

Draft 2

Public Facilities & Services Element

Data, Inventory, and Analysis

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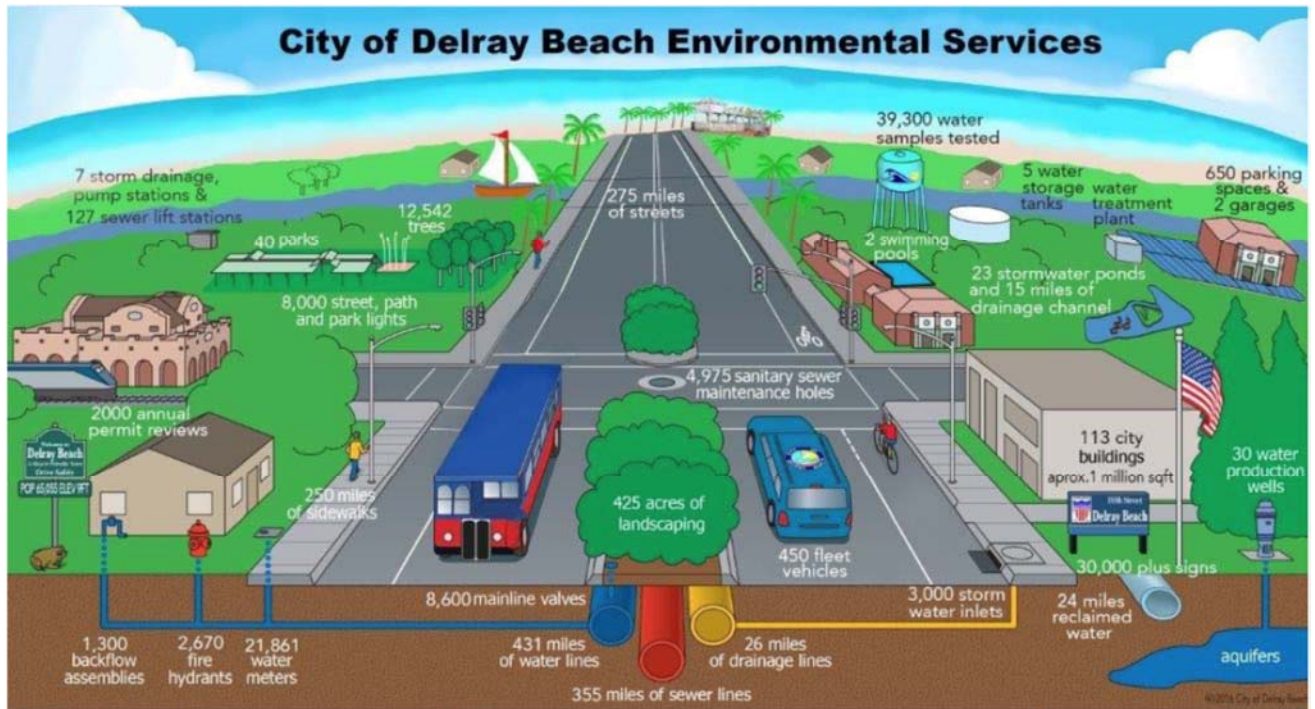
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INTRODUCTION

The purpose and objective of the Public Facilities & Services Element is to provide cost effective total life cycle management of the City's public infrastructure and key essential services to enhance sustainability and the health, safety and welfare of residents, businesses and visitors.

The City of Delray Beach maintains extensive public infrastructure and facilities. Storm drainage systems, water treatment and transmission systems, City-owned buildings, landscaping and street trees, sidewalks, signs, parks, public parking, and street lamps are all maintained by the City. This infrastructure provides property owners, residents and visitors to the City with a high quality of life. A graphic depiction of the City's infrastructure is provided on the following page.

The Public Facilities & Services Element summarizes items of significance in the City's sanitary sewer, potable water, solid waste, stormwater management system, transportation system, and public facilities. The following summaries have been prepared to facilitate review of the requirements of Florida Statutes (F.S.) 163.3177 and guide the City of Delray Beach in the creation of Goals, Objectives, and Policies to govern the provision of public facilities and services. The text of the Element is a summary of the complete inventory, analysis, and recommendations which are contained in the technical source documents. As a summary, only significant items are highlighted. The source documents should be referred to for more information.



INVENTORY & ANALYSIS

General Government Facilities

The City has 113 public facilities. An inventory of the major buildings and facilities owned by the City includes:

Table PFE-xx General Government Facilities			
Location Name	Street Address	Occupancy Description	Year Built
GENERAL GOVERNMENT BUILDINGS/FACILITIES			
City Hall Complex	100 NW 1st Avenue	City Hall Building	1961
City Attorney Building	200 NW 1st Avenue	City Attorney Building	1959
Employee Health & Wellness Center	525 NE 3rd Avenue	Employee Health & Wellness Center	
Environmental Services Complex	434 S Swinton Avenue	Administration/Office - Public Works Facilities	2007
Federspiel Garage Building	22 SE 1st Avenue	Parking Garage	2007
OSS Garage Building	95 NE 1st Street	Parking Garage	2007
Public Library	100 Atlantic Avenue	Public Library	2005
PUBLIC SAFETY FACILITIES			
Fire Rescue Headquarters Building: Fire Station HQ	501 W Atlantic Avenue	Fire Rescue Headquarters Building: Fire Station HQ	1993
Fire Station #2 Building	35 N Andrews	Fire Station #2 Building	1991
Fire Station #3 Building	651 Linton Boulevard	Fire Station #3 Building	1971
Fire Station #4 Building	4321 Lake Ida	Fire Station #4 Building	2008
Fire Station #5 Building	4000 Germantown	Fire Station #5 Building	1993
K-9 Police Obstacle Course	1025 Mission Hill Road	K-9 Police Obstacle Course	
Ocean Rescue HQ Building: Anchor Park	340 South Ocean		1950
Police Headquarters Building	300 W Atlantic Avenue	Police Headquarters Building	1987
Police Substation (Lessee)	1570 S Federal Highway	Police Substation (Lessee)	
Seacrest Training Center	2350 N Seacrest Boulevard	Seacrest Training Center (Lessee)	2002
HISTORIC/CIVIC BUILDINGS			
1926 Historic Bungalow House (Lessor)	3 NE 1st Street	1926 Historic Bungalow House (Lessor)	1926
1931 Cason Cottage (Lessor)	5 NE 1st Street	1931 Cason Cottage (Lessor) Historic Cottage	1931
American Legion Post (Lessor)	196 NW 8 Avenue	American Legion Post (Lessor)	1966
Boy Scouts Building/Mike Macheck Boy Scout Park	405 Lake Ida Road	Equipment/Electrical	1962
Hunt House & Archive Bunker (Lessor)	111 NE Swinton Avenue	Hunt House & Archive Bunker (Lessor)	1931
Mae Volen Senior Center (Lessor)	850 N Congress	Mae Volen Senior Center	1997
Monterey House / Judge Knott Center (Lessor)	20 N Swinton Avenue	Monterey House / Judge Knott Center (Lessor)	1935
Munnings Cottage Building	154 NW 5 Avenue	Munnings Cottage Building (Lessor)	1931
Railroad Depot Building	80 Depot Avenue	Railroad Depot Building	1926
Spady House Museum	170 NW 5th Avenue	Spady House Museum	1924
RECREATION AND OPEN SPACE FACILITIES			
Playground	405 Lake Ida Road	Public Playground	
Amphitheater	SW 5 Ave & Atlantic	Public Amphitheater	
Family Recreation & Fitness Center Playground	850 N Congress	Multi-Play Structure	
Restrooms Building/Mike Macheck Boy Scout Park	405 Lake Ida Road	Boy Scout Facility	1993
Teen Center/Woman's Club Building	505 SE 5th Avenue	Teen Center/Woman's Club Building	1949
Skate Park: Teen Center/Woman's	505 SE 5th Avenue	Skate Park: Teen Center/Woman's	
OSS - Crest Theater	51 N Swinton Avenue	Theater/Gymnasium	1925
OSS - Cornell Museum Building	51 N Swinton Avenue	Museum	1913
OSS - Pavilion/Amphitheater Building	51 N Swinton Avenue	Pavilion/Amphitheater	2002
Crest Theater/Gymnasium	51 N Swinton Avenue	Loggia (West): Crest Theater/Gymnasium	1925
OSS - Gymnasium Building	51 N Swinton Avenue	OSS - Gymnasium Building	1925
Table PFE-xx (Continued) General Government Facilities			

Location Name	Location Name	Location Name	Location Name
Neighborhood Resource Center	141 SW 12th Avenue	Neighborhood Resource Center	1967
Community Land Trust Building: Neighborhood Resource Centers	141 SW 12th Avenue	Community Land Trust Building: Neighborhood Resource Centers	1967
Visitor Information Center Building: Sarah Gleason Park	2 S Ocean Avenue	Visitor Information Center Building: Sarah Gleason Park	1979
Community Center/Gym Building	50 NW 1st Avenue	Community Center/Gym Building	1961
Administration/Parks Maintenance	320 SW 4th Street	Administration/Garage Building: Parks Maintenance	1982
Atlantic Dunes Park	1605 South Ocean	Public Park Facility	
Barwick Park	4321 Lake Ida Road	Public Park Facility	
Bexley Park	1400 W Bexley Park Drive	Public Park Facility	2008
Catherine Strong Park	1500 SW 6th Street	Public Park Facility	2006
Currie Commons Park	750 SE 2nd Avenue	Public Park Facility	1980
Eagle Park Picnic Facility	55 Coral Trace Boulevard	Public Park Facility	
Knowles Park	1001 S Federal Highway	Public Park Facility/Boat Ramp	
Lake View Park	1100 Lake Drive	Public Park Facility/Boat Ramp	2006
Mangrove Park	1211 S Federal Highway	Public Park Facility/Boat Ramp	
Miller Park/Little Fenway	1905 SW 4th Avenue	Public Park Facility	
Merritt Park	320 SW 4th Street	Public Park Facility	1970
Orchard View Park	4060 Old Germantown Road	Public Park Facility	
Pine Grove Park	400 SW 10th Street	Public Park Facility	
Pompey Park	1101 NW 2nd Street	Admin/Gymnasium Building: Pompey Park	1978
Veterans Park	802 NE 1st Street	Public Park and Community Center	1966
Playground	2800 Albatross Road	Public Playground	
Beach Pavilion (Main)/Observation Ramp	Atlantic & Ocean	Public Beach Facility	
DB Municipal Golf Club	2200 Highland Avenue	Public Golf Course/Club House	1996
Lakeview Golf Course	2000 Dover Road	Public Golf Course	1973
Delray Beach Tennis Center Complex	201 W Atlantic Avenue	Public Tennis Center/Stadium	1993
Seacrest/Hilltopper Soccer Complex	2505 Seacrest Boulevard	Pavilion/Restrooms/Concession	2008
Delray Beach Memorial Gardens Municipal Cemetery	700 SW 8th Avenue	Municipal Cemetery & Mausoleum	1988
Delray Beach City Marina	159 Marina Way	Public marina	
<i>Source: City of Delray Beach</i>			

Wastewater Collection & Treatment Facilities

The South Central Regional Wastewater Treatment Plant is located in Delray Beach. Delray Beach and Boynton Beach established the South Central Regional Wastewater Treatment Plant and Disposal Board (SCRWWTP&DB) in 1974 as an independent special district through an interlocal agreement to treat wastewater. The City Commissions of both cities serve as the governing board and daily operations of the facility are overseen by a plant manager, who reports to the Board. The City is responsible for the wastewater collection and transmission system within the service area (See **Map PFE-XX**).

The service area coincides with the City’s Planning Area plus additional areas provided service through contract to the Town of Highland Beach and several single and multi-family connections in the Town of Gulf Stream. The service area encompasses approximately 18 square miles, as shown on Map **PFE-xx**.

The wastewater collection system consists of approximately 431 miles of gravity and force mains interconnected to 128 lift stations. Fewer than 100 septic systems remain within the service area. The treatment plant was constructed in 1979, with a programmed life of 50 years (2029). With the completion of the Palm Beach County Biosolids Pelletization facility, which dries and processes sludge for use in fertilizer, land spreading of sludge has been eliminated.

The design capacity of the South Central Regional Wastewater Treatment Plant for secondary treatment capacity is 24 mgd. The plant design capacity for tertiary treatment is 10 mgd for reclaimed water use.

Table PFE-xx CITY OF DELRAY BEACH SEWER CAPACITY/DEMAND ANALYSIS <i>(Includes Service to the City of Highland Beach)</i>	
CAPACITY	AVERAGE FLOW
24 mgd	17 mgd
<i>Source: South Central Regional Wastewater Treatment & Disposal Board.</i>	

Pursuant to the Florida Department of Environmental Protection (FDEP) 2008 Leah G. Schad Ocean Outfall Program, which requires the elimination of ultimate disposal of secondary effluent by ocean discharge by 60 percent of the annual flow by the year 2025, ultimate disposal is now through deep well injection and reclaimed water distribution, except for emergency situations and FDEP permitted exceptions. The FDEP baseline average annual daily flow is 12.9 mgd, which results in a required 7.7

mgd reuse requirement. The reuse goal is shared equally between Boynton Beach and Delray Beach, with a 3.85 mgd commitment for each municipality by 2025.

Within the City, there are sixteen (16) reclaimed water service areas with forty-two (42) existing users. The City intends to expand the users within each service area to provide an additional forty (40) users with reclaimed water. A map of existing and planned reclaimed water areas are shown in Map PFE-xx. The planned reclaimed water areas will be operational by the end of Fiscal Year 17/18. Additional reclaimed water areas are planned for implementation and can be viewed in the Reclaimed Water Master Plan Update (Matthews Consulting, 2016).

Between 2003 and 2016, the City installed \$8.7 million of reclaimed water system infrastructure. To phase the project out over multiple years of capital improvement budgets, the system was installed in eight (8) phases. The reclaimed water system has a re-pump station adequate to serve the barrier island and future infrastructure in the south-east service area, as well as approximately twenty (20) miles of transmission and distribution lines, ranging from 4 to 36 inches. The current reclaimed water capacity is 3.0 mgd, and the flow is 2.29 mgd. The City intends to expand the reclaimed water system by 2.0 mgd to comply with the SFWMD Consumptive Use Permit and FDEP Ocean Outfall Legislation.

Potable Water & Groundwater Recharge Facilities

Potable water treatment is provided by the City of Delray Beach at the Potable Water Treatment Plant through a lime softening system. The geographic service area coincides with the Planning Area plus service provided to the Town of Gulf Stream for 0.80 mgd, through contract as a bulk customer. The service area encompasses approximately 18 square miles, as shown on Map PFE-xx at the end of this element.

The lime softening water treatment plant, as noted within the 2015 10-Year Water Supply Facilities Work Plan is rated at 26 mgd by the Florida Department of Environmental Protection (FDEP). The City maintains a State certified laboratory, the primary responsibility of which is monitoring potable water quality. EPA Stage 2 Standards for disinfection by-products are being met through the use of supplemental chemical treatment.

Although demand is anticipated to increase, the City has more than adequate capacity to accommodate the projected increase in demand.

Table PFE-xx
POTABLE WATER SUPPLY DEMAND
 (Includes Service to Town of Gulf Stream)

CAPACITY	2015	2020	2025	2030
26 mgd	16.36 mgd	16.96 mgd	17.56 mgd	18.37 mgd

Source: City of Delray Beach 10-Year Water Supply Facilities Work Plan (2015)

The water distribution system includes 431 miles of water mains ranging from 2 inch to 24 inch diameter, 2,670 fire hydrants, transfer pumps, and storage facilities with a capacity of 8.5 mg.

The City currently withdraws groundwater from the 30 active Surficial Aquifer System (SAS) wells in four wellfields and one (1) Floridan Aquifer System (FAS) well for subsequent treatment and distribution to its service area. The City’s current SFWMD Water Use Permit No. 50-00177-W was issued on December 20, 2010 and expires on December 20, 2030. Under this permit, the annual groundwater allocation shall not exceed 6,972 MG (19.10 mgd) and the maximum monthly allocation shall not exceed 654 MG (21.8 mgd). In addition, there are more than 1,000 domestic wells within the service area, predominantly used for irrigation. There are no major groundwater recharge areas within the Planning Area, although the entire region east of the Conservation Area is identified as a prime aquifer recharge area by the U.S. Geological Survey and the Palm Beach County Comprehensive Plan.

Solid Waste Management

The Solid Waste Authority (SWA) of Palm Beach County has responsibility for the ultimate disposal of solid waste in the region. The City is responsible for collection of solid waste within the City limits through a franchise contract with a private firm.

The SWA’s solid waste management system consists of a landfill, a 2,000 ton per day waste-to-energy facility, a 3,000 ton per day mass burn waste-to-energy plant, a recovered materials processing facility, a biosolids pelletization facility, a vegetative waste processing operation, household hazardous collection facilities, and six transfer stations.

Solid waste is collected by the City’s contractor and is transported to the regional facility located near West Palm Beach. Solid waste can also be taken to a transfer

station, located on S.W. 4th Avenue just south of Linton Boulevard, which has a capacity of 1,000 tons per day. In 2006, the Southwest County Transfer Station was purchased to provide an additional 2,400 tons per day of capacity, to alleviate capacity shortages at the South County and Central County facilities.

The North County Regional Solid Waste Disposal Facility, operated by the SWA, is the ultimate disposal site. This facility occupies 334 acres, and consists of a Class 1 (garbage and incinerator residue) and a Class 3 (trash) landfill. The landfill, at its established Level of Service standard of 7.02 pounds per person per day, has sufficient capacity to serve until the year 2049. In addition to the landfill, the facility provides recycling and waste-to-energy incineration. As of September 30, 2016, the SWA North County Landfill had an estimated 25,303,180 cubic yards of landfill capacity remaining. The second Waste to Energy facility which began operation in 2015 will significantly extend the useful life of the landfill.

Despite the recycling and incineration programs, the landfill will reach final depletion by 2047. According to the 2017 Landfill Depletion Model report “SWA’s integrated solid waste management system is designed to minimize the reliance on landfilling in an environmentally responsible and cost-effective manner. While SWA’s combustion, recycling and recovery efforts have and will continue to significantly extend the life of the landfill, it is unreasonable to expect, given current technology, that landfill disposal can be completely avoided. Landfills, unlike other forms of infrastructure, are a depletable resource. The purpose of the Landfill Depletion Model is to forecast the estimated life of SWA’s landfill in order to assist facilities planning decisions and to assess the impact of alternatives on landfill life. As a planning tool, the model is useful in identifying the point or points in time at which a decision is required in order to ensure the availability of disposal capacity.

The total residential tonnage added to the landfill in 2016 was 32,569.8 tons. The City of Delray Beach produced 3,024.8 residential tons of recyclables in 2016 (this figure may include some commercial materials), which represents an 8.07% decrease in the City’s contribution to the landfill from 2008, when the City contributed 35,427.3 tons of residential garbage, bulk, and vegetation to the landfill.

Table PFE-XX shows the residential tonnage for Delray Beach between 2008 and 2016.

Table PFE-xx City of Delray Beach Residential Solid Waste & Recycling Annual Tonnage Report Summary 2008 -2016					
YEAR	Garbage (tons)	Recycle (tons)	Vegetation (tons)	Bulk (tons)	TOTAL ANNUAL TONNAGE

2016	16,509.9	3,024.8	1,626.2	14,793.71	35,954.6
2015	16,065.8	2,963.4	1,813.8	13,137.4	33,980.4
2014	18,738.3	4,267.4	853.6	15,800.6	39,659.9
2013	19,807.1	4,356.6	748.7	16,072.0	40,984.4
2012	19,285.0	4,057.6	728.0	16,300.1	40,370.7
2011	18,555.7	4,186.1	1,592.0	14,161.3	38,495.1
2010	18,235.5	4,419.5	1,515.5	13,765.2	37,935.7
2009	18,609.8	4,503.4	1,834.7	13,051.7	37,999.6
2008	19,630.7	5,216.3	2,053.7	13,742.9	40,643.6
<i>Source: City of Delray Beach / Southern Waste Systems</i>					

In 2016, [redacted] tons of residential and commercial waste were collected in the City. This compares to the County, who recycles 16.4% of all waste collected.

Table PFE-xx				
Incoming Waste, Palm Beach County				
Year	Building Debris	Garbage	Vegetation	Recycling
2016	85,109	935,295	293,662	82,923
<i>Source:</i>				

The Delray Beach population of 64,127 (2015) represents 4.65% of the County population of 1,377,300 (2015). The City’s impact on the landfill is [redacted]%, therefore, [redacted]% less than its portion of the County population and [redacted]% less than the 9.54 pounds per day per capita Level of Service standard established by the Solid Waste Authority. For 2015 (the latest population numbers available for comparison), this equates to [redacted] pounds per person per day—a <change> from the 6.02 pounds per person per day in 2007, and <difference from> the level of service standard of 7.13 pounds per capita per day. The City’s 2016 contribution to the landfill is [redacted]% of the total.

The City has an aggressive recycling program that began in 1990. The program includes curbside residential recycling for single family and multi-family homes. Additionally, the implementation of the source separated recycling program contributed to the need for the purchase of the Southwest County Transfer Station. The program accounts for a reduction to the waste stream of 3,024.83 residential tons in 2016. This represents a reduction of 8.26% in the residential waste stream, but less of a reduction than 2008 (12.83% reduction).

As discussed above, Delray Beach is well below the established level of service standard of 9.54 pounds per capita per day, at [redacted] pounds per person per day, which allows the landfill to meet its capacity goals by the projected final depletion year.

Stormwater Management

Responsibility for stormwater management in the City is divided among a hierarchy of state and regional agencies, the City, and landowners, as follows:

Table PFE-xx

Stormwater Management Agencies

AGENCY	RESPONSIBILITY
South Florida Water Management District	Major canals and structures; permitting
Lake Worth Drainage District	Lateral and equalizer canals and minor structures
City of Delray Beach/Palm Beach County	Public stormwater collection system
Land Owners	On-site storm sewers and retention areas

Stormwater is managed through a combination of interconnected SFWMD canals and natural waterways, local drainage districts, County and City government facilities, and community and neighborhood drainage systems.

South Florida Water Management District

Congress authorized the Central and Southern Florida Project in 1948 to control flood and drought. The District is operated and maintained by The South Florida Water Management District (SFWMD), whose predecessor the Central and Southern Florida Flood Control District, was established in 1949.

Florida is divided into 5 Water Management Districts—the City of Delray Beach is located within the South Florida Water Management District (SFWMD). The SFWMD is a regional governmental agency that manages the water resources in the 16 counties from Orlando to the Florida Keys, and serving a population of 8.1 million residents. SFWMD is the oldest and largest of the state's five water management districts. The agency is responsible for managing and protecting South Florida water resources by balancing and improving flood control, water supply, water quality and natural systems.

The restoration of the Everglades is a key project – the largest environmental restoration project in the United States. Lake Okeechobee and its watershed are another important focus of the SFWMD. The District is working to improve it, the Kissimmee River and its floodplain, and South Florida's coastal estuaries.

Stormwater is managed by SFWMD through a system of canals and natural waterways that work in connection with community and neighborhood systems.

Lake Worth Drainage District (LWDD)

The Lake Worth Drainage District (LWDD) was created in 1915 under Chapter 6458 of the 1913 General Drainage Laws of Florida. Currently, the District operates as an independent special district under Chapter 2009-258, Laws of Florida, and under F.S. 189 and 298

The LWDD was created to:

- Reclaim, drain, and irrigate the lands within its boundary.
- Provide water control and water supply.
- Protect the lands within its boundary from the effects of water by means of the construction and maintenance of canals, ditches, levees, dikes, pumping stations and other works.
- Provide improvements for the purpose of making the area habitable for both settlement and agriculture.

LWDD protects the 700,000 residents in its service area from flooding by maintaining approximately 500 miles of canals and their right-of-ways, 20 major water control structures and several minor structures. This system is also operated to provide ground water recharge to prevent saltwater intrusion for numerous municipal water utilities.

LWDD encompasses roughly 200 square miles in southeastern Palm Beach County, generally bordered on the west by the Arthur R. Marshall Loxahatchee National Wildlife Refuge, on the east by 1-95, on the north by Okeechobee Boulevard and on the south by the Hillsboro canal. There are 13 municipalities entirely or partially within the boundary of the LWDD (see Map **PFE-xx**). The western half of the City of Delray Beach is within the LWDD boundaries.

The responsibilities of the LWDD include:

- Permitting of construction projects that discharge into LWDD canals.
- Aquatic weed control program utilizing EPA & DEP approved herbicides.
- Daily inspections of 20 major water control structures and weekly inspection of minor water control structures.
- Daily recording of rainfall at multiple locations throughout the LWDD.
- Daily monitoring of surface water elevations at multiple locations.
- Water quality monitoring.
- Mowing of canal banks and berms.
- Removal of encroachments within canal rights-of-way.
- Community outreach and educational programs.

Palm Beach County

The City of Delray Beach is part of the Palm Beach County Stormwater Management Program (SWMP), in order to maintain compliance with the Environmental Protection Agency (EPA) Municipal Separate Storm Sewer System (MS4) National Pollutant Discharge Elimination System (NPDES). NPDES is a federal program to eliminate stormwater pollutant discharge to “receiving waters.” Palm Beach County applies for NPDES permitting for forty (40) governmental units within the County – including the City of Delray Beach – to the Florida Department of Environmental Protection (FDEP) through the lead permittee, the Northern Palm Beach County Improvement District (NPBCID). The City is responsible for monitoring and assessment of pollutants discharged into water bodies, with discharges not to exceed the Total Maximum Daily Loads (TMDLs). All stormwater management and monitoring is subject to the NPDES requirements. MS4 permit (FLS000015-004) is scheduled to expire in 2021.

City of Delray Beach

Currently, the city maintains 3,000 stormwater inlets and over 26 miles of storm drainage pipes.

The City established the SFWMD Level of Service Standards for drainage as the City’s standard in the Goal’s, Objectives, and Policies:

Table PFE-xx			
Level of Service Design Standards			
Level of Service Standard	Design Standard for Roadways	Impacts	
		General Conditions	Accessibility
A	10-year, 24-hour	Possible minor ponding	Roads are accessible
B	5-year, 24-hour	Possible minor ponding	Roads are accessible
C	3-year, 24-hour	Possible minor ponding	Roads are accessible
D	< 3-year, 24-hour	Portions of area have ponding with moderate duration < 12 hours	General inconvenience
E	< 3-year, 24-hour	Ponding with relatively long duration > 12 hours	Sections of roadways are not accessible and general inconvenience
F	< 3-year, 24-hour	Ponding with relatively long duration > 12 hours and structural damage	Sections of roadways are not accessible and general inconvenience

Source: 2000 Stormwater Master Plan for the City of Delray Beach by Kimley-Horn

As described in the 2000 Stormwater Plan, these Level of Service standards are applied to City drainage in the following manner (City of Delray Beach 2000 Stormwater Master Plan Update, Kimley Horn and Associates, Inc):

- All SFWMD permitted projects were assigned a Level of Service Standard A, B or C depending on the storm event used for design of the roadways within each permitted project. If the permit did not specify the roadway design standard, a Level of Service Standard C was assumed.
- All FDOT or Palm Beach County roadways (excluding 1-95 which was designed for greater than a 10-year, 24-hour storm event) were assigned a Level of Service Standard C (per FOOT and Palm Beach County standards) unless drainage problems have been identified.
- All undeveloped areas were assigned a Level of Service Standard C based on the assumption that as these areas are developed minimum standards will be met.
- All developed areas within the City with existing storm sewer systems were assigned a Level of Service Standard C. This assumes that the City has previously reviewed plans for these systems and minimum standard criteria have been met. Note some of these areas may contain isolated problems areas which, based on the available data, were thought to be attributed to localized irregularities and/or maintenance problems.

- All developed areas within the City without drainage systems, or with drainage systems that were determined to be inadequate but where significant drainage problems have not been identified, were assigned a Level of Service Standard D. Note these areas may contribute to drainage problems elsewhere.
- All developed areas within the City without drainage systems, or with drainage systems that were determined to be inadequate where significant drainage problems have been identified, were assigned a Level of Service Standard E.
- All developed areas where structural damage due to flooding has been identified by City Staff were assigned a Level of Service Standard F. (Often structural damage due to flooding occurs when buildings have a floor elevation that is below the road.)

This section is subject to change upon completion and adoption of the planned Stormwater Master Plan update.

Transportation System

A well-maintained transportation system is a component of public facilities, which is crucial to sustaining a high quality of life. The City has 275 (centerline) miles of streets, and 250 miles of sidewalks. Street infrastructure includes parking meters, street lights, signs, and pavement markings. The transportation system includes bike lanes, the trolley, a pending bike share program, and planned Tri-Rail Coastal Link station.

The Transportation Element and Capital Improvements Element provide a full inventory of the transportation facilities, needs, and planned improvements.

PUBLIC FACILITIES & SERVICES FRAMEWORK

In the late 1980s, the City Public Works Division prioritized expenditures for severe deficiencies in infrastructure, such as undersized and deteriorating water lines, insufficient water pressure, and saltwater inflow and infiltration in sewer lines. As improvements to these systems were completed, the City transitioned into renewal and replacement on an ongoing basis.

Currently, the City prioritizes project funding based on critical items, mandatory items, and desirable items (discussed in detail in the Capital Improvements Element). Since the City previously addressed critical and mandatory items, the majority of projects funded fall in the category of “desirable items.” This allows the City to invest more in innovative public facilities that improve sustainability and increase quality of life for Delray Beach citizens. These types of projects include facilities that process reclaimed water and multi-modal improvements.

The best management practices and recommendations for future projects provided below are based on this understanding of City public facility needs.

BEST MANAGEMENT PRACTICES

Best management practices for the public facilities and services described in this section can be grouped into two themes, based on the priorities and needs described above: Resilience and Multi-Modal Transportation. The majority of the recommendations are related to management practices, but several notable strategies are also discussed.

Resilience

Emergency Preparedness. Emergency planning was previously of a reactive nature for municipalities, but the practice has shifted to planning for preparation and recovery—more broadly described as resilience. To effectively plan, cities should use the following strategies (Source: American Public Works Association, 2015):

- Integrate multiple planning efforts
- Scale down data to the local level and share the information with the region as applicable
- Engage stakeholders
- Identify and prioritize programs that address vulnerability
- Develop measurable indicators of success
- Use electronic mapping

The American Planning Association (APA) stresses the importance of local ownership of emergency preparedness. Despite the federal, state, and local entities available to assist with disaster recovery, local emergency preparedness is a crucial factor in achieving resilience (Source: PAS Report 576, APA, 2014).

Green Infrastructure. Green streets are a proactive way to improve stormwater runoff. The term refers to infrastructure improvements within rights-of-way that use natural systems to “capture, treat, and infiltrate stormwater” (Source: APWA Reporter, June 2016). American Public Works Association (APWA) recommends seven best management practices for efficient, effective, and affordable green infrastructure: 1) integrate green infrastructure planning with other initiatives for multi-benefit projects, 2) integrate green infrastructure projects with other planned investments, 3) quantify the benefits of green infrastructure in terms of multiple systems (such as heat island effect, air quality, etc.), 4) explore alternative funding such as special tax levies, revised stormwater or traffic impact fee schedules, or partnerships with private partners 5) locate green infrastructure in close proximity to storm drains, 6) provide rebates and incentives to property owners who implement green infrastructure projects, and 7) use cost-effective designs.

Energy Efficiency. The energy required to operate potable water and wastewater treatment facilities accounts for a significant portion of utility provider budgets. As much as 40 percent of operating costs in a potable water system are for energy expenditures—energy efficient practices can result in a cost savings of 15 to 30 percent (Source: Environmental Protection Agency. EPA.gov). The sheer cost of energy, combined with the need to reduce energy consumption to mitigate climate change, municipalities should pursue solutions to reduce energy consumption – and reduce the cost to customers. One energy reduction strategy is the improvement of pumping system performance. After an analysis of the in-plant pumping system to understand energy consumption, municipalities can achieve greater energy efficiency through strategies such as selection of the appropriate pumps for the flow and pressure of the system, the use of an energy-efficient centrifugal pump, optimum pipe sizing, using pumps that match the system requirements (because system requirements are often not the same as those specified in the system design), regular maintenance (of components such as wear ring and rotor erosions), and regular tests of pumping system efficiency (Source: “Improving Pumping System Performance,” DOE, 2006).

Adaptation Action Planning. Adaptation strategies can be grouped into two categories: softening strategies, and hardening strategies (Adaptation Tool Kit: Sea Level Rises and Coastal Land Use, 2011). Hard armoring involves “hard-engineered structures to protect coastal development from flooding and erosion. Hard armoring can be built onshore or offshore and includes bulkheads, sea walls, revetments, dikes, tide gates, storm surge barriers, and groins.” The use of hardening has fallen out of favor because of the potential to increase flooding and erosion on natural properties—rather than letting the landscape provide natural protection and ecological services. Soft armoring “creates man-made barriers that replenish or mimic natural buffers or elevate land so that structures are less vulnerable to flooding, storm surge, and erosion. Examples of soft armoring include beach renourishment, dune creation, revegetation, wetlands restoration,²³⁹ and living shorelines.”

Infrastructure Maintenance & Improvements. The Environmental Protection Agency (EPA) has a best practice guide with flexible and scalable recommendations, to assist local governments in implementing sustainable water utilities practices (inclusive of both potable water and wastewater). The roadmap is designed to help municipalities address the challenges of aging infrastructure, climate change, population growth, and competing capital project priorities. (“Moving Toward Sustainability: Sustainable and Effective Practices for Creating Your Water Utility Roadmap”, EPA, 2014). Sustainable utility planning falls into the following core management areas: product quality and operational optimization, customer satisfaction and stakeholder understanding and support, employee leadership development, financial viability, infrastructure stability, operational resiliency, community sustainability, and water resource adequacy—supported by utility business planning and performance measurement / continual improvement. In each of these areas, the guide provides recommendations for implementation based on the municipality’s degree of adoption, growing successively more progressive.

The American Planning Association proposes a new best practices model – “One Water” – which eliminates the planning silos and addresses water supply, water quality, and stormwater as a single resource. “One Water is based upon the idea that all water within a watershed is hydrologically interconnected and is most effectively and sustainably managed using an integrated approach. One Water advances the rationale for managing water supply, wastewater, and stormwater as one resource—because that is how it exists in nature. The benefits of One Water include improved resource sustainability (greater reliability, security, and resilience), conservation of natural waters and related ecosystems, and flood avoidance” (Source: PAS Report 588, APA, 2017).

Multi-Modal Transportation

Complete Streets. In 2016, the City adopted a Complete Streets Policy, which is modeled on the best practices recommended by Smart Growth America.

- Includes a vision for how and why the community wants to complete its streets.
- Specifies ‘all users’ includes pedestrians, bicyclists and transit passengers of all ages and abilities, as well as trucks, buses and automobiles.
- Applies to both new and retrofit projects, including design, planning, maintenance, and operations, for the entire right of way.
- Makes any exceptions specific and sets a clear procedure that requires high-level approval of exceptions.
- Encourages street connectivity and aims to create a comprehensive, integrated, connected network for all modes.
- Is adoptable by all agencies to cover all roads.
- Directs the use of the latest and best design criteria and guidelines while recognizing the need for flexibility in balancing user needs.

- Directs that Complete Streets solutions will complement the context of the community.
- Establishes performance standards with measurable outcomes.
- Includes specific next steps for implementation of the policy.

This City policy provides the regulatory support for multi-modal improvements.

NEEDS & RECOMMENDATIONS

The needs and recommendations are based on both public input and subject matter feedback. As part of the Always Delray Comprehensive Plan update process, the City conducted a public workshop on May 20, 2017, to discuss Public Facilities and other Grow Elements.

Needs Identified by Public Input

Workshop participants identified short, mid, and long-range goals for public facilities improvements. These goals are:

Focus on Now

- Expansion of reclaimed water facilities to reduce ocean discharge
- Improved way-finding signs
- Reduce nuisance street flooding

Focus on Soon

- Beautification projects for roads and public spaces
 - Street lighting for public safety
 - Improved surveillance capabilities

Focus on Later

- A living shore line
- Sea walls
- Sidewalks / ADA Accessibility
- Street lights

This input from the public should be considered during the project prioritization process.

Additional needs were identified in the following areas as a result of inventory and analysis of existing public facilities and services. Since the City has completed all critical improvements to the system, the identified needs can be categorized as 1) initiatives to maintain or improve existing infrastructure, 2) initiatives to enhance quality of life, and 3) sustainability initiatives.

Recommendations and Initiatives to Maintain or Improve Infrastructure

Public Building Improvements. The City is undertaking a major initiative to refurbish and remodel buildings and facilities to become more energy efficient, sustainable, and resilient. This includes upgrades and replacements for HVAC systems, roofs, and other components of the facilities. In addition, the City is reviewing all public land/properties to evaluate each property and determine if there is a clear public need for the land/facility.

Recommendation:

- Continue to support public WiFi and explore its expansion as public infrastructure.
- Explore the feasibility of solar panels on public buildings.
- Work with the Delray Beach CRA to assess the need for new parking facilities and plan for their location.

Wastewater Improvements. Ongoing improvements are needed to force mains, sewer mains, lift stations, and other plant facilities, including the reclaimed water system. Significant expansion of the reclaimed water system is planned. These needs have been identified in the capital budget to accommodate ongoing demand and regulations. Infiltration into the collection system could impact future facility costs through capital expansion. This problem has been significantly reduced in recent years with the repair and reconstruction of the collection system city-wide. An on-going program to reduce infiltration/inflow is a cost-effective method of reducing the need for treatment facility expansion and requires on-going capital investment.

Recommendation:

- Continue the program for extending water and sewer mains to inhabited areas in the City, and allocate capital projects funding for treatment plant replacements to improve system efficiency.

Potable Water Improvements. Ongoing improvements are needed to water mains, water meters, raw water wells, and other plant facilities. These needs have been identified in the capital budget to accommodate ongoing demand and regulations.

Recommendation:

- Upgrade components of the potable water system to improve efficiency.

Solid Waste Improvements. Although the landfill has adequate capacity to accommodate the solid waste generated by the City, the City could increase the amount of waste that is recycled.

Recommendation:

- Increase involvement in recycling programs by expanding both participation and the number of permitted recyclable items.

Stormwater Improvements. Local and City-wide drainage deficiencies are identified in the Stormwater Master Plan and funded by the Stormwater Utility Fee. As of mid-2017, an update to the plan is planned, but pending at an unspecified start date. As a part of this process, the City has identified drainage deficiencies throughout the City. Projects identified include seawall overtopping along the Intracoastal Waterway to prevent flooding from high and king tides, miscellaneous projects to remedy street flooding, and projects to repair swale degradation. Increased flooding from sea level rise is also a growing stormwater concern for the City. Upon completion of the Stormwater Master Plan Update, the Public Facilities and Services Element should be updated to reflect new information.

Recommendation:

- Implement green streets as a tool to improve stormwater drainage.

Quality of Life Initiatives

Transportation Improvements. The City does not have an active Safe Routes to Schools program in place. The goal of Safe Routes to Schools is to encourage safe walking and biking to school, through public infrastructure improvements, such as sidewalks, bicycle lanes, traffic calming, and shade trees.

Recommendation:

- Implement a Safe Routes to Schools program to improve the safety of children walking and biking to school. This program would include evaluating existing conditions, mapping routes to school, identifying needed improvements, and prioritization of the identified improvements (based on the criteria in the capital improvements element).
- Analyze bicycle and pedestrian safety along routes to major destinations, such as parks, the downtown district, schools, and employment centers, and prioritize multimodal improvements in the capital improvements element.
- Increase the percentage of tree coverage throughout the city to aesthetically improve areas and provide a shaded environment for pedestrians. To measure

success in this area, the City should develop benchmarks for tree coverage on public streets and public land.

- Continue to plan for any multi-modal improvements needed in the Tri-Rail station area to serve the increase in density associated with transit oriented development.

Sustainability Initiatives

Emergency Preparedness. In 2017, Hurricane Irma hit Delray Beach with Category **xx** strength winds, highlighting vulnerabilities within the City, particularly to the water treatment system which lost power to 70% of pumping stations. To prevent disruption of service during a natural or manmade catastrophic event, the City should implement the following strategies.

Recommendation:

- Develop a plan for Continuity of Operations.
- Develop a plan for post disaster recovery for all hazards.
- Plan for the development of an emergency operations center (EOC).
- Develop strategies to reduce stormwater runoff.
- Develop strategies to prevent street flooding and ponding on critical streets.
- Develop backup power systems for street lights and traffic lights.
- Upgrade IT infrastructure to facilitate post-disaster recovery.
- Work with Palm Beach County to identify or construct and designate additional public facilities as shelters buildings with ARC 4496 design standards to withstand hurricane force winds, including window strength and protection, wind and debris exposure, and storm surge inundation.
- Coordinate with the Treasure Coast Regional Planning Council (TCRPC) on any updates to the Statewide Regional Evacuation Study for the Treasure Coast Region.

Adaptation Action Measures. An adaptation action area is “a designation in the coastal management element of a local government’s comprehensive plan which identifies one or more areas that experience coastal flooding due to extreme high tide and storm surge, and that are vulnerable to the related impacts of rising sea levels for the purpose of prioritizing funding for infrastructure needs and adaptation

planning” [F.S. 163.3164(1)]. Although the statute allows for the adoption of the Coastal High Hazard Area as the adaptation action area, the City has not yet adopted the designation.

Both softening and hardening solutions for flood-prone areas have been proposed or implemented by the City. Residents expressed support for living shorelines during the Always Delray process, and the City currently uses seawalls.

As the City continues to pursue adaptation action planning measures, some of the following steps should be taken.

Recommendation:

- Designate an adaptation action area.
- Develop and implement research-driven mitigation strategies in all water supply, transportation, and facilities planning studies.
- Explore the continued use of seawalls and the new installation of living shorelines.
- Upgrade City Hall and other public facilities for both emergency preparedness as well as for future resilience to sea level rise.
- Continue to direct growth of transportation facilities away from the high hazard / coastal evacuation areas.
- Prohibit public facilities in coastal high hazard areas.
- Continue to support stormwater drainage improvements – including green infrastructure projects – to mitigate the impacts of flooding.
- Continue the program to reduce inflow and infiltration in the wastewater collection system.