CHAPTER 4. INFRASTRUCTURE ELEMENT DATA AND ANALYSIS

INTRODUCTION

The purpose of the Infrastructure Element is to identify and describe the necessary public facilities and services needed to accommodate the City's population through the ~~2023 and 2038~~ planning periods. This element addresses the public facilities provided within the City which include:

- Potable Water
- Wastewater
- Solid Waste
- Drainage
- Ground Water Recharge

The Seminole Improvement District (SID) is the exclusive retail provider of potable water, reuse water, and wastewater facilities in the City, and is empowered to construct and maintain the facilities related to those services and drainage. SID's service area is limited to the City's municipal boundaries, and therefore, SID's capacity will be used only within the City. Pursuant to the City Charter, the City may not duplicate services provided by SID. The relationship between the City and SID for provision of those services and facilities is detailed in the Interlocal Agreement between the City of Westlake and the Seminole Improvement District Regarding the Provision of Certain Services, Infrastructure, and Public Facilities in the City of Westlake and for Assurance of Non-Duplication of Services dated March 2018 ("SID-Westlake Interlocal"). SID's specific plans for facilities construction, maintenance, and expansion are contained in its Water Control Plan dated ~~October 13, 2015~~ March, 3, 2021 and its Water, Wastewater and Reuse Utilities Master Plan dated ~~April 29, 2015~~ July 30, 2025. The SID utility service area is depicted on INF Map 4.1. The anticipated infrastructure facilities needed for the ~~2023 and 2038~~ planning periods depicted on INF. Map 4.2 and INF. Map 4.3.

SID operates pursuant to a number of permits from the South Florida Water Management District (SFWMD), the United States Army Corps of Engineers, and other agencies. These permits, which serve as data and analysis for the Plan, are available upon request.

POTABLE WATER

SID is the retail provider of potable water within the City. There is an Interlocal Agreement between Palm Beach County and the Seminole Improvement District Regarding the Sale of Bulk Water and Wastewater Service and Establishment of Water, Wastewater, and Reclaimed Water Service Areas and Settling Certain Disputes and Lawsuits Between the Parties, dated April 18, 2006, which provides that SID can purchase bulk water from the County at a rate of up to 5.0 MGD for the next thirty (30) years with provisions to extend the

agreement for 50 or more years. SID and Palm Beach County have invested in significant infrastructure in the City's area to provide potable water service. The development of the City will not require additional capacity to provide potable water to the City; rather it utilizes existing excess capacity from existing infrastructure. SID maintains water distribution facilities for service within the City and will expand internal potable water distribution lines concurrent with development within the City.

The City's level of service standard for potable water is 110 gallons per capita per day for residential uses and 150 gallons per 1,000 sq. ft. per day for non-residential uses with the following exceptions. Schools have a level of service standard of 18 gpd per student. Hotels have a level of service standard of 100 gpd per room. Parks have a level of service standard of 10 gpd per visitor. The per capita level of service standard will be applied to dwelling units using a 2.65 average population per household (PPH) unless it can be demonstrated that a different PPH is applicable. The City will continue to coordinate with SID to monitor and evaluate future operating demands as the City increases utility users and to adjust the level of service standard, if needed, through the planning periods.

The table below provides an analysis of potable water demand over the short and long term planning periods. The first section identifies the level of service standards used for the planning analysis. The second section identifies existing and projected population and uses that require potable water. Existing non-residential square footages include the Grove Market commercial area and the packing house parcel which includes industrial and office uses. Square footage numbers are from the Palm Beach County property appraiser parcel database. Existing student numbers are based on school capacity numbers from the Palm Beach County School District ~~2016/17 Work Plan~~ and anticipated students from a potential new school. New development square footage, hotel rooms, and college students are based on the existing development orders within the City. Projections of recreation and park day time visitors are based on averages derived from the National Recreation and Park Association 2016 study of park usage entitled "NRPA Americans' Engagement with Parks Survey." The third section computes the current and projected demand for the ~~2023 and 2038~~ planning periods.

The anticipated facilities needed for the ~~2023 and 2038~~ planning periods are identified in Table 4.1 and are also depicted on INF. Map 4.2 and INF. Map 4.3.

Table 4.1: Potable Water Analysis

Potable Water Level of Service			
	Gallons Per Day		
Per Person	110		
Per square foot for Commercial, Civic, and Industrial	0.15		
Per Student	18		
Per Hotel Room	100		
Per visitor of park and recreation facilities	10		
Demand Generators			
	2018	**2023**	**2038**
Population (excluding hotel population)	298	3,803	15,791
Existing Commercial, Civic, and Industrial S.F.	180,581	180,581	180,581
New Commercial, Civic, and Industrial S.F.	75,000	650,000	2,200,000
Total Commercial, Civic, and Industrial S.F.	255,581	830,581	2,380,581
K-12 Students	4,463	4,463	5,433
College Students	0	0	3,000
Total Students	4,463	4,463	8,433
Hotel Rooms	0	150	150
Recreation and Park Daytime Visitors	0	650	2,600
Demand Projections			
	2018	**2023**	**2038**
Population (excluding hotel population)	32,780	418,330	1,737,010
Total Commercial, Civic, and Industrial	38,337	124,587	357,087
Total Students	80,334	80,334	151,794
Hotel Rooms	0	15,000	15,000
Recreation and Park Day Time Visitors	0	6,500	26,000
Total Demand (Gallons Per Day)	151,451	644,751	2,286,891

The City will adopt a Water Supply Facilities Work Plan for the City that will identify water resource development and water supply development options consistent with the 2013 Lower East Coast Regional Water Supply Plan Update. The City is required to update the Infrastructure Element within 18 months of any update to the 2013 Lower East Coast Regional Water Supply Plan Update by SFWMD.

The M Canal runs along the northern boundary of the City, west of Seminole Pratt Whitney Road, and within the City boundary east of Seminole Pratt Whitney Road. The City of Westlake does not use the M Canal as a public water supply; however, the City of West Palm Beach does use the M Canal as a public water supply. The City's stormwater management and drainage, which is under SID's jurisdiction, is separate from and unconnected from the M Canal. The M-2 canal serves as the City's drainage canal, which carries water to the C-51 Basin.

WASTEWATER

SID is the retail provider of wastewater services to the City. SID has an Interlocal Agreement with Palm Beach County (the same 2006 interlocal agreement that addresses potable water) to purchase wastewater capacity at a rate up to 4.0 MGD. SID and Palm Beach County have invested in significant infrastructure in the Westlake area to provide wastewater service. The development of the City will not require additional capacity to provide wastewater service to the City; rather, it will utilize existing excess capacity, thereby discouraging

urban sprawl. SID has decommissioned its wastewater treatment facility but maintains pump stations, force mains, collection facilities and interconnects to the County system for wastewater service within the City. The City will coordinate with SID to expand internal wastewater distribution lines concurrent with development within the City.

The City's level of service standard for wastewater is 100 gallons per capita per day (gpd) for residential uses and 150 gallons per 1,000 sq. ft. per day for non-residential uses with the following exceptions: schools have a level of service standard of 18 gpd per student; hotels have a level of service standard of 100 gpd per room. Parks have a level of service standard of 10 gpd per visitor. The per-capita level of service standard will be applied to dwelling units using a 2.65 average PPH unless it can be demonstrated that a different PPH is applicable. The City will continue to coordinate with SID to monitor and evaluate future operating demands as the City increases utility users and to adjust the level of service standard if needed through the planning periods.

The table below provides an analysis of wastewater demand over the ~~2023 and 2038~~ planning periods. The first section identifies the level of service standards used for the planning analysis. The second section identifies existing and projected population and uses that require wastewater service. Existing non-residential square footages include the Grove Market commercial area and the packing house parcel which includes industrial and office uses. Square footage numbers are from the Palm Beach County property appraiser parcel database. Student numbers are based on school capacity numbers from the Palm Beach County School District ~~2016/17 Work Plan~~ and anticipated students from a potential new school. New development square footage, hotel rooms, and college students are based on the existing development orders within the City. Projections of recreation and park daytime visitors are based on averages derived from the National Recreation and Park Association 2016 study of park usage entitled "NRPA Americans' Engagement with Parks Survey." The third section computes the current and projected demand for the ~~2023 and 2038~~ planning periods. The anticipated infrastructure facilities needed for the ~~2023 and 2038~~ planning periods are identified in Table 4.1 and also depicted on INF Map 4.2 and INF Map 4.3.

Table 4.2: Wastewater Analysis

Wastewater Level of Service Standard			
	Gallons Per Day		
Per Person	100		
Per square foot for Commercial, Civic, and Industrial	0.15		
Per Student	18		
Per Hotel Room	100		
Per visitor of park and recreation facilities	10		
Demand Generators			
	2018	**2023**	**2038**
Population (excluding hotel population)	298	3,803	15,791
Existing Commercial, Civic, and Industrial	180,581	180,581	180,581
New Commercial, Civic, and Industrial S.F.	75,000	650,000	2,200,000
Total Commercial, Civic, and Industrial S.F.	255,581	830,581	2,380,581
K-12 Students	4,463	4,463	5,433
College Students	0	0	3,000
Total Students	4,463	4,463	8,433
Hotel Rooms	0	150	150
Recreation and Park Daytime Visitors	0	650	2,600
Demand Projections			
	2018	**2023**	**2038**
Population (excluding hotel population)	29,800	380,300	1,579,100
Total Commercial, Civic, and Industrial	38,337	124,587	357,087
Total Students	80,334	80,334	151,794
Hotel Rooms	0	15,000	15,000
Recreation and Park Day Time Visitors	0	6,500	26,000
Total Demand (Gallons Per Day)	148,471	606,721	2,128,981

REUSE WATER

Pursuant to the SID-Westlake Interlocal, SID will be the exclusive retail provider of reuse water within the City and will provide development within the City reuse water for irrigation. If reuse is not available from the County, irrigation may be supplemented by canal water as allowed by permit with the South Florida Water Management District.

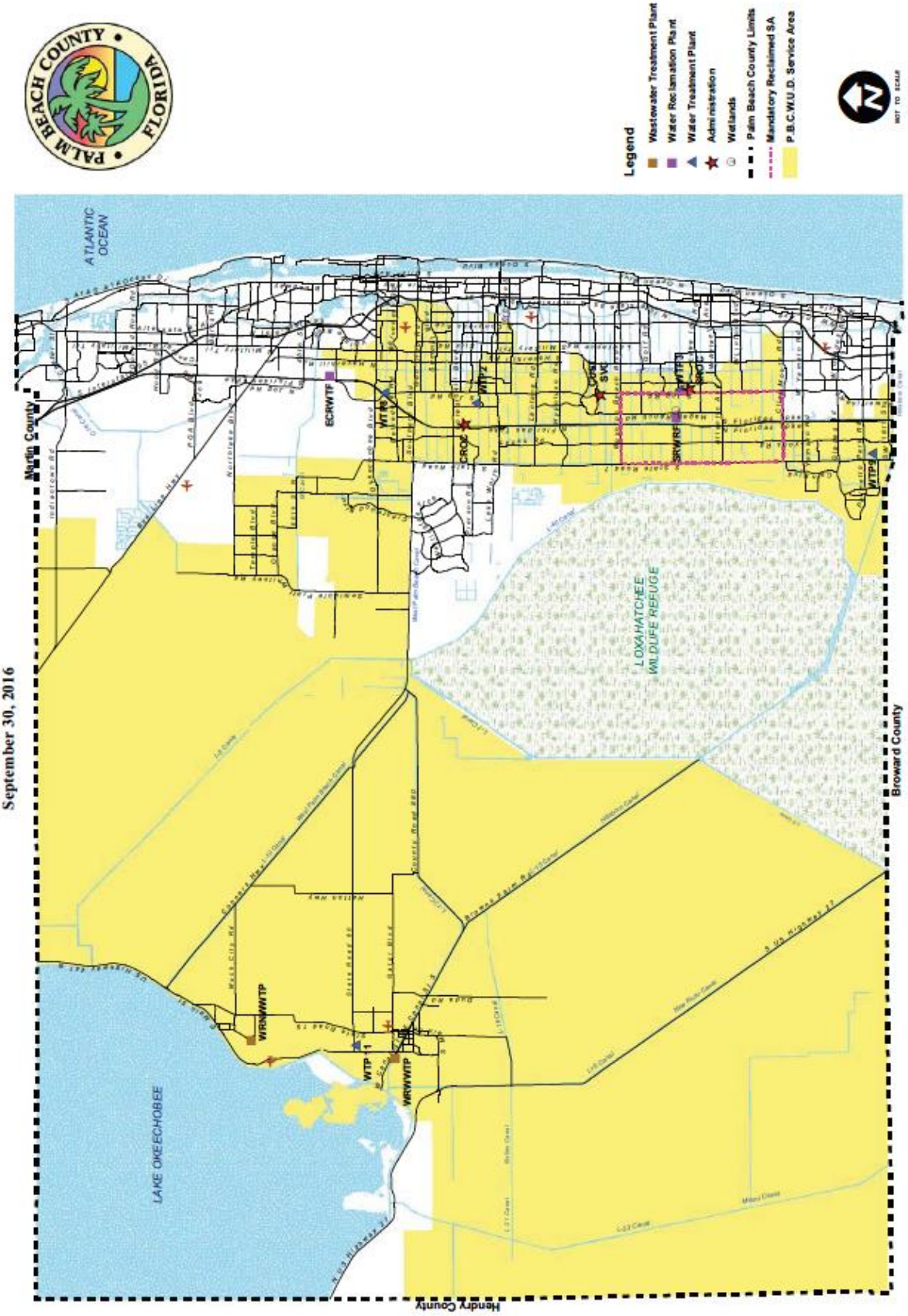
An Interlocal Agreement for the Purchase and Sale of Bulk Reclaimed Water between SID and Palm Beach County for the purchase of bulk reuse water dated April 20, 2010 gives SID a "prior reserve capacity" of reuse water to be provided by the county. The amount of reuse water is contingent upon the amount needed by Florida Power and Light. The agreement calls for the county to make available 2.85 MGD of reuse water in 2017, which is scheduled to increase to 3.85 MGD by 2025. SID will not produce its own reuse water, but will receive reuse water pursuant to this agreement with Palm Beach County. At this time, a re-pump and two storage facility~~ies~~ and some transmission pipes are connected and in operation. Further expansion of the distribution system within the City will occur as the City develops.

The anticipated infrastructure facilities for the ~~2023 and 2038~~ planning periods are depicted on INF Map 4.2 and INF Map 4.3.

Figure 4.1 below shows the service area and major facilities of the Palm Beach County Water Utilities Department as depicted in its Comprehensive Annual Financial Report Fiscal years Ended ~~September 30, 2016 and 2015~~.

Figure 4.1

PALM BEACH COUNTY, FLORIDA
WATER UTILITIES DEPARTMENT
SERVICE AREA (SA) AND MAJOR FACILITIES
September 30, 2016



SOLID WASTE

The Solid Waste Authority (SWA) of Palm Beach County is a dependent special district responsible for managing solid waste disposal and recycling programs within Palm Beach County pursuant to a Special Act of the Florida Legislature in 2001. The SWA integrated solid waste management system includes a 334 acre 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 biosolid pelletization facility, a vegetative waste processing operation, household hazardous collection facilities and 6 transfer facilities.

The SWA's 2017 Landfill Depletion Model projects sufficient landfill capacity through the ~~2038~~ planning period with the current lifespan of the facility projected to extend from ~~2038 to 2051~~ depending upon various demand and operational assumptions. This projection is based upon countywide growth projections. Based on the average solid waste generation rate for the county as a whole, the City is establishing a solid waste level of service standard of 7.02 pounds per capita per day, which can be maintained through both the ~~2023 and 2038~~ planning periods.

DRAINAGE

SID manages drainage throughout the City. The land area of the City is currently drained through the M-2 Canal. The ultimate discharge point for the area is the South Florida Water Management District C-51 Canal. There are numerous agricultural ditches and canals currently running through the City. The system was created for citrus agricultural use and provided both irrigation water supply and flood control within the area. Permits for peak discharge up to 2-inches in 24 hours via M-2 Canal to C-51 Canal are in place for SID, which can accommodate the City's future land uses shown Future Land Use Map (FLU Map 2.1).

SID will continue to provide drainage for the City. SID's master drainage management plan currently provides for a drainage system which will consist of an extensive lake system to be constructed in phases to accept runoff from common areas, collector roads, and residential and non-residential development areas. The water management system will continue to discharge into the M-2 Canal.

Drainage for the City can be maintained through the ~~2023 and 2038~~ planning periods. The anticipated infrastructure facilities needed for the ~~2023 and 2038~~ planning periods is depicted on INF Map 4.2 and INF Map 4.3.

The City is located within the SFWMD C-51 Basin and is subject to the SFWMD C-51 Basin Rule, (found in Part III, Ch. 40E-41, Rules 40E-41.220 through 40E-41.265, Florida Administrative Code), in addition to other stormwater regulations. The proposed minimum building floors will be designed at or above the higher of the peak stage in the 100-year, 3-day, zero discharge design storm or the SFWMD's C- 51 Basin 100-year stage. As set forth in Table 4.3A below, flood protection within the City will be provided for various storm events based on the rainfall depths provided by the isoheytal graphs in the SFWMD's Environmental Resource Permit Applicant's Handbook Volume II. The SID drainage infrastructure is designed to

accommodate the City as a whole, therefore the perimeter berm and peak discharge criteria applies to the overall SID stormwater management system, rather than individual development within the City.

Table 4.3A Drainage Level of Service Standards

Storm Event	Intensity of Rainfall Depth (in.)	Development, Roads, and Drainage Facilities
10 year-1 day	7.4	Local Roads and Parking Lots
25 year-3 day	12	Arterial Roads, Collector Roads, Perimeter Berm, and Peak Discharge
100 year-3 day, zero discharge	14	Finished Floors

Source: Isoheytel Graphs SFWMD's Environmental Resource Permit Applicant's Handbook Volume II
**Perimeter Berm and Peak Discharge are referring to master SID stormwater management system.*

SFWMD maintains and implements design elevation guidelines for buildings and road construction that address possible flooding, as illustrated in the Table 4.3B below.

Table 4.3B Drainage Level of Service Standards

Elevation (NAVD 88)	Development, Roads, and Drainage Facilities
18.23	Local Road Crown
18.23	Parking Lots
19.23	Arterial and Collector Road Crown
19.83	Finished Floors

Source: SFWMD Conceptual Permit 50-0021-S

GROUND WATER RECHARGE

The City is located within the jurisdiction of the SFWMD, and more specifically, within the SFWMD Lower East Coast (LEC) Planning Area. The principal ground water resource for the LEC Planning Area is the Surficial Aquifer System. The extensive water management and lake system within the City will provide for recharge of the local surficial aquifer consistent with the requirements of the SFWMD.