2.1.1
Continue monitoring groundwater conditions through installation of monitoring wells consistent with the County's Wellfield Protection Ordinance and the City's Industrial Pretreatment Program, as well as applicable State and Federal requirements. (Policy A-1.1 carried forward)

Policy CSR 2.1.2
Encourage the preservation of existing groundwater recharge areas through sensitive site planning, including maximizing open space, pretreatment of stormwater runoff, etc. In the case of environmentally sensitive lands, such preservation may include sensitive development under "planned development" concepts, exaction (public site dedication provisions of the Land Development Regulations), and acquisition (including the County Environmentally Sensitive Lands Acquisition Program). (Policy A-1.3 carried forward)

Policy CSR 2.1.3
Continue water resource monitoring and protection programs and proactively address potential impacts on the coastal aquifer from increased chlorides due to a changing climate and sea level rise.

Policy CSR 2.1.4
Continue to monitor developments in the field of water treatment technology, including desalinization, and utilize the most cost-effective technology available to meet long-term demands. (Policy A-1.2 carried forward)

Policy CSR 2.1.5
Protect existing wellfields and water supplies, and plan for infrastructure replacement and wellfield relocation as needed in consideration of potential increased coastal flooding, sea level rise, saltwater intrusion, and other potential future climate change impacts using the most recent sea level rise projections from the Southeast Florida Regional Climate Compact.

Objective CSR 2.2 Wellfield Protection

Implement and expand upon the concepts, principles, and regulations contained in the Palm Beach County Wellfield Protection Program. (Objective A-2 carried forward)

Policy CSR 2.2.1
Continue to assure compliance with the County Wellfield Protection Ordinance by including compliance as a performance standard for which a specific finding must be made upon approval of

any site plan or conditional use action. (Policy A-2.1 carried forward)

Policy CSR 2.2.2
Inspect and monitor business premises, to ascertain that facilities and procedures exist and are utilized to properly manage hazardous materials and wastes commonly occurring as a result of existing or proposed activities in compliance with the Wellfield Protection Program, Industrial Pretreatment Program, and Fire department inspections. (Policy A-2.2 carried forward)

Policy CSR 2.2.3
Prohibit the establishment of hazardous waste storage, transfer, or generating facilities in wellfield protection areas. (Policy A-2.3 carried forward)

Objective CSR 2.3 Water Quality

Specific programs to protect water quality from threats to groundwater, surface and other water resources shall be implemented to monitor, enforce, reduce, eliminate, and provide environmentally responsible disposal methods of materials which may be hazardous or contaminate our water supply or other water bodies. (Objective A-3 carried forward)

Policy CSR 2.3.1
Participate in data collection efforts, including but not limited to sampling for microbiological analysis, and enforcement of new water quality criteria for use in the Healthy Beaches Program required as of January 2016 adopted by the Florida Department of Health (DOH). These criteria reflect the most current, 2012 Recreational Water Quality Criteria (RWQ criteria), recommendations and water quality grant requirements put forth by the United States Environmental Protection Agency (USEPA) and sample sites exceeding established standards result in the issuance of an advisory.

Policy CSR 2.3.2
Maintain the current program of monitoring and inspecting industrial and commercial sites. (Policy A-3.1 carried forward)

Policy CSR 2.3.3
Implement public education programs to provide awareness of the impacts of the improper disposal of household hazardous waste. (Policy A- 3.2 carried forward)

Policy CSR 2.3.4
Support the continuation of a central collection site, under the jurisdiction of the Solid Waste Authority, to which the public may bring and deposit household hazardous wastes on a daily basis. (Policy A-3.3 carried forward)

Objective CSR 2.4 Water Supply and Shortage

Continue to mitigate against future water shortages using a series of innovative activities, which educate the public, reduce consumption, minimize waste, and generally protect water resources, shall continue to be undertaken. These activities shall be directed toward the continued reduction of water use, and shall be evaluated annually. (Objective A-4 carried forward)

Policy CSR 2.4.1
Cooperate and support development and implementation of local and regional water resource strategies, water resource development, conservation and reuse projects that promote a sustainable water supply. Regional and local water resource development strategies shall include, but not be limited to, increased water conservation, reclaimed water, Upper Floridan aquifer development and the C-51 Reservoir Project.

Policy CSR 2.4.2
Implement a water conservation program, as required by its water use permit, based on the following principles: enforcement of landscaping and xeriscaping ordinances, low volume plumbing ordinance, rain sensor ordinance, implementation of a conservation rate structure, leak detection system and water conservation education programming and development of alternative water supply projects.

Policy CSR 2.4.3
Continue developing other alternative water supplies as a mechanism to diversify the City's sources of potable water supply.

Policy CSR 2.4.4
Raise public awareness of water conservation practices on a regular basis through multiple, creative outlets, including posting literature in City Hall, installing signs along major roads, providing information in utility bills, neighborhood newsletters, press releases, and social media platforms, as well as education programs in local schools. (Policy A-4.1 carried forward)

Policy CSR 2.4.5
Continue to implement requirements for water conserving fixtures in new construction and incentivize higher efficiency standards in new construction and renovations. (Policy A-4.2 carried forward)

Policy CSR 2.4.6
Require the use of native plants and environmentally-friendly landscaping and design in all publicly owned areas, including demonstration projects that educate the public on the resulting benefits of water and native wildlife conservation. Inform residents and/or plant or animal sellers about the benefits of native species and the hazards of invasive species, promoting at events such as tree giveaway

Policy CSR 2.4.7
Revise land development regulations to eliminate required irrigation systems when a landscape plan is approved that includes the use of native plants and other vegetation that will survive without irrigation, while meeting landscape code requirements.

Policy CSR 2.4.8
Continue to include requirements on the use of low-water tolerant plant species, as well as the installation of rain or moisture monitor devices for irrigation systems in landscape standards.

Policy CSR 2.4.9
Continue to require the preservation of existing native plant communities, where practicable, and the use of native plants and trees in landscape plans for new development and redevelopment projects.

Policy CSR 2.4.10
Continue requiring a water source, other than City water, for irrigation purposes in geographically defined areas of the City. (Policy A-4.6 carried forward)

Policy CSR 2.4.11
Continue to utilize and expand use of reclaimed water from the wastewater treatment plant, with prioritization for effluent reuse on golf courses, large homeowner associations with master meter systems, City parks, and within the Coastal Planning Area. (Policy A-4.5 carried forward).

Policy CSR 2.4.12
Provide incentives for new construction and redevelopment to incorporate the use of grey water systems for both irrigation and toilets/sanitary sewer systems.

Policy CSR 2.4.13
Whenever water wells are discontinued from use, certify they be plugged and sealed as required by the Florida Department of Environmental Protection. (Policy A-4.8 carried forward)

Policy CSR 2.4.14
Support public education programs and emergency powers of the South Florida Water Management District with respect to the conservation of water sources and, when such programs and activities are imposed by the District, impose those similar restrictions which are available under the City's emergency water conservation powers. (Policy A-4.9 carried forward)

Policy CSR 2.4.15
Direct storm water into landscaped areas for use in irrigation throughout the city limits. (Policy A-4.10 carried forward)

Policy CSR 2.4.16
Work with the South Florida Water Management District and Lake Worth Drainage District to enhance local regulations permitting innovative

techniques of pervious paving/surfaces to reduce water runoff and promote percolation/stormwater recharge, including low impact development principles. (Policy A-4.11 carried forward)

Policy CSR 2.4.17
Work with the South Florida Water Management District and Lake Worth Drainage District to maintain and enforce vegetative requirements and to investigate opportunities for shared or joint use of lands, easements or rights-of-way for passive, non-structural recreational opportunities.

Objective CSR 2.5 Potable Water

To address the City's existing and projected potable water needs and sources in the context of the regional water supply, the following policies shall be implemented. (Objective A-5 carried forward)

Policy CSR 2.5.1
The City adopts, by reference, the City of Delray Beach's 201x Water Supply Facilities Work Plan. (Policy A-5.1 carried forward)

Policy CSR 2.5.2
Participate in the development of, and actively support, the projects and recommendations contained within, the most recent version of the Lower East Coast Regional Water Supply Plan.

Objective CSR 2.6 Protecting Water Bodies

Support individually, and participate in, regional efforts to protect and enhance the quality of water, including Lake Ida, the drainage canal system, and the Intracoastal Waterway. (Objective C-2 carried forward)

Policy CSR 2.6.1
Work with other agencies to improve Lake Ida water quality, with the goal of achieving a water quality level that will allow swimming. (Policy C-2.1 carried forward)

Policy CSR 2.6.2
Continue to monitor the quality of waters flowing into coastal water bodies and implement strategies to maintain protection or improvement in them considering potential contamination resulting from inundation, structural compromise, from sea level rise, storm events, or other climate related impacts.

Policy CSR 2.6.3
Review existing City regulations on fertilizer application and update, if needed, to incorporate concepts including, but not limited to, blackout periods, effectiveness of enforcement and setback distances from water bodies. Expand education and outreach efforts for homes and business owners on proper fertilizer application techniques and the adverse fertilizer impacts on City water quality.
[Complete 202X]

CSR 3 CONSERVE AND PROTECT MINERALS AND SOILS

CONSERVE, PROTECT, AND PROVIDE FOR THE APPROPRIATE USE OF AREAS SUITABLE FOR THE EXTRACTION OF DESIRABLE SOILS AND MINERALS.

Performance Measures: Success in addressing Objectives and Policies of **Goal CSR 3** shall be measured utilizing the following performance indicators:

- Decrease in permit violations related to lake excavation activities.
- Increase in more natural shoreline protection strategies such as mangrove plantings and installation of rip rap.
- Increase in landscaping along roadways to prevent soil erosion.
- Decrease in number of septic tanks.

Objective CSR 3.1 Soil Resources

Conserve and protect soils resources by maintaining land development regulations governing soil erosion and limit the use of septic tanks to those soil associations suitable for such usage.

Policy CSR 3.1.1
To minimize soil erosion on new construction sites, maintain land development regulations that require measures consistent with the Best Management Practices of the United States Natural Resources Conservation Service including, but not limited to, replanting, restoring and protecting vegetation.

Policy CSR 3.1.2
Include appropriate landscaping and design, including, but not limited to, replanting, restoring and protecting vegetation, to minimize soil erosion in the design and construction or expansion of arterial and collector roadways with steep embankments.

Policy CSR 3.1.3
Maintain shoreline protection and erosion control by continuing a program of beach and dune protection, coastal and shoreline buffering, and use of seawalls only when natural protection strategies are not feasible; and, evaluate opportunities to protect coastal investments and infrastructure, as appropriate, from the impacts of climate change.

Policy 3.1.4
Remove from use existing septic tanks that are located in areas served by sewer systems as required by law and local regulation. Septic systems deemed subject to flooding, or with chronic drainfield problems that may have an adverse impact on the environment shall be abandoned and connection made to the central sewer system. (Policy A-1.1 carried forward)

CSR 4 PROTECT LANDS FOR THE BENEFIT OF HABITAT AND SPECIES

CONSERVE, ENHANCE, REGENERATE, MAINTAIN AND PROTECT WETLANDS, NATURAL RESERVATIONS AND SENSITIVE LANDS, WHICH PROVIDE HABITAT FOR THE PROTECTION OF FISHERIES WILDLIFE AND ENDANGERED OR THREATENED SPECIES OR CONTAIN NATIVE VEGETATION VITAL TO THE ENVIRONMENTAL QUALITY OF THE CITY. (Goal Area "B" carried forward)

Performance Measures: Success in addressing the Objectives and Policies of **Goal CSR 4** shall be measured utilizing the following performance indicators:

- Sea turtle nest hatchling success rates
- Maintain the number and size of existing wetlands
- Maintain conservation and specially designated and protected properties
- Beach nourishment:
  - Evaluation and physical monitoring of the beach project annually
  - Completing planned periodic beach renourishment events
  - Coordinating swiftly with project partners (USACE, Palm Beach County and FDEP) to assess and repair storm damages to the beach.

Objective CSR 4.1 Fisheries, Wildlife and Habitat

Implement policies that protect fisheries, wildlife, wildlife habitat and marine habitat and restrict activities known to adversely affect the survival of endangered and threatened wildlife (Objective B-2 carried forward?)

Policy CSR 4.1.1
Continue to implement the Sea Turtle Conservation Program, which includes monitoring of nesting and hatching activity, and enforcement of lighting restrictions. (Policy B-4.2 carried forward)

Policy CSR 4.1.2
Continue to enforce sea turtle lighting requirements.

Policy CSR 4.1.3
Maintain existing programs to protect offshore reefs and marine habitat through monitoring and management of beach renourishment construction activities. (Policy B-4.4 carried forward)

Policy CSR 4.1.4
Protect, conserve, rehabilitate and restore wildlife habitat, open space and recreation areas, conservation areas and prevent any further net loss of these lands in the City. (Policy B-2.2 carried forward?)

Policy CSR 4.1.5
Cooperate with the US Department of Agriculture, the Florida Department of Environmental Protection (FDEP), Fish and Wildlife Conservation Commission to eliminate invasive exotic plant and animal species and pursue the removal, eradication, treatment and maintenance of exotic, nuisance and invasive species within all City-owned and City managed preserve areas.

Policy CSR 4.1.6
Provide for the removal of existing invasive exotic species such as Australian Pine, Brazilian Pepper, Shefelara Umbrella Plant, Ear-Leaf Acacia, and Melaleuca on private property as development and/or redevelopment occurs in the City's Landscape Ordinance and also prohibit the planting or cultivation of these species anywhere within the City. (Policy B-1.6 carried forward)

Policy CSR 4.1.7
Promote on-site preservation as the most desirable alternative for the protection of upland habitats, and plant and wildlife species, with off-site preservation for endangered or threatened species of special concern utilized when recommended by the Florida Fish and Wildlife Conservation Commission and the US Fish and Wildlife Service.

Policy CSR 4.1.8
Comply with all relevant State and Federal regulations which pertain to listed species and consult, as required, with regulatory agencies prior to the issuance of a land use approval that would result in an adverse impact to any listed species.

Policy CSR 4.1.9
Support marine law enforcement programming and restrict access and activities in designated Manatee Essential Habitat Areas and support existing speed regulations such as Idle Speed Zones, Low Speed Zones and Slow Speed Buffer Zones to promote boater safety and protect manatees. (Policy B-2.4 carried forward)

Policy CSR 4.1.10
Marine construction activities shall comply with all state and Federal regulatory requirements and shall be located so as to minimize impacts to manatees and resources that they depend upon, as well as other rare, threatened or endangered species. Such activities shall also require minimal or no dredging as well as have good tidal flushing. In instances where dredging is required, both initial and maintenance dredging shall be minimized.

Objective CSR 4.2 Habitat Protection

Identify, designate, protect, maintain and regenerate habitat, natural reservations and environmentally sensitive areas. (Objective B-1 carried forward)

Policy CSR 4.2.1
Conserve and protect natural reservations and environmentally sensitive areas as depicted on City maps of designated properties of ecological concern.

Policy CSR 4.2.2
Consider the climate adaption needs of native plants, the diversity of plant and wildlife species, and consider strategies for assisting in their natural migration.

Policy CSR 4.2.3
The submission of a biological survey and a habitat analysis shall accompany land use requests for plan amendments, rezonings, and site plan approval. However, the requirement shall not apply where it is apparent that there are no such resources. (Policy B-2.1 carried forward)

Policy CSR 4.2.4
Continue to protect valuable open space and conservation lands through dedication of park lands, impact fees or dedication in lieu of and the provision of greenspace and buffering at the time of site plan review.

Policy CSR 4.2.5
Continue to maintain and implement regulations that protect and preserve trees, including those in areas of native vegetative communities and promote the use of native vegetation. The City shall maintain and enforce land clearing requirements and enhance tree replacement policies that focus on like kind species in the site planning process.

Policy CSR 4.2.6
Identify the following areas as "Conservation" on the Neighborhood, Districts and Corridors Map: Policy carried forward

- The FIND parcels 645, and 650 along the Intracoastal;
- The Leon Weekes Environmental Preserve;
- Delray Oaks; and
- The Donnelley Tract on Palm Trail.
- The Public Beach Dunes
- Bexley Park Preserve

Policy OPR 3.1.1

Policy CSR 4.2.6
Publicly-owned environmentally sensitive areas have been identified on the Future Land Use Map by an "Open Space - Conservation" symbol. The FIND parcels 645 has been zoned into the conservation zone district and parcel 650 (Mangrove Park) has been zoned Open Space. These designations shall be maintained in order to further Objective xx as well as the Goals, Objectives and Policies of the Open Space and Recreation Element. (Policy B-1.1 carried forward) MOU with FIND to improve public access, passive public benefit.

Policy CSR 4.2.7
Continue to preserve the portion of the Hurricane Pines site that has been preserved as part of the open space for the Heritage Club project to be maintained by the homeowners association as a preservation area. (Policy B-1.2 carried forward)

Policy CSR 4.2.8
Continue to maintain the City-owned park site in the Hammock Reserve area with primarily passive

uses to maximize retention of the existing native plant communities and continue to preserve as an environmentally sensitive site. (Policy B-1.3 carried forward)

Policy CSR 4.2.9
Protect natural reservations which exist as historic sites through the continued implementation and enforcement of the City's Historic Preservation Ordinance. (Policy B-1.5 carried forward)

Policy CSR 4.2.10
Integrate required project open spaces with a trail system, where feasible and functionally possible, particularly where contiguous parcels are identified.

Policy CSR 4.2.11
Continue to require the conservation of trees and existing native vegetation in redevelopment and new development projects.

Policy CSR 4.2.12
Promote the ongoing protection and maintenance of unique habitats and natural areas to preserve environmental, recreation, and other public benefits, including but not limited to, the conservation of publicly-owned natural lands, wetland mitigation areas and water recharge areas.

Policy CSR 4.2.13
Prioritize and pursue funding opportunities for the restoration and/or enhancement of degraded natural areas, such as, restoration of shorelines or dunes, restoration of natural hydrology, or removal of non-native vegetation.

Policy CSR 4.2.14
Include impacts to habitat and wildlife in future climate planning efforts including vulnerability assessments.

Policy CSR 4.2.15
Continue to implement and enforce regulations which promote proper tree and vegetative maintenance.

Objective CSR 4.3 Local Government Coordination

Maintain cooperation with adjacent local governments to conserve, appropriately use, or protect unique vegetative communities located within more than one local jurisdiction.

Policy CSR 4.3.1
Coordinate with applicable agencies to identify, manage, and protect unique native vegetative communities, and marine and estuarine resources that are located within the City but cross jurisdictional boundaries or are of regional significance.

Policy CSR 4.3.2
Participate in data collection and updating management plans for unique vegetative communities that are entirely or partially located within the City.

Policy CSR 4.3.3
Participate in efforts to secure funding to protect, or the designation process for, unique vegetative communities within the City.

Objective CSR 4.4 Protecting Wetlands.

Protect and conserve the functions and values of wetlands and direct future land uses that are incompatible with the protection and conservation of wetlands and wetland functions away from wetlands.

Policy CSR 4.4.1
Implement provisions that avoid and minimize impacts to wetland function, and where impacts are unavoidable, require replacement of lost function through mitigation.

Policy CSR 4.4.2
Implement integrated water management strategies in order to lessen negative impacts to open spaces, wetland mitigation areas, and natural systems, improve the ability of these systems to adapt to climate change, and optimize the ability of these systems to create additional benefits to the City's residents and visitors.

Policy CSR 4.4.3

Maximize connectivity between wetland areas, onsite preserve areas in private developments, areas subject to habitat management plans and/or mitigation projects to enhance their relationships with other wetlands.

Policy CSR 4.4.4
Integrate wetlands into stormwater drainage/water management practices in permitted development, protected lands and mitigation areas to provide necessary recharge hydrology and conditions to sustain the wetland areas.

Policy CSR 4.4.5
Distribute land uses in a manner that avoids or minimizes, to the greatest degree practicable, the effect and impact on wetlands. Impacts to wetland functions shall be directed away from wetland areas, or when compatible land uses are allowed to occur, shall be mitigated or enhanced, or both, to compensate for loss of wetland functions.

Policy CSR 4.4.6
Develop and implement programs for protecting and expanding existing open space, natural areas and wetland areas such as Transfer of Development Rights, deed of conservation easements, restrictive covenants, and tax incentives, while incorporating species and habitat vulnerability to climate change into the land use planning or land acquisition.

Objective CSR 4.5 Habitat Outreach

Educational programs shall be implemented to increase public awareness on species and habitat protections.

Policy CSR 4.5.1
Increase public awareness of manatees and manatee protection efforts including signage at new and existing public and private marinas, boat ramps, and non-residential boat docks, as well as appropriate public parks, and educational displays or informational kiosks that raise manatee awareness.

Policy CSR 4.5.2
Increase public awareness of threatened and endangered species through signage at appropriate habitat locations and coordinate with other partners to increase public awareness of native flora and fauna and their unique role in the ecosystem.

OPR 5 PROMOTE ENERGY EFFICIENCY AND DIVERSIFY ENERGY MIX

CONSERVE ENERGY RESOURCES BY PROMOTING ENERGY EFFICIENCY AND DIVERSIFY THE MIX OF ENERGY RESOURCES THROUGH INCREASING RENEWABLE ENERGY USE.

Performance Measures: Success in addressing the Objectives and Policies of **Goal CSR 5** shall be measured utilizing the following performance indicators:

- Reduction in residential, commercial and municipal electricity use.
- Increase in the number of green buildings in the City.
- Increases in energy efficiency municipal retrofit projects.
- Increases in City and communitywide renewable energy projects.

Objective CSR 5.1 Energy Efficiency

Promote and provide incentives for energy efficient buildings, homes and infrastructure to reduce electricity use.

Policy CSR 5.1.1
Consistent with the Florida Building Code, increase energy efficiency requirements for residential and commercial construction through an outreach effort to determine best incentives, approaches and case studies. Encourage increasing energy efficiency attributes of repurposed buildings. Develop a sustainable construction incentive program for new residential and commercial construction. Evaluate strategies to use various fee structures encouraging sustainable construction standards consistent with law.

Policy CSR 5.1.2
Create a Sustainable Development Standards evaluation system and Handbook to assist with interpretation of criteria for clarification in the development community. Include aspects of energy efficient design for homes and businesses and sustainable landscaping. [2022]. Short Term goal

Policy CSR 5.1.3
Consistent with the Florida Building Code, determine feasibility of changes to promote cooler roof systems with reflective coating materials.

Policy CSR 5.1.4
Create outreach campaign on how residents and business owners can implement simple solutions to become more energy efficient and save on power bills.

Policy CSR 5.1.5
Undertake energy and water audits and retro-commissioning of operations for City facilities, and sources of energy use such as streetlights, to develop an energy and water efficiency capital retrofit program with a return on investment analysis showing costs and benefits of a citywide retrofit program. Implement a recurring program of retro-commissioning every eight (8) years on City facilities.
[Complete by 20XX]

Policy CSR 5.1.6
Develop sustainable construction standards for City-owned buildings and major renovations consistent with Section 255.2575, Florida Statutes, requiring energy efficient and sustainable buildings. Require public infrastructure projects incorporate elements of efficiency for energy and water consumption in new or upgraded infrastructure investments and develop energy efficiency criteria to include in City procurements and capital projects as measured through Envision or a similar program. In the capital improvements planning process infrastructure decisions shall consider the most energy efficient technologies available. Develop or financially support infrastructure operators' participation in training programs on energy and water efficiency techniques.

Policy CSR 5.1.7
Implement a system to maintain a centralized database (Utility Management System) that collects and tracks key sustainability indicators to

facilitate sustainability and energy reporting, management of programs, and assessment of performance.

Policy CSR 5.1.8
Cooperate with organizations such as the Palm Beach Branch of the US Green Building Council, Florida Green Building Coalition, Green Roofs for Healthy Cities and others to host informational events for residents and professionals on green roofs, green building techniques, and energy conservation.

Policy CSR 5.1.9
Continue to enforce any environmental lighting restrictions and promote the goals of the Dark Sky Initiative.

Objective CSR 5.2 Renewable Energy

Increase renewable energy projects in homes, commercial buildings and City facilities.

Policy CSR 5.2.1
Promote, as appropriate and feasible, solar arrays, wind turbines, bio-diesel, energy storage technologies, micro-grids, community battery storage of electric power, and solar car charging on public assets, residential buildings, and commercial property.

Policy CSR 5.2.2
Where feasible, design and construct all new City buildings to allow for easy, cost-effective installation of solar systems, such as optimal roof orientation, roof framing to support solar panels, installation of electrical conduit to accept solar electric system wiring, and installation of plumbing to support a solar hot water system, including space for a solar hot water storage tank.

Policy CSR 5.2.3
Encourage, through the development of financial and regulatory incentives, such as the Property Assessed Clean Energy Programs (PACE), the increased use of electricity generated by alternative and renewable energy within the City, such as solar, wind, geothermal, and ocean energy technologies.

Policy CSR 5.2.4
Encourage and reduce barriers to solar cooperatives and other community renewable energy aggregation programs.

Policy CSR 5.2.5
Work towards achieving the SolSmart Silver designation to offer expedited permit review for clean energy projects and remove regulatory barriers to the installation of solar in nearly all zoning districts. Develop and promote programs that encourage solar energy, such as solar cooperatives, that assist residents and businesses with the soft/indirect costs of solar arrays, and by streamlining the permitting processes and lowering permitting fees to facilitate implementation of alternative energy projects. [Complete by 2022].

Policy CSR 5.2.6
Eliminate unnecessary obstacles for renewable energy generation (appropriately sized and sited: hydrogen, solar energy, geothermal energy, bioenergy, and wind energy projects or facilities).

Policy CSR 5.2.7
Provide incentives for the deployment of private sector renewable energy projects by adding criteria for program requirements related to the use of any appropriate economic development incentives that encourage such developments such as through the Community Redevelopment Agency.

Policy CSR 5.2.8
Complete a renewable energy feasibility study on all City facilities to identify opportunities for renewable energy projects to power municipal operations, minimize disruptions from major storms and weather events coupling renewable energy with backup power storage and establish a renewable energy target for municipal operations. [Complete by 2021].

Policy 5.2.9
Provide and encourage through the land development regulations, the use of energy design techniques, such as passive solar design for residential and commercial solar installations. Provide incentives for installing solar arrays on

rooftops and other impervious spaces and remove any barriers to their installation in such areas.

Policy CSR 5.2.10
Collaborate with local jurisdictions, state, and federal agencies to advance renewable energy goals through new programs, adoption of best practice programs, pursuit of grants for project and policy research, and policy implementation.

Policy CSR 5.2.11
Create website and outreach materials about solar incentives, programs and net-metering opportunities into a compiled initiative.

CSR 6 SUPPORT SUSTAINABLE WASTE MANAGEMENT, URBAN AGRICULTURE AND FOOD PROGRAMS

THE CONSERVATION OF NATURAL RESOURCES SHALL BE ENCOURAGED THROUGH CITY SUPPORT OF WASTE MANAGEMENT RECYCLING, URBAN AGRICULTURE AND FOOD DELIVERY POGRAMS. (Goal Area "D" carried forward).

Performance Measures: Success in addressing the Objectives and Policies of **Goal CSR 6** shall be measured utilizing the following performance indicators:

- Increase in tonnage of waste recycled.
- Number of materials eligible for recycling.
- Increase in construction and demolition recycling.
- Increase in hazardous waste drop off utilization.
- Increase in composting.
- Maintain and increase community gardening opportunities.
- Increase in backyard farming and urban agriculture.
- Increase in the number of businesses and community organizations who use locally produced food.

Objective CSR 7.1 Materials Management

Develop a cooperative materials management system and infrastructure, with partnering organizations, in order to maximize the recovery and reuse of waste and other materials in ways that capture their economic value, conserve embedded energy, and minimize net life-cycle emissions of greenhouse gases and other pollutants.

Policy CSR 6.1.1
Continue to participate in the Palm Beach County Solid Waste Authority recycling program and work with Palm Beach County to meet or exceed county-imposed recycling goals in Section 403.706(2)(a), Florida Statutes requiring a recyclable materials program that shall have a goal of recycling solid waste by 75 percent by December 31, 2020. (Objective D-1 carried forward).

Policy CSR 6.1.2
Work with the Solid Waste Authority to increase its rates of residential and commercial recycling and implementation of hazardous waste management programs for the proper storage, recycling, collection and disposal of hazardous wastes.

Policy CSR 6.1.3
Continue to support the County's education program to increase participation in recycling. (Policy D-1.2 carried forward).

Policy CSR 6.1.4
Implement communitywide incentives and policies ensuring that residents and businesses are working toward achieving community waste reductions goals. The City shall conduct an annual education program to encourage increased participation in the recycling program by low performing neighborhoods. (Policy D-1.3 carried forward).

Policy CSR 6.1.5
Work with the waste hauler to receive city-level monitoring data and utilize annual and quarterly service reports to create a database of waste management services, analyze usage, and identify opportunities for improving waste management within the Delray Beach Planning Area.

Policy CSR 6.1.6
To reduce waste, promote use of more sustainable products in certain industries such as biodegradable straws, bags, packaging and containers.

Policy CSR 6.1.7
Update commercial recycling requirements consistent with Section 403.7046(3), F.S. and collaborate with Chamber of Commerce to reach business entities on importance of recycling and benefits to the community overall in increasing recycling rates with an emphasis on restaurants.

Policy CSR 6.1.8
To increase recycling of construction and demolition debris, provide the public with educational materials about available pick up service, and partner with the Solid Waste Authority, its waste hauler and other appropriate agencies to promote available methods of disposal.

Policy CSR 6.1.9
Promote the recycling of hazardous wastes through education and outreach conveying information about available locations and programs for hazardous waste recycling. The City shall consider collection events to promote convenient drop-off opportunities.

Policy CSR 6.1.10
Cooperate with the Palm Beach County Health Department and other concerned agencies in developing emergency response plans to handle accidents involving hazardous wastes.

Policy CSR 6.1.11
Continue to support and enforce the implementation of the Oil and Grease Management Program and the Surcharge Program. Coordinate with the City's waste hauler and Chamber of Commerce to determine if opportunities exist for the City to assist in waste oil reduction through consolidated pick up, hauling services and recycling.

Policy CSR 6.1.12
Explore opportunities to add recycle receptacles on City properties specifically in locations where the City currently supports trash receptacles, such as throughout the downtown, at the municipal beach and along A1A, and other appropriate areas.

Policy CSR 6.1.13
Work closely with the Solid Waste Authority in the preparation of public notices, educational materials, promotional materials to be distributed to residential and commercial customers.

Policy CSR 6.1.14
Actively work with the City's waste hauler in the administration of the "Optional Benefits" described in Exhibit 13 of the current Agreement with the City:

- The City shall collaborate in the administration of the "Recycle Delray" program, which promotes recycling through community events and outreach programs for local schools and businesses.
- The City shall use the contribution made to the Delray Beach Public Library for recycling and composting educational outreach activities.
- The City shall ensure continued support of one Keep America Beautiful Coastal Cleanup event per year.
- The City shall coordinate with its waste hauler to support the "Annual Shredder Day" providing free shredding services to the City and its residents.
- The City shall coordinate to support the "You Recycle, We Replant" provision of the Agreement which provides for new or replacement trees in public places.

Policy CSR 6.1.15
Prior to demolition, salvageable materials should be removed and sourced to upcycling and reuse organizations, or recycled.

Policy CSR 6.1.16
Work with the Green Market to reduce waste, minimize polystyrene and plastic bag use, and promote composting and recycling.

Objective CSR 6.2 Food and Organic Waste
Develop partnerships with Solid Waste Authority, stakeholders and waste hauler to decrease the amount of food and organic waste citywide.

Policy CSR 6.2.1
Explore opportunities with the Solid Waste Authority and its waste hauler to implement a food and organic waste recycling program to potentially include collection of, containers for, and recycling of fruits and vegetables, meat, poultry, seafood (bones and shells), bakery items and ingredients, eggs and paper egg cartons, plants, cut flowers, potting soil, coffee grounds, filters, tea bags and paper products (napkins, paper towels), which could include a shared composting program for food waste management.

Policy CSR 6.2.2
Prepare educational materials on restaurant-based recycling strategies and work with waste hauler to target distribution to largest enterprises and ensure availability of recycling containers for other waste materials.

Policy CSR 6.2.3
Identify or designate other materials that the City aspires to have handled separately (such as organic material or pre-consumer waste) through partnerships with the Solid Waste Authority and/or new services by amending the current Waste Management Agreement, or in negotiating future contracts with waste management entities identify opportunities for community composting programs where food and organic waste may be handled separately and used to create natural compost to be used in community gardens or sold to interested parties.

Objective CSR 6.3 Disposal of Waste on Beaches
Enhance and protect the character of Delray Beach's public beach system through promotion of coastal cleanup activities and supporting the proper disposal of solid waste and recyclable materials.

Policy CSR 6.3.1
Restrict litter and marine pollution at City events and activities.

Policy CSR 6.3.2
Promote recycling of waste generated by residents and visitors of Delray Beach's public beach by providing recycling receptacles and public notices.

Policy CSR 6.3.3
Support the coastal cleanup program conducted by the Keep America Beautiful and any other approved coastal cleanup activities.

Policy CSR 6.3.4
Partner with community organizations, schools, agencies, and non-for-profit groups to sponsor bi-annual coastal cleanup events.

Objective CSR 6.4 Local Food Resources
Maximize local resources for energy-efficient food processing within the City's local foodshed. Identify strategies, research policies and limitations and encourage enabling location-appropriate urban agriculture and community gardening.

Policy CSR 6.4.1
Partner with community groups and other local governments in the region to delineate and promote a local foodshed as part of a sustainable local food system.

Policy CSR 6.4.2
Work with other local governments, institutions, and community groups in the defined foodshed to identify processing facilities and related infrastructure needed to process locally grown foods.

Policy CSR 6.4.3
Create programs and policies which encourage and support composting, community garden networks and local food production, in order to meet the multiple goals of reduced emissions and energy consumption, while increasing the resiliency and long-term food security of the community.

Policy CSR 6.4.4
Encourage backyard agriculture and community gardening throughout the City. Increase the use of locally grown and/or processed foods in City facilities where food is provided and encourage other local government facilities to do the same.

Policy CSR 6.4.5
Work to facilitate partnerships between local farmers and local government organizations such as the Palm Beach County Cooperative Extension Service, Palm Beach County School Board to provide healthy, fresh foods in local schools and other institutions.

Policy CSR 6.4.6
Increase support for the City's Green Market by encouraging increase of, and removing barriers for, local city-based growers. Permit and encourage small-scale agricultural production and sale direct to the public.

Policy CSR 6.4.7
Explore opportunities and assess community readiness for support of a community garden network to be located on publicly held lands by partnering with local organizations, schools, agencies, non-for-profit groups, and individuals to provide fresh food for non-commercial use and green spaces.

CSR 7 SUPPORT SUSTAINABLE CITY OPERATIONS AND PRACTICES THAT INCREASE THE TRIPLE BOTTOM LINE

BECOME MORE SUSTAINABLE THROUGH ADOPTION OF POLICY AND IMPLEMENTATION OF SUSTAINABLE PRACTICES. THE CITY ALSO, WHEN APPLICABLE, WILL IMPLEMENT POLICIES AND PROGRAMS THAT PROVIDE TRIPLE BOTTOM LINE (ENVIRONMENTAL, ECONOMIC AND SOCIAL) BENEFITS TO RESIDENTS, BUSINESSES, VISITORS AND OTHER GOVERNMENTAL AGENCIES TO STRENGTHEN DELRAY BEACH'S POSITION AS A MODEL OF SUSTAINABLE PRACTICES. (Goal Area "E" carried forward)

Performance Measures: Success in addressing the Objectives and Policies of **Goal CSR 7** shall be measured utilizing the following performance indicators:

- Develop and adopt a Sustainability and Climate Action Plan within three (3) years.
- Track and increase the number of sustainability policies or regulations adopted including policies incorporated into procurement guidelines.
- Continue annual reporting from the Green Implementation Advancement Board.
- Increase in the number of City events and resources promoting sustainable practices.
- Increase in education and outreach materials promoting sustainable practices.
- Increase in sustainability and climate resiliency web page traffic.
- Promote the green economy by increasing sustainability-related business within the City.
- Number of solar systems installed on City buildings and facilities.
- Track participation and attendance at major community arts and cultural events, performances, festivals, and programs where green or sustainability educational materials are presented or materials are distributed.

Objective CSR 7.1 City Sustainability Practices

Develop a baseline of City sustainable practices and determine methods to increase the sustainability of the City overall with prioritized actions that result in the greatest greenhouse gas reductions, extent of outreach and increased community support.

Policy CSR 7.1.1

Review and re-evaluate current zoning codes, regulations and policies according to sustainable community development practices, such as those outlined in the criteria recommended by the United States Green Building Council's Leadership in Energy and Environmental Design for Neighborhood Development (LEED-ND) certification, application of a national rating system for local governments, such as the STAR Community Index ™ (STAR), or other methodology.

Policy CSR 7.1.2

Build on the work of the Green Implementation Advancement Board, previous Sustainability Reports and recommendations of the City's previous Green Task Force by developing a Sustainability and Climate Action Plan that prioritizes actions, recommendations and outcomes to reduce greenhouse gas emissions based on established targets in the previously referenced City inventory. Update the Sustainability and Climate Action Plan recommendations every five (5) years.

Policy CSR 7.1.3

Review the City's procurement guidelines to address the importance of energy efficiency, renewable energy, reductions in greenhouse gas emissions, recycling and other sustainable practices. Create environmentally preferable purchasing policy for local government procurement of safe, healthy, and environmentally responsible products.

Policy CSR 7.1.3

In order to meet the City's greenhouse gas reduction goals, and highlight renewable energy projects to the community, require any new major facilities or retrofits (upgrade) include solar energy or other renewable energy source.

Objective CSR 7.2 Sustainability Implementation
Annually, determine an actionable set of recommendations that enables the City of Delray Beach to implement its current environmental commitments in a timely, cost-effective, and citizen-centric manner, as well as explore new opportunities for sustainability. [Amended by Amendment 10-1] (objective E-1 carried forward)

Policy CSR 7.2.1
By February 1st of each year, the Green Implementation Advancement Board (GIAB), shall review City operations and policies toward achieving Delray Beach's green and sustainability goals and providing a report of recommendation to the City Commission regarding: [Amended by Amendment 10-1] (Policy E-1.1 carried forward)

1. Ways to improve the environmental Sustainability of City programs, services, and equipment facilities.
2. Strategies for improving environmental sustainability of the community.
3. Incentives for residents, businesses, and organizations to practice environmental conservation including recycling.
4. Proposed means to enhance water and energy conservation.
5. Ideas for promotion of tree planting and xeriscaping.
6. Best Practices for implementation in Delray Beach, including long-term strategies.
7. Proposed revisions to City Ordinances to address Green Technologies and operations.
8. Strategies to address factors that affect energy conservation.

The GIAB will consider the cost and environmental implications related to any potential recommendation to the City. The GIAB's consideration will include the "Triple Bottom Line" approach, which includes:

- Financial – Total cost, funding availability and is the payback within a reasonable timeframe (5-8 years)?
- Environmental - Is the recommendation good for the environment within the City of Delray Beach and does it improve the City's overall quality of life?
- Social – Does the policy address social equity issues within the City?

(Policy E-1.1 carried forward)

Objective CSR 7.3 Sustainability Initiatives.
Increase community and staff awareness, and support for, sustainability initiatives.

Policy CSR 7.3.1
Develop informational signage in city facilities to educate visitors about sustainability and resilience initiatives such as relative elevation or location from mean sea level identifiers.

Policy CSR 7.3.2
Develop a sustainability training program for City staff and track training of new hires and existing employees. Establish a City Green Team with representatives from each City department.

Policy CSR 7.3.3
Annually review and update sustainability information available on the City's website and coordinate input with other City departments to cross reference common programs and initiatives.

Policy CSR 7.3.4
Track participation, attendance or other performance measures for major community arts and cultural events, performances, festivals, and programs where green or sustainability educational materials are presented or materials are distributed.

Policy CSR 7.3.5
Collaborate with neighborhood associations, civic groups, and local service providers to identify and address neighborhood-specific needs with regard to sustainability and climate issues.

Policy CSR 7.3.6
Develop partnership opportunities with Palm Beach County Public Schools through the District's School Sustainability program to

collaborate with City students on sustainability activities.

Objective CSR 7.4 Green Economy.
Encourage the development of the green industry and businesses to diversify the local economy and make a positive environmental contribution to the City.

Policy CSR 7.4.1
Coordinate plans and programs in coordination with Palm Beach County, neighboring cities, power companies, and private partners, in order to reduce greenhouse gas emissions by:

- Expanding the market for energy efficient products and services
- Supporting alternative and renewable energy production through innovative financing; and
- Promoting and incentivizing energy conservation retrofits.

Policy CSR 7.4.2
Strengthen the local economy by promoting green business training programs in industries that reduce reliance on fossil fuels; advance the use of sustainable materials, technologies, and services; and encourage local jobs in climate-change conscious, sustainable businesses that offer a living wage job.

Policy CSR 7.4.3
Track increased number of green business establishments in the jurisdiction over time from a 2018 baseline through occupational licenses or other mechanism. Partner with the Community Redevelopment Agency and Downtown Development Authority to create incentives and promotional events for green businesses and services

Policy CSR 7.4.4
Create programs that directly help businesses transition to new green practices and implement a green business promotion program.

Policy CSR 7.4.5
Create or support promotional campaigns to bank locally, buy locally, or buy from small and independent businesses and retailers.

CSR 8 INCREASE CITYWIDE RESILIENCE TO SEA LEVEL RISE AND WEATHER-RELATED EVENTS EQUITABLY FOR ALL CITY RESIDENTS

THE CITY SHALL SUPPORT INCREASED RESILIENCE TO SEA LEVEL RISE, FLOODING, STORMS AND OTHER DISRUPTIVE WEATHER EVENTS.

Performance Measures: Success in addressing the Objectives and Policies of **Goal CSR 8** shall be measured utilizing the following performance indicators:

- Completion of a Sustainability and Climate Action Plan with a vulnerability analysis
- Number of shoreline protection projects completed.
- Dune health, beach width and elevation
- Percent of restored seawalls.
- Percent of raised seawall.
- Number of shoreline-strengthening capital projects completed.
- Number of capital projects with resiliency features that reduce flooding or other impacts from other weather events including green infrastructure.
- Establish tree canopy goals to mitigate heat island impacts and increase stormwater benefits
- Increase community awareness of the need to address vulnerabilities and increase resiliency through the number of outreach events.

Objective CSR 8.1 Protection from Erosion

Implement programs and techniques to protect property from erosion and deterioration created by the impacts of wind and water. (Objective B-3 carried forward)

Policy CSR 8.1.1
Continue to control erosion from wind and flowing water through the building permit review and inspection process and the soil erosion control ordinance. (Policy B-3.1 carried forward)

Policy CSR 8.1.2
Prohibit the construction of new vertical seawalls and promote the replacement of vertical seawalls with naturally sloped shorelines, living shorelines, mangrove replanting and other non-structural strategies, unless vertical seawalls are found to be an overriding public interest to reduce impacts to property from tidal flooding, sea level rise and other weather-related events.

Policy CSR 8.1.3
Continue to support Palm Beach County's program to restore and protect the shoreline of Lake Ida. In addition, the City supports continuing monitoring of boating activity in the lake to assure that this activity does not produce adverse impacts on the shoreline. (Policy B-3.2 carried forward)

Policy CSR 8.1.4
Consistent with the City of Delray Beach Intracoastal Waterway Water Level & Infrastructure Vulnerability Study, review and revise seawall height requirements for all City and privately-owned seawalls within three (3) years to address sea level rise and tidal flooding. [2024].

Policy CSR 8.1.5
Consistent with the City of Delray Beach Intracoastal Waterway Water Level & Infrastructure Vulnerability Study, establish a program to accommodate necessary repair, replacement, and maintenance of City owned seawalls along the Intracoastal Waterway and canals. (Policy B-3.3 carried forward) Policy CIE xxx

Objective CSR 8.2 Coastal Construction

Continue to enforce the rules and regulations of the Florida Department of Environmental

Protection which establish a "Coastal Construction Control Line" and an "Erosion Control Line" as a part of the Land Development Regulations.

Policy CSR 8.2.1
Continue to administer its adopted regulations which prohibit non-beach related construction seaward of the Erosion Control Line (ECL) and which provide performance standards for construction seaward of the Coastal Construction Control Line (CCCL). Any construction activities seaward of the coastal construction control line shall be consistent with Chapter 161, F.S.

Objective CSR 8.3 Minimize Coastal Impacts

Enforce the coastal construction standards that minimize further impacts of man-made structures on City beaches, and restore altered beaches.

Policy CSR 8.3.1
Limit the use of beaches and shorelines to appropriate ocean-oriented preservation, recreation, and education functions.

Policy CSR 8.3.2
Maintain or improve the existing natural conditions on the City public beaches.

Policy CSR 8.3.3
Coordinate with the State to implement state-of-the-art beach and dune stabilization techniques as needed.

Policy CSR 8.3.4
Limit the cumulative effects of development on natural systems by strict maintenance of setback requirements, adherence to stormwater retention requirements, and retention of publicly owned natural habitats, and the use of transfer of development rights.

Policy CSR 8.3.5
Prohibit the destruction or degradation of natural inter- and sub-tidal vegetative communities in the development of new man-made estuarine beaches, except for overriding public interest.

Objective CSR 8.5 Green Infrastructure

Protect and enhance local and regional ecosystems, optimizing the co-benefits of habitat restoration, coastal buffers, wetland mitigation, urban reforestation, and expanded green infrastructure, in order to mitigate against heat island impacts, reduce greenhouse gas emissions and provide stormwater retention benefits.

Policy CSR 8.5.1
Conduct a tree inventory within three (3) years (including City rights-of-way and private lands) and set an appropriate canopy goal to maintain as a strategy to address heat islands and stormwater. The City shall also develop a list of priority planting areas in conjunction with the inventory. [Complete by 2022].

Policy CSR 8.5.2
Maintain the City's status designated as a Tree City USA. The City shall seek funds to develop and maintain an urban reforestation program, in order to expand green infrastructure, reduce the heat island effect and encourage local carbon sequestration and storage.

Policy CSR 8.5.3
Develop better data regarding current and projected heat island effects in the City. Encourage planting of native trees known to sequester carbon on available public and private lands and pursue programs and funding strategies designed to mitigate heat island effect and create carbon emission offsets through tree plantings and/or carbon mitigation banks.

Policy CSR 8.5.4
Incorporate species and habitat vulnerability to climate change into land use planning, land acquisition, mitigation projects and conservation easement considerations.

Policy CSR 8.5.5
Analyze water and stormwater management operations in the context of sea level rise, to lessen negative impacts to open spaces,

wetland mitigation areas, and natural systems, improve the ability of these systems to adapt to climate change, and optimize the ability of these systems to create additional benefits to the City's residents and visitors.

Objective CSR 8.6 Reduce Vulnerability

Prepare the City's land, infrastructure and historic assets to become less vulnerable and withstand flood and other weather-related disruptions.

Policy CSR 8.6.1
Develop critical data sources to support, and complete, a City Sustainability and Climate Action Plan with a vulnerability analysis within three (3) years that characterizes flood risk citywide from weather-related events and future flood risk from sea level rise. Include the vulnerability of public facilities and services, including but not limited to: buildings; water and wastewater treatment plants, transmission lines and pumping stations; stormwater systems; roads, rail, bridges, and all transportation and transit infrastructure including roads; power generation facilities and power transmission infrastructure; hospitals and police and fire stations; historic assets and natural areas. Include recommendations to mitigate risk including a comprehensive suite of capital improvements projects linked to the Capital Improvements Element. Include a long-term funding strategy for climate adaptation integrated into the City's capital planning process. Link Sustainability and Climate Action Plan and vulnerability analysis recommendations to further Comprehensive Plan and Code revisions for implementation which shall include design criteria that address future climate impacts. Update the analysis every five (5) years.

Policy CSR 8.6.2
Maintain and enhance current and best available data for mapping and adaptation analysis in preparation of the Sustainability and Climate Action Plan with a vulnerability analysis including, but not limited to, accurate elevation data, and other necessary modeling data. Include recent data from the City's Stormwater Master Plan Update and Intracoastal Waterway Water Level & Infrastructure Vulnerability Study into the development of the Sustainability and Climate Plan.

Policy CSR 8.6.3
Incorporate sea level rise, flooding and climate information into the planning, siting, construction, replacement and maintenance of public infrastructure, including roads, in a manner that is cost-effective and that maximizes the use of the infrastructure throughout its expected life span.

Policy CSR 8.6.4
Ensure development is resilient through the implementation of vulnerability and adaptation principles into policies in the Strategic Plans, comprehensive plan, capital improvements plans, building codes, life-safety codes, emergency management, land development and zoning regulations, water resource management, flood control and stormwater management, coastal management, and community development frameworks.

Policy 8.6.5
Create Transfer of Development Rights policies, including sending and receiving areas, to encourage development and redevelopment in less vulnerable areas and discourage it in flood prone areas.

Policy CSR 8.6.6
Continue to utilize the best available and regionally accepted modeling parameters that identify future conditions under which the stormwater system is expected to operate including future precipitation and sea level rise conditions.

Policy CSR 8.6.7
Develop first floor elevation information within building footprints for City facilities (and critical non-City owned facilities and assets). Identify facilities, municipal and critical, within the special flood hazard area (SFHA) that should receive site level investigation, including elevation data and engineering assessments of for vulnerability. Analyze elevation data for

surrounding roads for City and critical at-risk facilities to determine impacts from future conditions. This data should be integrated into a GIS management tool.

Policy CSR 8.6.8
Ensure locally-owned public facilities that will be used as shelters, command centers, storage, staging or demonstration areas to meet the highest risk standards for new construction or substantial renovations.

Policy CSR 8.6.9
Inventory socially vulnerable facilities such as at risk elderly, homeless or other populations who are residing in facilities that may not have auxiliary power through generators and ensure they are complying with state statutes.

Policy CSR 8.6.10
Consider building elevations and future flood risk in the historic preservation review process and create programs and materials that help property owners adapt to flood threats and sea level rise.

Policy CSR 8.6.11
Continue monitoring of potential saltwater intrusion into the City's groundwater supply.

Policy CSR 8.6.12
Inventory critical water and wastewater treatment plants and ensure adequate auxiliary power, chemical and mechanic spare resources are available to ensure City has the capability to operate and produce water and treat and dispose wastewater in accordance with State Statutes.

Policy CSR 8.6.13
Enhance pre-disaster and post-disaster debris management activities to increase clearing and decrease obstruction after storm events including permit streamlining and debris mulching opportunities for residents and City facilities.

Policy CSR 8.6.14
Provide resources and better link pre-disaster planning, post-disaster recovery and resiliency planning through improvement in the City's Community Rating System Class rating of 8 including the following strategies:

- Enhance public outreach activities and resources that can improve future Community Rating System cycle reviews that focus on flood risk and FEMA mapping.
- Evaluate the administrative costs associated with pursuit of additional "future conditions" credits in the Community Rating System against the insurance premium reductions that will accrue to the approximately 7,500 (as of 6/30/18) property owners who currently hold flood insurance policies through the National Flood Insurance Program. If the benefits outweigh the costs, the City should consider pursuing these credits in the Community Rating System program.

Policy CSR 8.6.15
Prior to incorporating a new project to the Capital Improvements Element, the City shall assure that it is reviewed for recommendations to increase resiliency, including future flooding and heat conditions, and account for the impacts from climate change, including but not limited to, sea level rise and storm surge. The City shall focus on level of service standards, as one of the points of analysis, to assure that infrastructure useful life and service expectations can be met in the face of climate change impacts.

Objective CSR 8.7 Coordinate Resources

Continue work across levels of government and agencies including non-profit organizations, professional and industry organizations, and academic institutions, to share resources and data related to climate, vulnerability and sea level rise, as well as common resiliency strategies to address impacts.

Policy CSR 8.7.1
Coordinate with agencies such as the Florida Department of Emergency Management, SFWMD, NOAA, the US Army Corps of Engineers, the US Geological Survey, State of Florida

agencies and others to ensure the availability of best available data and tools for climate modeling and analytical efforts.

Policy CSR 8.7.2
Continue participation with Southeast Florida counties and municipalities, academia, state and federal government agencies and other organizations in the analysis of sea level rise, drainage, storm surge and hurricane impacts and the planning of mitigation and adaptation measures. Coordinate to create and support new initiatives and incorporate new data, such as updated sea level rise projections, into future decision-making. Coordinate efforts with the latest version of the Regional Climate Action Plan and other appropriate regional planning initiatives.

Policy CSR 8.7.3
Coordinate with the SFWMD and Lake Worth Drainage District to address efforts related to sea level rise impacts on coastal structures upon which Delray's drainage capacity is linked.

Policy CSR 8.7.4
Participate in the development of the County's Local Mitigation Strategy to better link resiliency, climate preparedness and emergency management through the submission of projects within the context of the City's preparedness and emergency plans.

Policy CSR 8.7.5
Partner with the Department of Health on programs and initiatives to exchange data, plan and educate the community on the public health consequences of climate change, such as extreme temperatures and vector-borne diseases, and take steps to build capacity to respond to or prevent those consequences.

Policy CSR 8.7.6
Continue to collaborate with organizations that provide advocacy, education and outreach efforts including, but not limited to The Sandoway House Nature Center, the American (and Florida) Shore and Beach Preservation Association, Marine Industries Association of Florida, etc.

Objective CSR 8.8 Outreach on Resiliency

Increase communitywide dialogue on the importance of mitigation and response to flooding, sea level rise, heat events and weather-related events to increase the City's resiliency.

Policy CSR 8.8.1
Increase resilience to, and community awareness of, emergency management, natural or man-made hazards or disasters through education and outreach materials ensuring outreach to vulnerable populations.

Policy CSR 8.8.2
Discuss City's vulnerability and resiliency strategies with the business community, through the Chamber of Commerce or other avenues, to avoid business disruption due to floods, weather events and disasters (promoting incorporation of City's data into recovery plans). Work with the business community to develop resources encouraging business continuity planning.

Policy CSR 8.8.3
Develop a communications strategy in conjunction with the City Sustainability and Climate Action Plan that includes targeted outreach events, signage on sea level rise impacts at key public locations and other creative components and events.

Objective CSR 8.9 Social Aspects of Resiliency

Identify socially vulnerable populations at risk from future climate impacts, including flooding and heat exposure, to develop initiatives and address service deficiencies, that will increase the resilience and equity of those areas of the City.

Policy CSR 8.9.1
Ensure vulnerability assessments specifically identify and quantify socially vulnerable populations at risk from aging infrastructure or lack of economic capacity to respond to climate-related events and develop strategies

that are sensitive to these characteristics of those areas.

Policy CSR 8.9.2
Partner with organizations, such as the Department of Health, and not for profit organizations, to develop materials and education or community outreach events, sited where socially vulnerable populations reside, to increase awareness of, tools to address and improved resiliency for these areas in the City.

Policy CSR 8.9.3
Increase diversity in the public input components of the capital planning process- particularly for vulnerable populations.

CSR 9 EMERGENCY PREPAREDNESS

DAMAGE TO PUBLIC FACILITIES AND DISRUPTION OF SERVICES TO THE PUBLIC DUE TO NATURAL OR OTHER DISASTER WILL BE MINMIZED BY PRE-DISASTER FACILITIES PLANNING.

Performance Measures: Success in addressing the Objectives and Policies of Goal PFE 9 (Emergency Preparedness) shall be measured utilizing the following performance indicators:

- Number of projects that "harden" City facilities
- Adoption of an Emergency Operations Plan
- Preparation, completion, and implementation of a Continuity of Operations Plan (COOP); effectiveness of execution of COOP (if needed)
- Remaining available capacity at emergency shelters during storm

Objective CSR 9.1

Implement programs to "harden" facilities and prevent disruption of service as a result of natural or other disasters.

Policy CSR 9.1.1
All major repairs, reconstruction, or new construction of public facilities shall include design features to "harden" the facility and to add, where appropriate, self-sustaining energy source (i.e. solar with backup battery power) to enable these facilities to continue to provide services and be used as a safe haven during storm events.

Policy CSR 9.1.2
Plan for and work with others to upgrade the information/technology (IT) infrastructure in the City to assist with rapid post-disaster recovery.

Policy CSR 9.1.5
Plan for, construct, and maintain an emergency operations center (EOC) with a brick and mortar facility, staff, equipment, technology, and training that will meet current and estimated future needs of the City of Delray Beach. (add dates to complete by)

Policy CSR 9.1.6
Continue to participate in the Palm Beach County Local Mitigation Strategy Group and propose projects for funding via Federal Emergency Management Agency's Hazard Mitigation Grant Program.

Objective CSR 9.2

Adopt an Emergency Operations Plan that includes the existing disaster planning and recovery programs of the City, coordinate with other County plans and procedures, which shall be reviewed annually.

Policy CSR 9.2.1
The City's Emergency Operations Plan shall be modeled after the Federal Emergency Management Agency standards for Emergency Operations Plans and shall be comprised of all departmental Continuing of Operations Plans, as well as technical and hazard specific annexes.

Policy CSR 9.2.3
Annually review the City's Emergency Operations Plan to ensure the plan is consistent with the Palm Beach County Comprehensive Emergency Management Plan.

Policy CSR 9.2.4
Address both immediate and short-term aspects in the Emergency Operations Plan, including mobilization for cleanup; repair, and restoration of services; removal of hazards and damaged structures; and, coordination of interagency hazard mitigation and response reports/programs. The Plan shall include a post disaster recovery component for "all hazards," natural (excessive heat, drought, flood, hurricanes, storms) and man-made disasters (chemical spill, large event attack, terrorist attacks, attacks on public infrastructure). (add date by)

Policy CSR 9.2.5
Provide long range redevelopment in the Plan that provides for the land use and character of development which presently exists, except that the height of reconstructed buildings shall be limited to the then current height regulations of the City, except as provided in Policy CME 4.3.3.

Policy CSR 9.2.6
Adopt and utilize the shelter plan in the Palm Beach County Comprehensive Emergency Management Plan. Periodically assess the need for additional emergency staff shelter capacity and, when a need is anticipated, plan and budget for expanded capacity. To fund shelter expansions, consider an impact fee based on new residential development.

Objective CSR 9.3
Execute the steps outlined in the adopted COOP, as needed, for each event to ensure efficient and timely planning before, during, and after an event.

Policy CSR 9.3.1
Adopt and regularly review/update a Continuing of Operation Plan for all City departments to complete the Emergency Operations Plan and continue to review and update the Emergency Operations Plan and train departmental staff to implement the plan. [Complete by 2020]. Provide ongoing training for the use and implementation of the plans. (add date by)

Policy CSR 9.3.1
Ensure that all facilities, roadways, and public services are prepared for an event.

Policy CSR 9.3.2
Take the available and appropriate steps to ensure the safety of its residents and emergency personnel during an event.

Policy CSR 9.3.3
Ensure that damage and impacts from the event are assessed immediately following the event.

Policy CSR 9.3.4
Take the appropriate steps to ensure a timely clean-up and restoration of the community support and continuity of operations for city services for all residents and businesses.

Policy CSR 9.3.5
Coordinate with FEMA to ensure appropriate assistance is provided to the City and its residents based on the impact of the event.

Policy CSR 9.3.6
Evaluate and assess the actions taken before, during, and after the event to address any issues or concerns, as well as areas of improvement and strength to ensure readiness for the new event.

Policy CSR 9.3.7
Continue established and ongoing programs for emergency preparedness, emergency evacuation, and disaster relief and shall enhance and expand such programs through periodic reviews. After a significant event, evaluate the effectiveness of these programs and policies, as well as the those of the County, schools, hospitals, etc. and provide an after-action report to the public.

Objective CSR 9.4
Continue to inform the public of the impact of potential natural disasters and hazard events, before, during and after events, as well as measures taken to protect human life and property.

Policy CSR 9.4.1
Maintain and enhance means of public information before, during, and after named and unnamed events using text messaging, social media, AM radio station, other means of communication when no power available.

Policy CSR 9.4.1
Provide public education campaigns and workshops in order to increase understanding of the potential impacts of natural disasters, including evacuation areas, evacuation routes, and preparedness.

Policy CSR 9.4.2
Provide public information regarding planned and completed infrastructure projects to mitigate the impacts of natural disasters, such as, but not limited to storm surge and tidal flooding.

Policy CSR 9.4.3
Provide public information regarding programs and grants available to harden properties.

APPENDIX: FLORIDA STATUTES REVIEW FOR COMPLIANCE WITH SECTION 163.3177, REQUIRED AND OPTIONAL ELEMENTS OF COMPREHENSIVE PLAN; STUDIES AND SURVEYS	
Requirement	**Provided**
Subsection (6)(d): A conservation element for the conservation, use, and protection of natural resources in the area, including air, water, water recharge areas, wetlands, waterwells, estuarine marshes, soils, beaches, shores, flood plains, rivers, bays, lakes, harbors, forests, fisheries and wildlife, marine habitat, minerals, and other natural and environmental resources, including factors that affect energy conservation.	Goal CSR 1 Goal CSR 2 Goal CSR 3 Goal CSR 4 Goal CSR 5 Goal CSR 6 Goal CSR 7 Goal CSR 8 Goal CSR 9
Subsection (6)(d)1: The following natural resources, where present within the local government's boundaries, shall be identified and analyzed and existing recreational or conservation uses, known pollution problems, including hazardous wastes, and the potential for conservation, recreation, use, or protection shall also be identified: a. Rivers, bays, lakes, wetlands including estuarine marshes, groundwaters, and springs, including information on quality of the resource available. b. Floodplains. c. Known sources of commercially valuable minerals. d. Areas known to have experienced soil erosion problems. e. Areas that are the location of recreationally and commercially important fish or shellfish, wildlife, marine habitats, and vegetative communities, including forests, indicating known dominant species present and species listed by federal, state, or local government agencies as endangered, threatened, or species of special concern.	CSR Map 1 CSR Map 2 CSR Map 3 CSR Map 4
Subsection (6)(d)2: The element must contain principles, guidelines, and standards for conservation that provide long-term goals and which meets subsections a-k	See Below.
Subsection (6)(d)2.a: Protects air quality.	Goal CSR 1 Objective CSR 1.1 Policy CSR 1.1.1 Policy CSR 1.1.2 Policy CSR 1.1.3 Policy CSR 1.1.4 Objective CSR 1.2 Objective CSR 1.5 Policy CSR 1.5.1 Policy CSR 1.5.3

APPENDIX: FLORIDA STATUTES REVIEW FOR COMPLIANCE WITH SECTION 163.3177, REQUIRED AND OPTIONAL ELEMENTS OF COMPREHENSIVE PLAN; STUDIES AND SURVEYS	
Subsection (6)(d)2.b: Conserves, appropriately uses, and protects the quality and quantity of current and projected water sources and waters that flow into estuarine waters or oceanic waters and protect from activities and land uses known to affect adversely the quality and quantity of identified water sources, including natural groundwater recharge areas, wellhead protection areas, and surface waters used as a source of public water supply.	Goal CSR 2 Policy CSR 2.1.2 Policy CSR 2.4.14 Policy CSR 2.4.16 Policy CSR 4.2.12 Policy CSR 4.3.1 Policy CSR 4.4.4 Policy CSR 8.3.5
Subsection (6)(d)2.c: Provides for the emergency conservation of water sources in accordance with the plans of the regional water management district.	Policy CSR 2.4.14
Subsection (6)(d)2.d: Conserves, appropriately uses, and protects minerals, soils, and native vegetative communities, including forests, from destruction by development activities.	Goal CSR 3 Objective CSR 3.1 Policy CSR 8.3.5
Subsection(6)(d)2.e: Conserves, appropriately uses, and protects fisheries, wildlife, wildlife habitat, and marine habitat and restricts activities known to adversely affect the survival of endangered and threatened wildlife.	Goal CSR 4 Objective CSR 4.1 Policy CSR 4.1.3 Policy CSR 4.1.4 Policy 4.1.7 Policy 4.2.2
Subsection(6)(d)2.f: Protects existing natural reservations identified in the recreation and open space element.	Goal CSR 4 Objective CSR 4.2 Policy CSR 4.2.1 Policy CSR 4.2.9
Subsection(6)(d)2.g: Maintains cooperation with adjacent local governments to conserve, appropriately use, or protect unique vegetative communities located within more than one local jurisdiction	Policy CSR 4.2.5 Objective CSR 4.3 Policy CSR 4.3.1 Policy CSR 4.3.2 Policy CSR 4.3.3
Subsection(6)(d)2.h: Designates environmentally sensitive lands for protection based on locally determined criteria which further the goals and objectives of the conservation element	Policy CSR 2.1.2 Goal CSR 4 Objective CSR 4.2 Policy CSR 4.2.1 Policy CSR 4.2.8
Subsection(6)(d)2.j: Protects and conserves wetlands and the natural functions of wetlands.	Policy CSR 4.2.12 Objective CSR 4.4 Policy CSR 4.4.1 Policy CSR 4.4.3
Subsection(6)(d)2.k: Directs future land uses that are incompatible with the protection and conservation of wetlands and wetland functions away from wetlands.	Objective CSR 4.4 Policy CSR 4.4.5