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## CITY OF LAKE WORTH BEACH, FLORIDA



## CITY OF LAKE WORTH BEACH 2020 10-YEAR WATER SUPPLY FACILITIES WORK PLAN

*prepared by*

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Engineer's Project No. B9019.00

# 2020 10-Year Water Supply Facilities Work Plan

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# SECTION 1



## Introduction

# Section 1

## Introduction

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### 1.1 Project Background

Adopted by the 1985 Florida Legislature, the “*Local Government Comprehensive Planning and Land Development Regulation Act*” (reference Chapter 163, Part II, F.S., also known as Florida's “*Growth Management Act*”) requires all of Florida's 67 counties and 410 municipalities to adopt Local Government Comprehensive Plans that guide future growth and development. Comprehensive plans contain chapters or “elements” that address future land use, housing, transportation, infrastructure, coastal management, conservation, recreation and open space, intergovernmental coordination, and capital improvements. The City of Lake Worth Beach’s Comprehensive Plan was last adopted April 2018 (with amendments approved April 2019).

Water Supply Facilities Work Plans are required to be developed by Local Governments in order to identify specific water supply planning needs. The Work Plans are subsequently coordinated with the Local Government’s Comprehensive Plan amendments, and these work plans are required to be updated every five (5) years to coordinate with 5-year updates to the South Florida Water Management District’s (SFWMD) Lower East Coast (LEC) Water Supply Plan.

### 1.2 Project Purpose and Scope

The purpose of this report is to serve as the City’s 10-Year Water Supply Facilities Work Plan in order to keep the City current with overall planning strategies and projection data. The City’s Work Plan will be used to coordinate with SFWMD and their recent update to the LEC Water Supply Plan which was adopted by the SFWMD governing board on November 2018. The City has 18 months from the date of adoption of the LEC, or by May 2020, to revise their Comprehensive Plan to incorporate the 10-Year Water Supply Facilities Work Plan. Work Plan details are included in Sections 2 through 4 of this report and recommended Comprehensive Plan updates are included in Section 5.

## SECTION 2



### Overview of Lake Worth's Existing Water Supply System

## Section 2

# Existing Water Supply System

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## 2.1 Service Area

The City of Lake Worth Beach is a coastal community located in central Palm Beach County, Florida. The City's water service area includes approximately 10 square miles of residential and commercial property, and serves a population of approximately 38,261 within the City, and a population of approximately 11,118 outside of the municipal boundaries for a total population of approximately 49,379 (2018 basis).. There are approximately 20,621 ERUs in the City's service area, and the City current serves approximately 13,965 water accounts. The water service area includes areas in unincorporated Palm Beach County, and one (1) large/bulk water area which serve Lake Clarke Shores/Hypoluxo Village (bulk water sales agreement) (refer to Appendix A for a copy of the bulk water agreement). The City's water service area is shown in **Figure 2-1**.

## 2.2 SFWMD Water Use Permit

The City's existing Water Use Permit No. 50-00234-W was issued by the South Florida Water Management District (SFWMD) on October 29, 2012 and has a 20-year permit duration (through October 29, 2032). A letter modification was issued December 15, 2016 with the same expiration date. The current permit provides for an annual allocation of 4,106 million gallons per year (MGY) (which equates to an equivalent annual average daily flow of 11.25 MGD) and a maximum monthly allocation of 356.5 million gallons. The City's raw water sources are the Surficial Aquifer System and the Floridan Aquifer System.

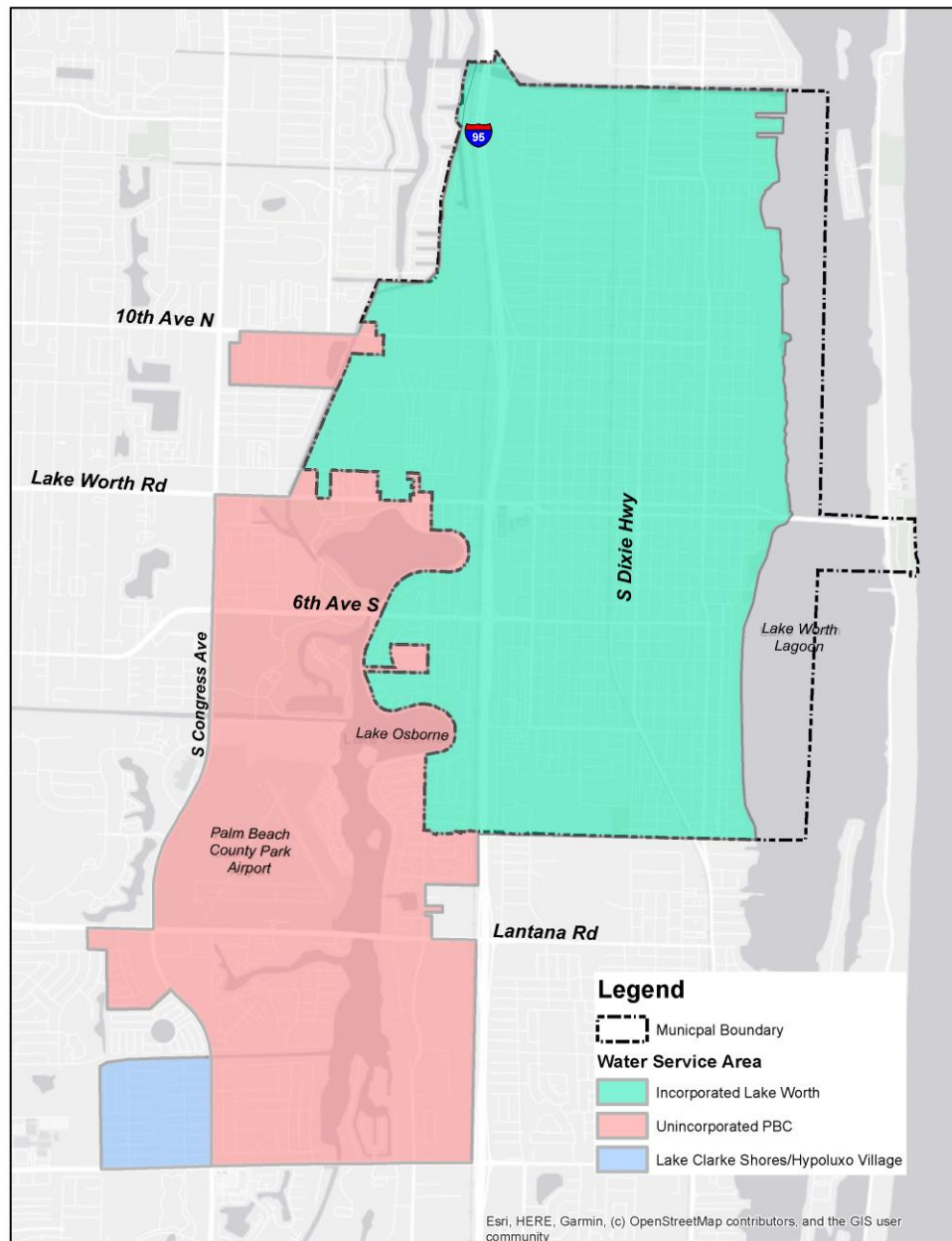
The following withdrawal limitations from specified sources are stipulated:

**Table 2.1**  
**Lake Worth Beach WUP Raw Water Withdrawal Limitations**

Criteria	Surficial Aquifer System	Floridan Aquifer System
Annual Withdrawal, MG (equiv. MGD)	1,916 (5.25)	2,190 (6.0)
Maximum Monthly Withdrawal, MG (equiv. MGD)	180 (5.92)	206 (6.77)
Monthly Average Dry Season (Dec. thru May), MG (equiv. MGD)	152 (5.0)	n/a
Monthly Average Wet Season (Jun. thru Nov.), MG (equiv. MGD)	168 (5.5)	n/a
SAS Wells 1-15, Monthly Average Dry Season (Dec. thru May), MG (equiv. MGD)	101 (3.3)	n/a
SAS Wells 1-15 Monthly Average Wet Season (Jun. thru Nov.), MG (equiv. MGD)	112 (3.68)	n/a

Source: SFWMD WUP No. 50-00234-W issued October 29, 2012.

Figure 2-1  
Lake Worth Beach Water Supply Service Area



## 2.3 Raw Water Sources

The Surficial Aquifer and the Floridan Aquifer are the sources that are utilized by the City of Lake Worth Beach for its raw water supply. The wells consist of casings that are 12-inch to 16-inch in diameter. The raw water is withdrawn by either submersible turbine pumps (Surficial) or surface mounted horizontal split case pumps (Floridan) that discharge through a raw water collection and transmission system.

Well descriptions and details are included in **Table 2.2**.

The total wellfield capacity is approximately 22 MGD but is limited to average annual and maximum monthly withdrawal per the SFWMD water use permit described above in **Section 2.2**.

### 2.3.1 Surficial Aquifer Source

There are fourteen (14) Surficial Aquifer wells as shown in **Figure 2-2**. Ten (10) wells are active, and two (2) wells are proposed. The Surficial Aquifer wells provide raw water to be treated at the City's Lime Softening Water Treatment Plant.

The Surficial Aquifer source is a renewable water resource, but must be managed to maintain the salt water interface at a significant distance from the wellfield. The Water Use Permit discussed previously recognized that a higher allocation was appropriate during the rainy season when Surficial Aquifer water resources were more plentiful. In addition, capturing some of the rainy season rainfall can benefit aquifer recharge. The City has implemented multiple approaches to achieve this goal including:

- Installing infiltration trench storm drains on many roadway projects,
- Installing or enlarging dry detention areas for City projects,
- Working with developers to provide dry detention for stormwater, and
- Working with other agencies to provide dry detention for stormwater.

The implementation of these strategies had resulted in increases in the seasonal ground water elevations to the benefit of the Surficial Aquifer.

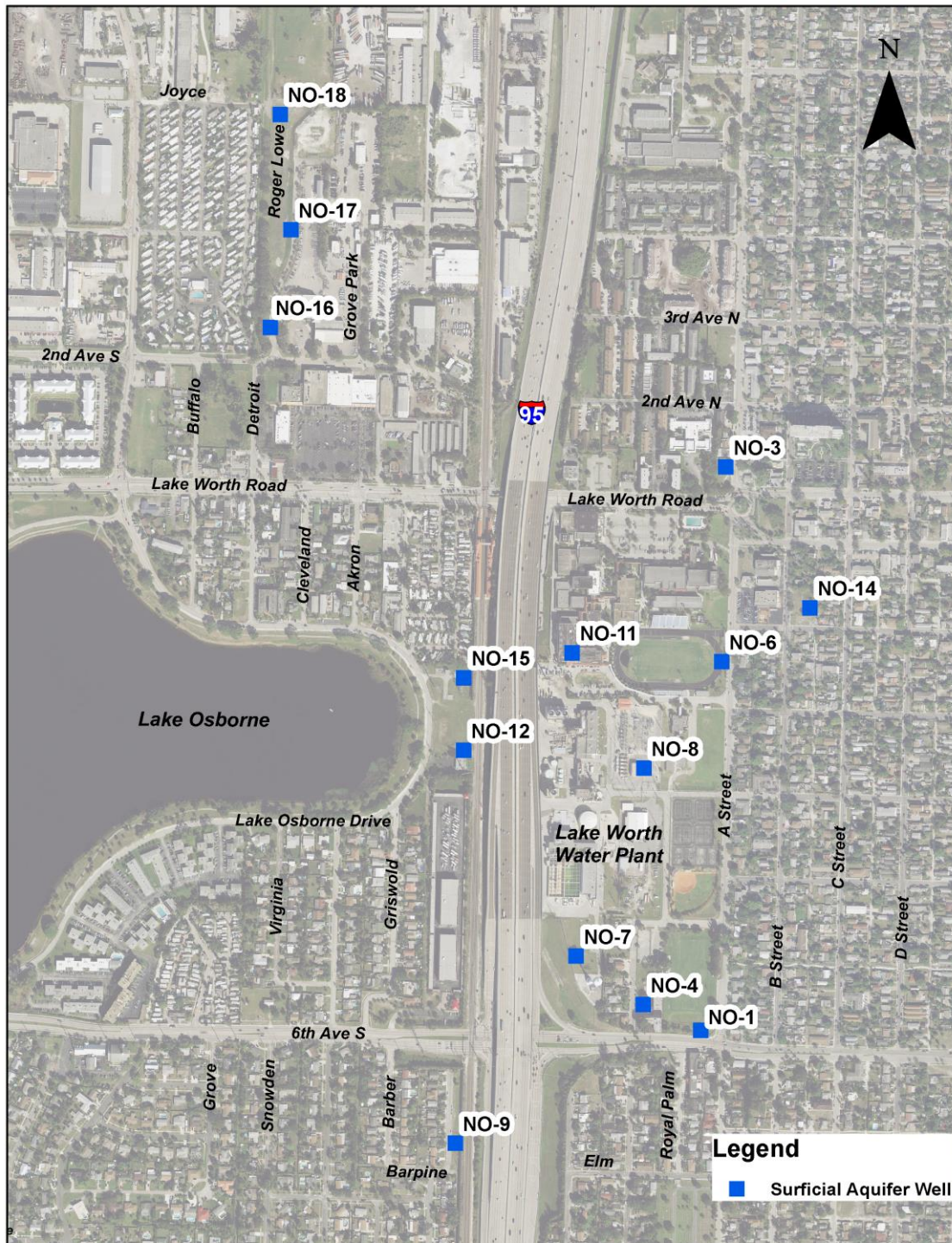
#### 2.3.1.1 Salt Water Interference

The City monitors the salt water interface through a series of eight monitoring wells located along the length of 5th Avenue South as well as other strategically located monitoring wells. **Figure 2-3** is a plot of the chloride levels from 2007 to 2020 for monitoring wells LW-2 and LW-4. Monitoring Well LW-2 is located at Palmway and 5th Avenue South and is located vertically near the face of the salt water wedge. Monitoring Well LW-4 is located at 'M' Street and 5th Avenue South and is located vertically near the bottom of the fresh water interface with the salt water zone. A one-year rolling average is utilized to smooth out the data points.

Table 2.2  
Lake Worth Beach Raw Water Wellfield

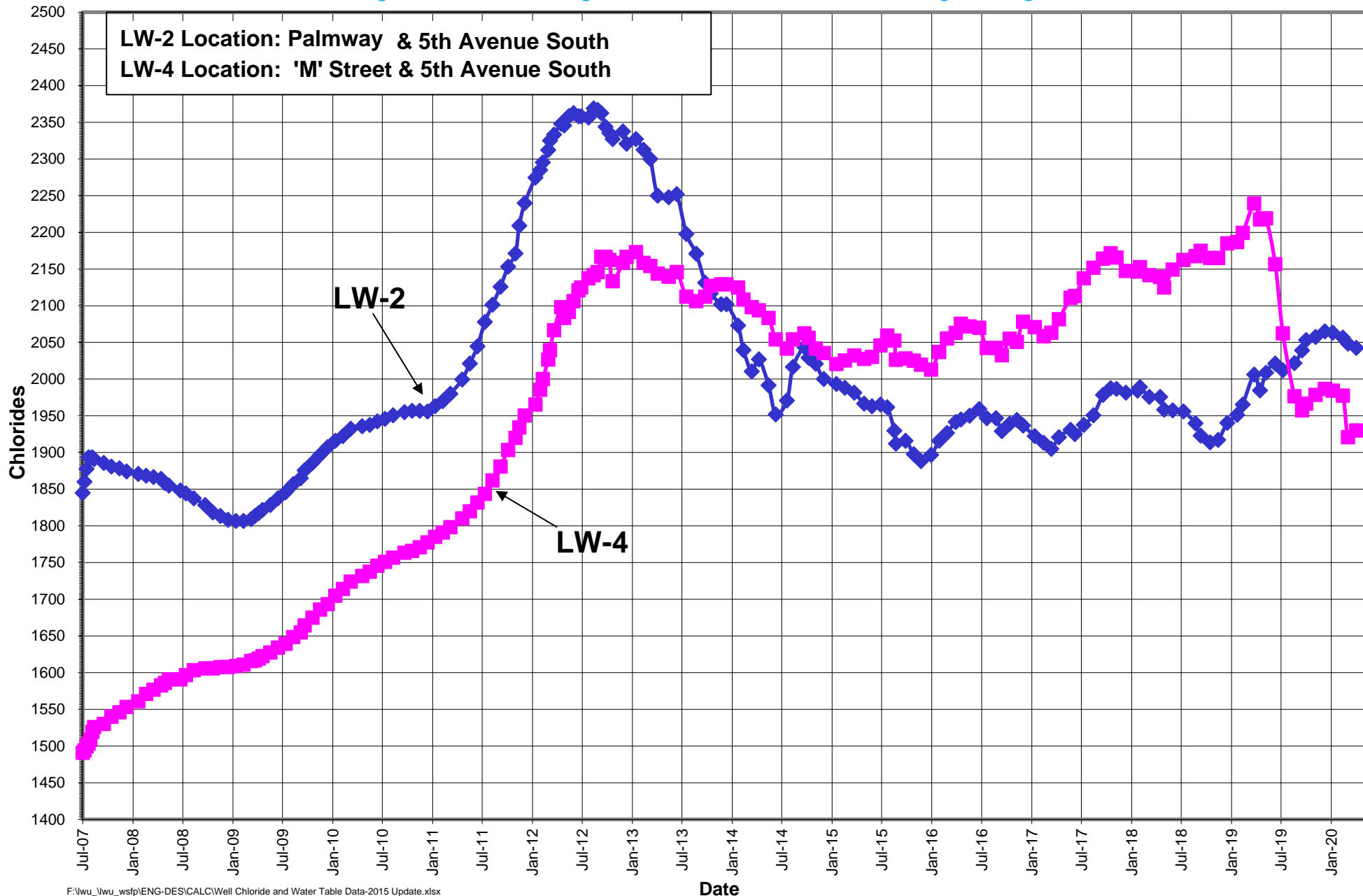
Well No.	Status	Diameter (in.)	Depth (feet)	Year Installed	Initial Capacity (gpm)
Surficial Aquifer Wells					
LW-1	Active Primary	12	250	1980	1000
LW-3	Active Standby	14	250	2000	800
LW-4	Active	12	110	1944	750
LW-6	Active Primary	14	175	1988	800
LW-7	Active Primary	14	150	1986	1000
LW-8	Active Primary	14	138	1987	700
LW-9R	Active Primary	12	258	2005	800
LW-11	Active Primary	14	102	1952	750
LW-12	Active Standby	14	160	2003	800
LW-14	Active	12	250	1974	800
LW-15R	Active Primary	14	280	2010	800
LW-16	Active Primary	16	284	2014	800
LW-17	Proposed Primary	16	TBD	TBD	800
LW-18	Proposed Primary	16	TBD	TBD	800
		Total Active + Proposed Capacity, gpm (MGD):			11,200 (16)
		Total Active + Proposed Firm Capacity, gpm (MGD):			10,200 (14.7)
Floridan Aquifer Wells					
F-1	Active	16	1520	2004	1500
F-2	Active	16	1484	2005	1500
F-3	Active	16	1490	2006	1500
F-4	Proposed (2020)	16	1550	TBD	1500
F-5	Proposed	16	1550	TBD	1500
F-6	Proposed	16	1550	TBD	1500
F-7	Proposed	16	1550	TBD	1500
F-8	Proposed	16	1550	TBD	1500
F-9	Proposed	16	1550	TBD	1500
F-10	Proposed	16	1550	TBD	1500
		Total Active Capacity, gpm (MGD):			4,500 (6.48)
		Total Active Firm Capacity, gpm (MGD):			3,000 (4.32)
		Total Active & Proposed Capacity, gpm (MGD):			15,000 (21.6)
		Total Active & Proposed Firm Capacity, gpm (MGD):			13,500 (19.4)

Figure 2-2  
Lake Worth Beach Surficial Aquifer Wellfield



Source: SFWMD WUP No. 50-00234-W issued October 29, 2012. Wells LW-2, LW-5, LW-10 and LW-13 have been abandoned.

Figure 2-3: Monitoring Well Chloride Data -Year Rolling Average



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After the RO plant started operation and demands on the surficial aquifer were reduced, the chloride concentration in both of these monitoring wells trended down. Initially Monitoring Well LW-2 trended down more sharply indicating that the salt water wedge was retreating oceanward. Since 2014 the chloride concentration in this well has been contained in a small range indicating that it is relatively stable. Monitoring Well LW-4 trended lower more slowly until 2016 and then began a gradual rise. In 2019 the well experienced a sharp drop in chlorides continuing to date. This drop in chlorides indicates that the surficial aquifer water table elevation likely increased exerting more pressure to depress the salt water interface. Overall the salt water interface has been retreating since 2012. This is a very positive indication that the City is managing its surficial aquifer withdrawals in a responsible manner.

### 2.3.2 Floridan Aquifer Source

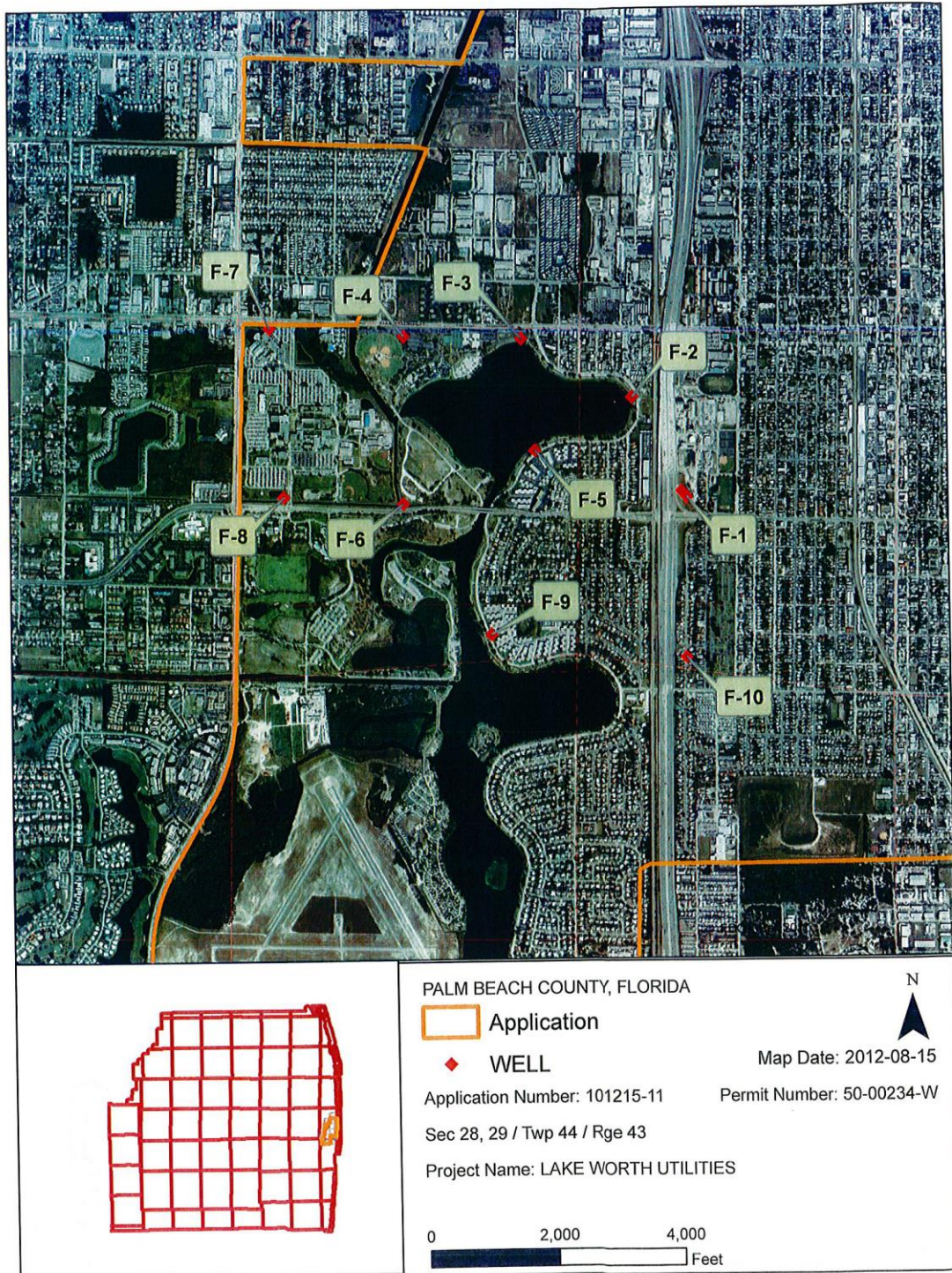
There are three (3) existing and seven (7) proposed Floridan Aquifer wells as shown in **Figure 2-4**. The Floridan Aquifer wells provide brackish raw water to be treated at the City's Reverse Osmosis (RO) Water Treatment Plant.

The Floridan Aquifer wells were first placed in operation in 2011. Therefore, they have been in operation for approximately nine years. In the operation of a Floridan Aquifer wellfield, it is critically important to rotate operation and rest the wells. While some increase in chloride concentration is anticipated over the life of the well, over pumping the wells can cause undesirable increases in the chloride concentration.

**Figure 2-5** shows a plot of the three-month rolling average of the chloride concentration for all three wells starting in 2011. The average starting chloride concentration was 2,025 mg/l while the current average concentration is 2,106 mg/l. This represents a very minor 4-percent increase over the first nine years of wellfield operation. This minor increase in chlorides is proof that the City is doing an excellent job operating the Floridan Aquifer wellfield in an appropriate manor of resting and rotating the wells. Figure 2-4 even demonstrates that Well F-3 had maintained a lower chloride concentration for the last four years than when it initially started production.

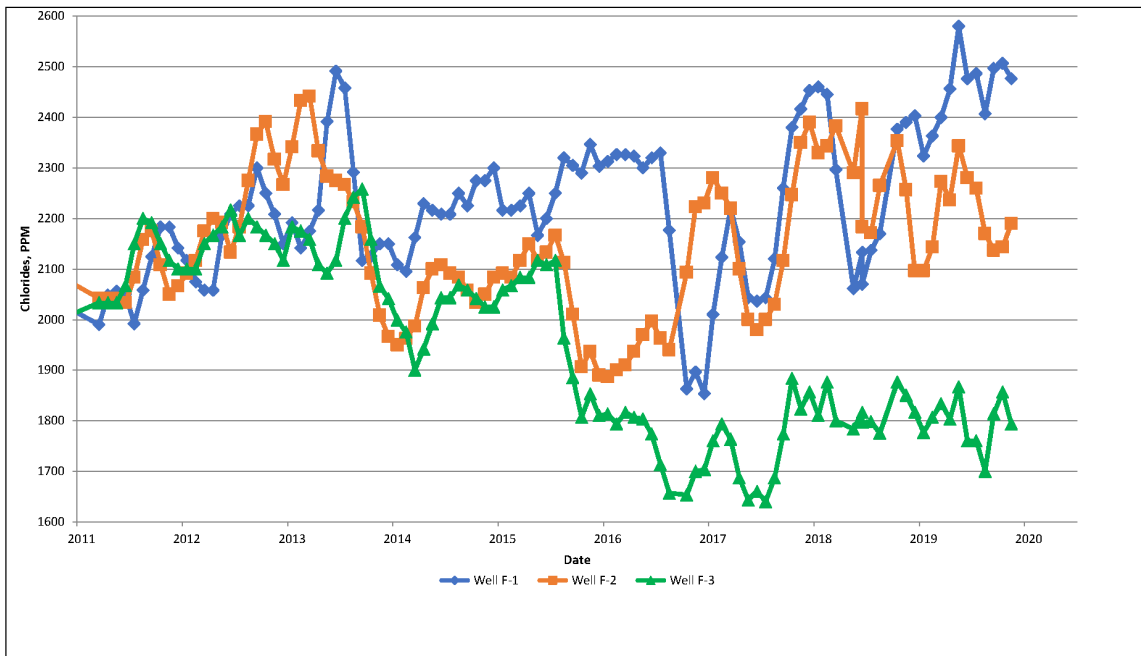
For reference the RO plant was designed to treat an average raw water chloride concentration of 3,000 mg/l as a minimum. The variable speed membrane feed pumps adjust their speed and pressure to accommodate an increasing chloride concentration. Based on other Floridan Aquifer well data in the County, the Floridan waters in some wells can increase to 4,000 mg/l chloride while other wells remain at a much lower concentration. Thus, an average blended concentration of 3,000 mg/l chlorides was utilized in the RO WTP Design Assumptions. Based on the current chloride concentrations noted above, the City's Floridan Aquifer wells are substantially below these typical levels and appear that they will remain so for the foreseeable future.

Figure 2-4  
Lake Worth Beach Floridan Aquifer Wellfield



Source: SFWMD WUP No. 50-00234-W issued October 29, 2012.

Figure 2-5  
Floridan Aquifer Wells  
3-Month Rolling Average Chloride Concentration



## 2.4 Water Treatment Facilities

The City owns and operates the City of Lake Worth Beach Water Treatment Plant (WTP) which provides potable water to the City's water service area. The plant includes two (2) treatment processes: a lime softening treatment plant which utilizes raw water from the Surficial Aquifer, and a Reverse Osmosis (RO) treatment plant which utilizes raw water from the Floridan Aquifer.

The lime softening WTP provides 12.9 MGD capacity, and includes lime softening, filtration, chemical addition and disinfection treatment processes. The lime softening facility consists of a rapid-mix chamber, two (2) horizontal flocculation and sedimentation basins (settling basins), and six (6) multimedia gravity filters. Each gravity filter has a capacity of 3.0 MGD, but is operated at a capacity of 2.5 MGD, yielding a total capacity of 15 MGD. Consequently, the overall capacity of the water treatment facilities is limited only by the 12.9 MGD capacity of the lime softening unit process.

The RO WTP was constructed in 2011 and provides 4.5 MGD total capacity, with three (3) membrane trains each rated at 1.5 MGD. The RO WTP is designed to be expanded in the future for a total capacity of 9.0 MGD, with six (6) membrane trains at 1.5 MGD each. Each membrane train is expandable by 15% capacity by the addition of 6 pressure vessels on the top row of the membrane train frame.

The RO WTP includes cartridge filtration, membrane feed pumps, chemical addition (acid, scale inhibitor and caustic), degasification/odor control, and disinfection treatment processes. RO concentrate is disposed through a deep injection well. The RO WTP is designed for a recovery rate of 75%.

A raw water bypass blend line and pipeline connection has been provided to allow 5 to 10 percent of the Floridan raw feed water to be blended with the permeate water stream. The purpose of this blend water stream is to add Hardness back to the permeate water flow.

The finished water from the two treatment processes is blended together prior to distribution.

## 2.5 Water Storage Facilities

The City's water storage facilities include a 1.8 MG clearwell (used for disinfection contact time), a 1.0 MG clearwell, a 1.5 MG ground storage tank and a 0.3 MG elevated storage tank at the water treatment facility. Total water storage volume at the water treatment plant site (not including the 1.8 MG clearwell) is 2.8 MG.

The City's water storage facilities also include several off-site facilities, including a 0.3 MG elevated storage tank at 22<sup>nd</sup> Avenue N and N "D" Street, a 0.5 MG ground storage tank at the South Booster Station, and a 0.5 MG ground storage tank at the North Booster Station. Total water storage volume at the offsite facilities is 1.3 MG.

The water storage facilities are shown on **Figure 2-6**. The City's total water storage volume for the plant and for the offsite facilities combined is 5.9 MG and provides sufficient capacity to meet peak hourly and fire flow demands, and to provide adequate contact time for disinfection prior to distribution.

## 2.6 Water Distribution System and Interconnects with Other Municipalities

The water distribution system consists of a piping network made up of transmission mains sized 12-inch to 36-inch in diameter, and distribution mains sized 2-inch to 10-inch in diameter. The majority of the distribution piping is 6-inch diameter and smaller. Most of the 2-inch lines are galvanized steel. The 4-inch through 36-inch lines are a combination of cast iron, PVC and ductile iron.

The water distribution system is supplied by five (5) high service water distribution pumps. Two (2) of the pumps (#1 and #2) are rated for 5,000 gpm (300 Hp), one (1) pump (#5) is rated for 3,900 gpm (250 Hp) and two (2) of the pumps (#3 and #4) are rated for 2,500 gpm (150 Hp) at a design system operating pressure of 72 psi. This provides a total pumping capacity of 18,900 gpm, and a total firm pumping capacity of 13,900 gpm with the largest unit as stand by.

The water distribution system includes two (2) booster pumping stations: the North Booster Station and the South Booster Station. The North Booster Station includes two (2) 1,500 gpm pumps, and the South Booster Station has two (2) 1,125 gpm pumps, for a total pumping capacity of 5,250 gpm, and a total firm pumping capacity of 2,625 gpm.

Five (5) interconnects exist between the City of Lake Worth Beach and neighboring water suppliers, which are listed in **Table 2.3** as follows:

**Table 2.3**  
**Lake Worth Beach Potable Water Interconnects**

Interconnecting Municipality	Type	Interconnect Location	Interconnect Size
Palm Beach County	Emergency	6 <sup>th</sup> Avenue South and Congress Avenue	10-inch
Palm Beach County	Emergency	Lake Worth Road and Congress Avenue	8-inch
West Palm Beach	Emergency	West Palm Beach Canal / C-51 and Gregory Road	16-inch
Lantana	Emergency	Ridge Road	6-inch
Lantana	Emergency	Dixie Highway	6-inch

These interconnects can be used to maintain water supply within the City during emergency conditions, or to provide emergency water to the neighboring utility from the City of Lake Worth Beach. Currently, one of the interconnects with the Town of Lantana (on Dixie Highway) is disconnected.

The City's water distribution system and interconnects are shown in **Figure 2-6**.

## 2.7 Domestic Self-Supply Systems

Domestic self-supply systems are private water wells used by customers for their own domestic water supply source. These private systems are regulated by the Palm Beach County Environmental Control Rule II (ECR II), which is implemented and enforced through the Palm Beach County Health Department. The ECR II requires private water systems to connect to an approved community water system if there is an available water main within 100 feet in a public right-of-way (ROW) or easement abutting the property on which the building(s) are located.

There are a few, isolated individual homes within the City of Lake Worth Beach's service area that use private wells for water supply. Currently, the City does not require connection to the City's water system but encourages connection on a voluntary basis. Due to the few numbers of these private systems, connection of these systems will not affect or impact the City's projected water supply needs.

Figure 2-6  
Lake Worth Beach Water Distribution System



## 2.8 Conservation Program

The City of Lake Worth Beach Implemented a Water Conservation Program which includes the following:

### ◆ Irrigation Ordinance

The City of Lake Worth Beach Implemented year-round landscape irrigation conservation measures in times of water shortage. The City adopted Florida Administration Code 40E which describes water use restriction during different levels of water shortage. During times of water shortage, the City allows irrigation for three days per week. Irrigation during these times are prohibited during the hours from 10:00 am to 4:00pm.

The City allows year-round watering seven (7) days a week if the home owner uses low volume irrigation, micro-irrigation, low-volume hand watering methods, and rain barrels, cisterns, or other similar rain-harvesting devices.

The City is currently reviewing their irrigation ordinance and comparing it with the model ordinances in the SFWMD Local Government Model Ordinances and Codes webpage. The goal is to update their irrigation ordinance with the appropriate new provisions.

### ◆ Landscape Regulations

The City's Ordinance Section 23.6 "Landscaping Regulations" focuses on the conservation of potable and non-potable water by setting landscape design standards to promote planting of native species, using shade trees, limiting lawn grass, and designing yard to retain storm runoff.

### ◆ Public Education Programs

The City promotes water conservation through handouts which are distributed at Board Meeting, Commission Meetings, Public Meetings, and with Utility bills. The handouts contain AWWA and SFWMD information which educates the public on the benefits of conserving water, water conservation tips and how to check and replace leaky faucets, shower heads, toilets and irrigation systems. The City also supports the "Florida-Friendly Landscaping" Program.

### ◆ Ultra-Low Volume Plumbing Fixture Ordinance

The City previously adopted the Standard Plumbing Code (1997 ed.) that requires the use of ultra-low volume plumbing fixtures.

### ◆ Water Conservation Rate Structure

The City previously adopted a Water Conservation Rate Structure. The rate structure establishes block rates based on volume of water usage, with increasing rates at higher usage.

◆ **Leak Detection Program**

The City has taken a number of steps to reduce unaccounted-for water losses. A meter replacement program has been in place to improve metered flow accuracy to large users. The City is currently replacing 2-inch galvanized water mains that are 50 years plus old with a 6-year phased program that began in 2015. This program is showing benefits since the 2019 unaccounted for water has been reduced to 6.24%.

◆ **Rain Sensor Device Ordinance**

The City has adopted a Rain Sensor Device Ordinance. The Ordinance will require that customers install rain sensors on new irrigation systems. The sensors detect when it is raining and automatically turn the irrigation system off.

◆ **Automatic Meter Infrastructure**

The City has implemented an Automatic Meter Infrastructure (AMI) and is accumulating data for future analysis.

## 2.9 Reuse

The City of Lake Worth Beach's wastewater treatment is provided by the East Central Regional Water Reclamation Facility (ECRWRF) located in West Palm Beach, Florida. The City's wastewater is conveyed to the ECRWRF through Lake Worth Beach's and Palm Beach County's wastewater collection and transmission systems. The ECRWRF is approximately 10-miles northwest of Lake Worth Beach. The ECRWRF has implemented a reuse water program that primarily provides reuse water to FPL under separate contract with PBC. There are no facilities in the vicinity of Lake Worth Beach that provide reuse water from the ECRWRF. Currently, reuse water is not an alternative water supply that is available to the City of Lake Worth Beach from the ECRWRF or any other water reclamation facility.

## 2.10 Regional Water Supply Issues

The City of Lake Worth Beach shares common goals with the Lower East Coast (LEC) Region, such as decreasing the regions dependency on the Surficial Aquifer, lowering per capita water use, increasing conservation and continuing reclaimed water efforts.

The City constructed a Reverse Osmosis (RO) Treatment Process at their Water Treatment Plant to take in brackish water from the Floridan Aquifer. Currently the RO Treatment Process consists of three treatment trains rated at 1.5 MGD each for a total of 4.5 MGD. The RO Treatment Process is designed to be expandable to over 9.0 MGD. Treating water from the Floridan Aquifer reduces the regional dependency on the Surficial Aquifer. Currently, the City has three (3) Floridan Aquifer wells and plans to add an additional seven (7) Floridan wells to increase withdrawal from the Floridan Aquifer and decrease withdrawal from the Surficial Aquifer.

The City has implemented an extensive CIP and R&R program which included \$32 million dollars' worth of water system improvements between 2014 and 2020. Projects included water main replacement, Water Treatment Plant maintenance, high service pump maintenance, well replacement, and storage tank rehabilitation. These projects increased overall water system efficiency and reduced water loss from the City's water main system.

In order to continually achieve lower per capita water use, the City created a strong conservation program which includes strict irrigation hours, ultra-low volume plumbing fixtures, block rate structure (to decrease demand), leak detection programs, rain sensor devices with automatic irrigation shut-off, and a public education program.

The East Central Regional Water Reclamation Facility (ECRWRF) treats wastewater from the City of Lake Worth Beach, the City of West Palm Beach, Palm Beach County and the Town of Palm Beach. A portion of the ECRWRF's wastewater is converted to reclaimed water which is used by Florida Power and Light for cooling water for their power plant located on SR 80. Lake Worth Beach participates in this regional group to promote the use of reclaimed water as an alternative water supply source.

## SECTION 3



## Potable Water Needs Assessment

## Section 3

# Potable Water Needs Assessment

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### 3.1 Population Projections

Each year, the Bureau of Economic and Business Research (BEBR) at the University of Florida prepares the official population projections, in five-year intervals, for each Florida County. Since BEBR issues only a single countywide figure for each county, the Planning Division of the Palm Beach County (PBC) Planning Department annually allocates these figures to smaller geographies for localized planning efforts.

PBC prepares the Population Allocation Model every other year as a tool for long-range service delivery planning in Palm Beach County. Ch. 163.3177(1)(f)3, F.S., requires that each comprehensive plan be based upon population projections published by the Office of Economic and Demographic Research (OEDR) or generated by the local government based upon professionally acceptable methodology. The OEDR publishes the projections prepared by BEBR. PBC utilizes the OEDR/BEBR medium range projections for the County's Population Allocation Model.

The population projections developed for the City of Lake Worth Beach are based on the PBC Planning Departments' 2019 Population Allocation Model. The projected population for the City of Lake Worth Beach water service area was estimated by overlaying a map of Lake Worth Beach's service area onto PBC's GIS base map containing population segregated into Traffic Analysis Zones (TAZ) (refer to **Figure 3-1**). Population projections for the City were developed by assessing a percentage of service area located within each TAZ and summing the population projections of the individual TAZs within the overall service area. A summary of the final population projections is included in **Table 3.1**.

Figure 3-1  
Lake Worth Beach Water Service Area and TAZ Map

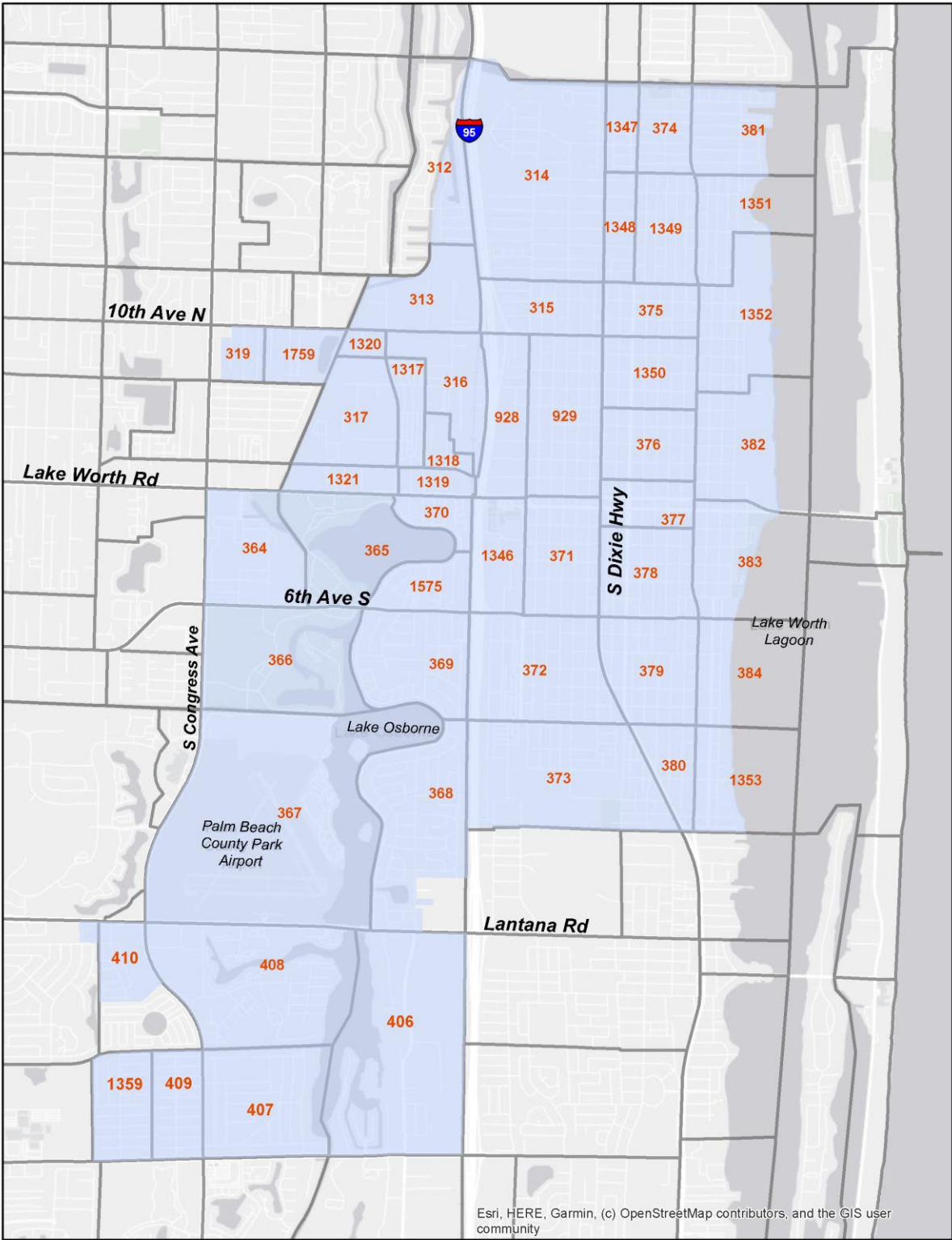


Table 3-1  
Lake Worth Beach Water Service Area  
Population Projections through 2040

TAZ	% of TAZ Population in	2018	2020	2025	2030	2035	2040	Percent Growth 2018-2040
<b>Incorporated Lake Worth Beach</b>								
312	30%	262	266	266	269	271	279	6%
313	100%	181	194	194	194	316	370	104%
314	100%	2,809	2,904	3,286	3,584	3,694	3,760	34%
315	100%	946	946	948	948	956	977	3%
316	100%	5	5	5	5	255	262	5140%
317	100%	499	697	1,091	1,326	1,361	1,384	177%
368	30%	582	592	598	623	636	647	11%
369	95%	1,276	1,307	1,379	1,401	1,417	1,443	13%
370	90%	532	544	550	584	620	639	20%
371	100%	2,705	2,718	2,743	2,832	2,860	2,910	8%
372	100%	3,475	3,544	3,599	3,621	3,644	3,719	7%
373	100%	2,532	2,587	2,644	2,734	2,760	2,811	11%
374	100%	605	615	624	637	645	659	9%
375	100%	741	741	750	783	794	809	9%
376	100%	1,331	1,360	1,420	1,499	1,700	1,758	32%
377	100%	400	401	406	445	535	649	62%
378	100%	1,734	1,774	1,797	1,813	1,832	1,872	8%
379	100%	2,314	2,365	2,419	2,500	2,525	2,570	11%
380	100%	727	740	741	741	745	761	5%
381	100%	629	644	652	668	676	690	10%
382	100%	740	752	762	803	815	831	12%
383	100%	1,112	1,137	1,152	1,160	1,172	1,194	7%
384	100%	265	277	308	326	330	338	28%
928	100%	1,268	1,272	1,677	2,036	2,087	2,126	68%
929	100%	3,571	3,588	3,634	3,738	3,764	3,830	7%
1317	100%	440	444	449	459	465	475	8%
1318	100%	0	0	0	0	0	0	0%
1319	80%	10	10	10	10	10	10	8%
1320	100%	0	0	0	0	0	0	0%
1321	30%	359	362	363	368	374	383	7%
1346	100%	40	42	46	47	47	49	23%
1347	100%	341	347	351	358	362	370	9%
1348	100%	359	371	375	384	454	541	51%
1349	100%	1069	1082	1096	1133	1145	1170	9%
1350	100%	1539	1573	1657	1735	1756	1794	17%
1351	100%	730	738	757	769	778	794	9%
1352	100%	652	666	675	693	702	718	10%
1353	100%	601	609	617	657	666	680	13%
1575	100%	881	895	907	945	1006	1040	18%
Total		38,261	39,108	40,948	42,829	44,176	45,312	18%

## Potable Water Needs Assessment

**Table 3-1**  
**Lake Worth Beach Water Service Area**  
**Population Projections through 2040**

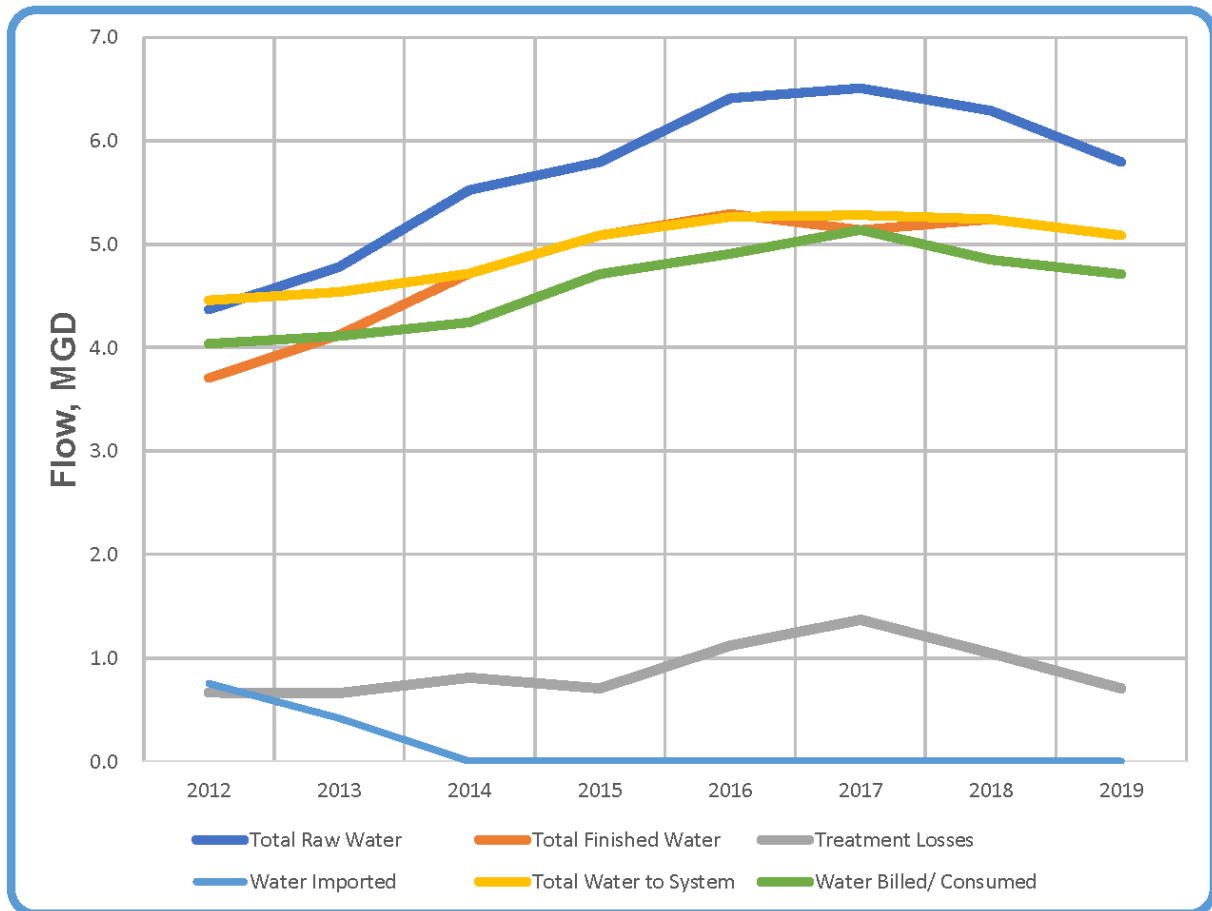
TAZ	% of TAZ Population in Service Area	2018	2020	2025	2030	2035	2040	Percent Growth 2018-2040
Unincorporated Palm Beach County								
319	100%	542	563	572	607	625	642	18%
364-PBSC	100%	0	0	0	0	0	0	0%
365-Park	100%	0	0	0	0	0	0	0%
366-Park	100%	0	0	0	0	0	0	0%
367-Airport	100%	0	0	0	0	0	0	0%
368	60%	1,163	1,184	1,196	1,246	1,271	1,293	11%
369	5%	67	69	73	74	75	76	13%
370	10%	59	60	61	65	69	71	20%
406	100%	757	806	887	914	929	952	26%
407	100%	1,220	1,278	1,292	1,316	1,329	1,343	10%
408	100%	3,357	3,487	3,583	3,609	3,626	3,648	9%
410	30%	539	541	542	544	624	641	19%
1319	20%	2	2	2	3	3	3	8%
1321	70%	837	844	846	858	872	894	7%
1759	100%	1122	1166	1174	1176	1177	1187	6%
Total		9,666	10,000	10,228	10,411	10,599	10,750	11%
Lake Clarke Shores/Hypoluxo Village								
409	100%	594	626	632	647	659	676	14%
1359	100%	858	913	940	969	982	1006	17%
Total		1,452	1,539	1,572	1,616	1,641	1,682	16%
<b>Total</b>		<b>49,379</b>	<b>50,647</b>	<b>52,748</b>	<b>54,856</b>	<b>56,416</b>	<b>57,744</b>	<b>0</b>
Source: PBC Planning Department 2019 Population Allocation Model								

### 3.2 Historical Potable Water Demands and Levels of Service

Data from 2012 through 2019 was evaluated to establish recent historical potable water demands for the City of Lake Worth Beach. Consumption data records from the City's billing accounts, as well as raw and finished water flow data from the City's water treatment plant operation records were reviewed and summarized.

Lake Worth Beach's historical raw, finished and billed/consumed water flows are shown in **Figure 3-2**. A complete summary of the City's historical water data is provided in **Appendix B**.

Figure 3-2  
Lake Worth Beach Historical Water Flows



Based upon the historical demand evaluation, **Table 3.2** shows the Levels of Service that are established for the City:

**Table 3.2**  
**Lake Worth Beach Potable Water Levels of Service**

Service Item	Value
Average Per Capita Finished Water Demand	105 gal/capita/day
Average Person per Household <sup>1</sup>	2.65
Max. Month: Average Day Demand Factor	1.16
Max. Day: Average Day Demand Factor	1.5
Peak Hour: Max Day Demand Factor <sup>2</sup>	2.0
Minimum Water Distribution System Pressure at Peak / Fire Flow Conditions <sup>2</sup>	30 psi
Minimum Fire Flow Requirements <sup>2</sup>	1,000 gpm Residential 2,000 gpm Multi-Family, Commercial, and Industrial

(1) Source: U.S. Census 2010 data.

(2) Source: Lake Worth Beach Water Distribution System Hydraulic Model, by Mock Roos

### 3.3 Water Demand Projections and Capacity Evaluation

The population projections established under **Section 3.1** were coupled with the projected Levels of Service established under **Section 3.2** to develop water demand projections for the City. The water demand projections are provided in **Table 3.3**.

Based on the projections, in the next 10 years, the City is anticipated to have a total finished water demand (average day) of 5.8 MGD and a maximum day demand of 8.7 MGD in the Year 2030. The water treatment plant currently has a permitted capacity of 17.4 MGD, which provides for sufficient capacity to meet the City's water demand needs over the next 10-year planning period.

However, the plant capacity is limited by the volume of raw water which is permitted to be withdrawn by the South Florida Water Management District (SFWMD) through the City's Water Use Permit (WUP). The current WUP allows for withdrawal of 4,106 million gallons per year, which is equivalent to an average daily withdrawal of 11.25 MGD, with a maximum monthly allocation of 356.5 million gallons (equivalent to 11.72 MGD maximum month average daily flow). The projected raw water needs in 2030 are 6.8 MGD average daily flow, and 10.2 MGD maximum month average daily flow. Based on the projections, the current permit is sufficient to meet the 10-year water supply needs of the City (through Year 2030).

Based on the projections, raw water capacity of the current WUP will meet the water supply needs of the City for the 20-year duration of the permit (through the Year 2032) and beyond.

**Table 3.3**  
**Lake Worth Beach Water Demand Projections**

Year	Service Area Population				Water Demand					Water Treatment Capacity, MGD	WTP Capacity Surplus/ (Deficit), ADDF MGD	WTP Capacity Surplus/ (Deficit) MDF MGD	Permitted Wellfield Allocation, AADF MGD <sup>5</sup>	Permitted Wellfield Allocation, Surplus/ (Deficit), AADF MGD
	Incorp. Lake Worth Beach	Unincorp. Palm Beach County	Lake Clarke Shores/ Hypoluxo Village	Total	Average Raw Water, MGD	Average Finished + Bulk Water, MGD <sup>1</sup>	Average Consumed / Billed Water, MGD <sup>2</sup>	Gallons per Capita per Day, GPCD <sup>3</sup>	Projected Max. Day Finished Water, MGD <sup>4</sup>					
2015	36,617	10,206	1,481	48,304	5.4	4.6	4.2	86.1		17.4				
2016	37,165	10,026	1,471	48,662	6.4	5.3	4.5	92.3		17.4				
2017	37,713	9,846	1,462	49,021	6.5	5.1	4.6	93.2		17.4				
2018	38,261	9,666	1,452	49,379	6.30	5.2	4.9	99.2		17.4				
2019	38,685	9,833	1,496	50,013	6.54	5.3	4.5	90.8		17.4				
2020	39,108	10,000	1,539	50,647	6.67	5.6	5.3	105.0	8.5	17.4	10.73	7.63	11.25	4.58
2025	40,948	10,228	1,572	52,748	6.95	5.9	5.5	105.0	8.8	17.4	10.45	7.23	11.25	4.30
2030	42,829	10,411	1,616	54,856	7.22	6.1	5.8	105.0	9.2	17.4	10.18	6.82	11.25	4.03
2035	44,176	10,599	1,641	56,416	7.43	6.3	5.9	105.0	9.4	17.4	9.97	6.52	11.25	3.82
2040	45,312	10,750	1,682	57,744	7.60	6.4	6.1	105.0	9.7	17.4	9.80	6.26	11.25	3.65

**Legend and Notes:**

= Historical Data

= Projected Data

AADF = Annual Average Design Flow

MDF = Maximum Day Flow

(1) Average Treatment Plant Water Loss = 15.38%

(2) Average Distribution System Water Loss = 6.36%

(3) Comprehensive Plan Level of Service Standard of 105 GPCD used for future projections.

(4) Maximum Day/Average Day Demand = 1.5

(5) Wellfield capacity based on SFWMD WUP AADF withdrawal allocation for Surficial + Floridan Aquifer systems.

Regarding the City's water distribution system, a "*Water Distribution System Hydraulic Model*" was developed by the City's Engineering Consultant, Mock•Roos, in December 2005, with an update provided in April 2013. The hydraulic model evaluated the City's water distribution system under future water demand and fire flow conditions. Deficiencies noted in the evaluation were developed into a water system Capital Improvement Program (CIP) (refer to **Section 4**).

The Hydraulic Model utilized the following assumptions for future flow conditions:

- Average Water Demand (existing) = 7.1 MGD
- Future Average Water Demand = 8.52 MGD (current demand x 1.2 peak factor)
- Future Maximum Day Demand = 12.78 MGD (future average demand x 1.5 peak factor)
- Future Peak Hour Demand = 25.56 MGD (future maximum day demand x 2.0 peak factor)

When compared to the water demand projections presented above, the assumptions utilized in the City's Hydraulic Model exceed the projected 10-year Average Day Demand of 5.8 MGD and Maximum Day Demand of 8.7 MGD. Therefore, with implementation of the recommended CIP projects, the distribution system has adequate capacity to serve the City's 10-year water supply needs.

Regarding the City's water distribution high service pumps and booster pump stations, it was previously noted in **Section 2.6** that the City has a firm pumping capacity of 13,900 gpm. The 10-year water demand projections estimate a Maximum Daily Flow of 8.7 MGD in 2030, with a Peak Hour Flow of 17.4 MGD (12,083 gpm). Since the firm pumping capacity of 13,900 gpm exceeds the projected peak hour demand of 12,083 gpm, the water distribution high service pumps and booster pump stations have adequate capacity to serve the City's 10-year peak hour water demands.

## SECTION 4



## Capital Improvements Program

## Section 4

# Capital Improvement Program

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### 4.1 Capital Improvement Program (CIP) Summary

The City of Lake Worth Beach Water Utility Department creates a Capital Improvement Program (CIP) to outline the necessary capital improvement and renewal & replacement upgrades that are required for the water distribution system and Water Treatment Plant. The City's 5-Year CIP is listed in **Table 4.1** and consists of \$19M of water system improvements between 2021 and 2025.

The City is continuing an extensive water main replacement program which includes replacing 2-inch lines and upgrading pipes to provide improved fire protection. The Water Treatment Plant is scheduled to replace one (1) High Service Pump and rehabilitate the ground storage tanks. The City also plans to complete construction of well LW-17, LW-18, F-4, and F-5.

## Capital Improvement Program

**Table 4.1**  
**Lake Worth Beach Water System**  
**5-Year Capital Improvement Program**

Lake Worth Beach Water System CIP						
Description	Proposed FY 2021	Proposed FY 2022	Proposed FY 2023	Proposed FY 2024	Proposed FY 2025	Total
<b>Water Distribution System Projects</b>						
Lake Bass Canal WM Reloc.		\$ 450,000				\$ 450,000
6th Ave. So. Bridge WM Adjust		\$ 250,000				\$ 250,000
10th Ave. No. WM Extension West of Canal to Congress Ave.		\$ 725,000				\$ 725,000
AC/Transite WM Replacement		\$ 100,000				\$ 100,000
EOC Complex/Fleet Maint. Bldg				\$ 1,000,000	\$ 1,000,000	\$ 2,000,000
2" WM Replacement - Phase V/VI	\$ 4,000,000					\$ 4,000,000
Floral Park/Lanair WM Expansion			\$ 900,000	\$ 750,000		\$ 1,650,000
<b>Subtotal Water Distribution System</b>	<b>\$ 4,000,000</b>	<b>\$ 1,525,000</b>	<b>\$ 900,000</b>	<b>\$ 1,750,000</b>	<b>\$ 1,000,000</b>	<b>\$ 9,175,000</b>
<b>Water Treatment Projects</b>						
RO Membrane Replacement		\$ 250,000	\$ 250,000	\$ 250,000	\$ 250,000	\$ 1,000,000
Scrubber/Degas Packing Replacement			\$ 250,000			\$ 250,000
WTP Roof Evaluation/Redo	\$ 90,000					\$ 90,000
WTP Structural Enhancements/Hardening		\$ 575,000				\$ 575,000
Clearwell Structural Imp., etc.	\$ 175,000					\$ 175,000
Wash Water Recovery Basin			\$ 1,200,000			\$ 1,200,000
S Booster Station Upgrades			\$ 600,000			\$ 600,000
East Clearwell Roof Coating		\$ 425,000				\$ 425,000
HS Pump #5 Replacement		\$ 500,000				\$ 500,000
MIT Deep Injection Well	\$ 150,000					\$ 150,000
Surficial Well Rehab	\$ 140,000	\$ 140,000	\$ 140,000	\$ 140,000	\$ 140,000	\$ 700,000
Well No. 17 Construction		\$ 60,000	\$ 662,000			\$ 722,000
Flash Mixer Struct. Mod		\$ 500,000				\$ 500,000
Well No. 18 Construction	\$ 60,000	\$ 662,000				\$ 722,000
Raw WM Well 16-17-18 & Repump Genset Connection		\$ 170,000				\$ 170,000
Dual Zone Monitoring Well				\$ 1,000,000		\$ 1,000,000
Floridan Aquifer Well F-4 Construction		\$ 80,000	\$ 1,500,000			\$ 1,580,000
Floridan Aquifer Well F-5 Construction			\$ 80,000	\$ 1,500,000		\$ 1,580,000
Radio Upgrade Project Phase 1 & 2		\$ 50,000	\$ 200,000			\$ 250,000
<b>Water Treatment Projects Subtotal</b>	<b>\$ 615,000</b>	<b>\$ 3,412,000</b>	<b>\$ 4,882,000</b>	<b>\$ 2,890,000</b>	<b>\$ 390,000</b>	<b>\$ 12,189,000</b>
<b>Grand Total</b>	<b>\$ 4,615,000</b>	<b>\$ 4,937,000</b>	<b>\$ 5,782,000</b>	<b>\$ 4,640,000</b>	<b>\$ 1,390,000</b>	<b>\$ 21,364,000</b>

## SECTION 5



Comprehensive Plan Goals,  
Objectives and Policies (GOP)

## Section 5

# Comprehensive Plan Goals, Objectives and Policies (GOP)

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## 5.1 Comprehensive Plan GOP

As noted in 163.3177(6)(c)3, F.S., local governments are required to update their Water Supply Facilities Work Plan through an amendment to their Comprehensive Plan within 18 months of the SFWMD Governing Board's adoption of the regional Water Supply Plan.

The most recent update to the LEC Water Supply Plan was adopted by the SFWMD governing board in November 2018. Therefore, by May 2020, the City is required to revise their Comprehensive Plan to incorporate the updated 10-Year Water Supply Facilities Work Plan.

The City's Goals, Objectives and Policies should be amended as follows in the City's 2020 Comprehensive Plan amendments:

### INFRASTRUCTURE ELEMENT

Policy 4.1.1.3: The City will continue to provide annual review of system demand and supply, and to update facility demand and capacity information based on issuance of development permits. The City will also prepare and include considerations of being a regional provider that may sell water in the future.

Policy 4.1.7.3: The City will maintain a water supply facilities work plan that is coordinated with SFWMD's 2018 *Lower East Coast Regional Water Supply Plan* and Palm Beach County by updating its own work plan within 18 months of an update to SFWMD's 2018 *Lower East Coast Regional Water Supply Plan*.

Policy 4.1.7.4: By March 2027, the City shall coordinate with SFWMD and update the City's 10-year water supply facilities work plan considering the *Lower East Coast (LEC) Regional Water Supply Plan*. The City hereby adopts by reference the "City of Lake Worth 2020 10-Year Water Supply Facilities Work Plan." The City shall send a letter to SFWMD which identifies projects for future water supply needs of the City. Projects must be selected from the LEC Regional Water Supply Plan or must be prior approved by SFWMD.

# APPENDIX A

## City of Lake Worth Beach Bulk Water Service Contract

INTERLOCAL AGREEMENT  
BETWEEN THE CITY OF LAKE WORTH AND  
THE TOWN OF LAKE CLARKE SHORES FOR THE  
PURCHASE AND SALE OF BULK POTABLE WATER

THIS AGREEMENT made and entered into this 15 day of February, 2011, by and between THE CITY OF LAKE WORTH, FLORIDA, a municipality organized under the laws of the State of Florida (hereinafter "CITY"), and the TOWN OF LAKE CLARKE SHORES, FLORIDA, a municipality organized under the laws of the State of Florida (hereinafter "TOWN").

WHEREAS, Section 163.01, Florida Statutes, known as the "Florida Interlocal Cooperation Act of 1969" authorizes local governments to make the most efficient use of their powers by enabling them to cooperate with other localities on a basis of mutual advantage and thereby to provide services and facilities that will harmonize geographic, economic, population and other factors influencing the needs and development of local communities; and

WHEREAS, the parties hereto have the common power to provide essential public utility services within their respective geographic jurisdictions; and

WHEREAS, the TOWN entered into an Interlocal Agreement with the CITY on October 13, 1993, for the CITY to provide bulk water sales to the Seminole Manor service area; and

WHEREAS, in October 2002 the TOWN paid for an additional 82 equivalent residential units to serve the Hypoluxo Village Service Area; and

WHEREAS, this previous Interlocal Agreement expired on October 13, 2008; and

WHEREAS, the TOWN owns and operates a Community Public Water System to serve residents living within the Seminole Manor Service Area and Hypoluxo Village Service Area as shown on Exhibit A; and

WHEREAS, the TOWN wishes to purchase bulk potable water from the CITY for distribution and sale to its customers within the Hypoluxo Village Service Area; and

WHEREAS, the CITY wishes to sell the TOWN bulk potable water within the Hypoluxo Village Service Area pursuant to the terms and conditions of this Agreement; and

WHEREAS, the TOWN and CITY both wish to discontinue bulk potable water sales from the CITY to the Seminole Manor Service Area; and

WHEREAS, the TOWN and CITY both wish to leave the water connection from the CITY to the Seminole Manor Service Area active in case it is needed as an emergency service connection; and

WHEREAS, as a consecutive system, the TOWN and CITY wish that the TOWN implement and facilitate conservation of water resources in accordance with the direction of the CITY, and restrictions in effect on the CITY's system; and

WHEREAS, the physical, chemical and biological quality of all treated potable waters produced by the CITY currently meets or exceeds all Federal, State and local laws, regulations and requirements, and the CITY will take reasonable steps to maintain the quality of treated waters to the Point of Connection (as later defined in this Agreement); and

WHEREAS, it is solely the responsibility of the TOWN to operate and maintain the water delivery system on the discharge side of the Point of Connection so that the physical, chemical and biological quality of the treated water meets or exceeds all Federal, State and local laws, regulations and requirements.

NOW, THEREFORE, for and in consideration of these premises, the mutual undertakings and Agreements herein contained and assumed, the CITY and TOWN hereby covenant and agree as follows:

1. The foregoing statements are true and correct and are incorporated herein by reference.
2. Scope of Agreement. The CITY agrees to furnish, and the TOWN agrees to purchase and accept, a supply of Potable Water in accordance with the terms and conditions of this Agreement. The CITY shall furnish, and the TOWN shall accept, the Potable Water at the Point(s) of Connection shown in Exhibit "A."
3. Term. This Agreement shall commence on the Effective Date of this Agreement and continue for a term of ten (10) years. The Term of this Agreement may be extended for successive periods of five (5) years each, upon the same terms and conditions as herein provided, by written agreement of both of the parties to this Agreement prior to expiration of the initial term of this Agreement or any renewal thereof.
4. Effective Date. This Agreement shall become effective upon approval by both parties. The Effective Date of this Agreement shall be the date the Agreement is ratified by the City of Lake Worth Commission.
5. Prior Agreements: This document, upon its execution by both parties shall supersede any and all prior negotiations, correspondence, conversations, agreements, including the expired prior agreement and any amendments thereto, or understandings applicable to the matters contained herein and the parties agree that there are no commitments, agreements or understandings concerning the subject matter of this Agreement that are not contained in this document. Accordingly, it is agreed by the parties that there shall be no deviation from the terms hereof which shall be predicated upon any prior representation or agreements whether oral or written, unless said are specifically provided for herein.

6. Definitions. The following definitions and references are given for the purpose of interpreting the terms as used in this Agreement and apply unless the context indicates a different meaning:
- (a) “Average Daily Flow (ADF)” – the average daily flow rate of potable water collectively measured through all Points of Connection. The Average Daily Flow rate is calculated by dividing the total amount of Potable Water flowing through the Points of Connection in any one fiscal year by the number of days in that same fiscal year;
  - (b) “Capacity Fee” – A one-time fee to be paid by the TOWN to the CITY based on the ADF of capacity reserved. This fee is assessed irrespective of the actual quantity of Potable Water flowing through the Point(s) of Connection.
  - (c) “CITY’s Potable Water System” – the system owned and/or operated by the CITY for the production and distribution of Potable Water to all retail, wholesale, and/or bulk customers of the CITY, said system being located on the CITY’s side of the various Points of Connection and including all Potable Water meters and related appurtenances located at the Point(s) of Connection.
  - (d) “Commodity Rate” - A fee to be paid by the TOWN to the CITY on a monthly basis for the supply of Potable Water to the TOWN at the Point(s) of Connection.
  - (e) “Equivalent Residential Unit (ERU)” - A factor used to convert a given average daily flow of bulk supply to equivalent number of residential connections. For this purpose of this Agreement, the average daily flow of one Equivalent Residential Unit is set at 350 gallons per day.
  - (f) “Point(s) of Connection” – The location(s) where the CITY’s Potable Water System is connected with the TOWN’s Potable Water System, as shown in Exhibit “A”, which is incorporated herein and attached hereto. The Potable Water System of the CITY shall include the water meter(s) and related appurtenances located at the Point(s) of Connection, with said water meter(s) being utilized for the measurement and payment of bulk Potable Water obtained by the TOWN.
  - (g) “Potable Water” – Water for human consumption which meets all applicable Federal, State, and County standards.
  - (h) “Reserved Capacity” – the amount of Potable Water capacity in the CITY’s Potable Water System that the TOWN has reserved through payment of Capacity Fees.
  - (i) Service Areas:

- a. “Hypoluxo Village Service Area” - That area within which TOWN owns and maintains a potable water distribution system including present and future water customers, that will receive bulk water sales from the CITY as shown on Exhibit A.
    - b. “Seminole Manor Service Area” - That area within which TOWN owns and maintains a potable water distribution system, as shown on Exhibit A, which has been provided bulk water from the CITY, and for which the CITY and TOWN have agreed to discontinue from bulk water service from the CITY’s supply.
  - (j) “TOWN’s Potable Water System” – the system owned and/or operated by the TOWN for the distribution of potable water, said system being located on the TOWN’s side of the Point(s) of Connection.
7. Point(s) of Connection: The parties hereto agree that the Points of Connection of the TOWN System to the CITY System and meter locations shall be as set forth below:
- (a) Hypoluxo Village Service Area: Within the Right-of-Way of Windward Lane adjacent to the south west side of 6975 S. Congress Avenue.
  - (b) Seminole Manor Service Area: Within the Right-of-Way of Ute Circle adjacent to the south west side of 3570 Lantana Road.
8. Obligation to Accept Service: Except as otherwise provided herein, TOWN agrees that during the term of this Agreement, the City shall be the exclusive provider of bulk potable water services to the Hypoluxo Village service area set forth in Exhibit “A,” and the Town shall only accept potable water services from the CITY for the Hypoluxo Village service area as set forth in Exhibit “A.”
9. Discontinuation of Service to Seminole Manor Service Area: In non-emergency situations, the TOWN expressly agrees to discontinue bulk water purchases from the CITY to the Seminole Manor Service Area, which is shown in Exhibit “A,” on or before the effective date of this Agreement. The TOWN herein expressly agrees to obtain potable water services for the Seminole Manor Service Area from another water service provider and to discontinue service from the CITY. The TOWN agrees that effective with the signing of this agreement the water commodity rate will become 200-percent of the commodity rate in effect for all water sold through the Seminole Manor Service Area point(s) of connection, except in the case of a declared emergency as defined later in this Agreement. The Town agrees that the increased commodity rate shall remain in effect until such time as service to this area is discontinued.
10. Each party agrees that they are responsible for all improvements, maintenance and repairs related to their respective equipment on their side of the Point of Connection and that the point to determine compliance with the contract terms is the Point of Connection.

11. It is mutually agreed that by entering into this Agreement, the CITY does not incur any responsibility beyond the Points of Connection prior to, or after, the date that delivery of water begins under this Agreement.
12. Existing Reservation of Capacity. While the reservation of capacity under the Interlocal Agreement between the CITY and TOWN that was executed on October 13, 1993, along with said Agreement's associated amendments, ended with the expiration of said agreement, the CITY acknowledges this capacity should not be re-purchased for the existing TOWN system to remain on the CITY's bulk delivery system. Therefore, the following capacity shall remain allocated to the TOWN:
  - (a) Hypoluxo Village Service Area: A survey of this service area showed a needed reserve capacity of 200,000 gallons per day for service within this service area. Therefore this amount of capacity is re-established for the TOWN for the life of this Agreement.
  - (b) Seminole Manor Service Area: The TOWN, as part of this Agreement, has agreed to discontinue bulk water purchases from the CITY to this service area. If service to this area continues past the execution of this Agreement the increased rate identified above shall be imposed.
  - (c) All capacity allocations not addressed above shall be considered vacated with the expiration of the previous 1993 agreement.
13. Operation of Seminole Manor Interconnect Facility in an Emergency: The piping to serve Seminole Manor will be left intact in case of a need for an emergency connection to Seminole Manor in the event of a potable water system failure causing an emergency in the Seminole Manor service area, the valves will be opened so as to permit the flow of potable water to the Seminole Manor service area. No supply of potable water shall be provided except in case of an emergency and upon the following terms and conditions to be determined by the CITY:
  - (a) There must be a sufficient surplus of potable water available after the CITY meets all of its anticipated needs.
  - (b) The CITY may reasonably limit the amount of potable water to be supplied to the TOWN.
  - (c) The CITY shall determine that the provision of potable water to the TOWN will not impose a danger to the health, safety or welfare of its citizens of the CITY. Any resultant expenses incurred by the CITY as a result of the connection to the Seminole Manor system shall be reimbursed by the TOWN.
  - (d) The CITY may reasonably limit the hours or days of supply of the potable water to the TOWN.

- (e) The CITY may require the TOWN to impose use restrictions on its customers as prescribed by the CITY.
- (f) With prior written notice to the TOWN, the CITY may place a reasonable termination date for the emergency supply period.
- (g) Water shall be considered the property and responsibility of the TOWN once it has passed through the Point(s) of Connection. The CITY and TOWN each shall have the sole and exclusive right to sell and distribute the water in its respective water system on its respective side of the Point(s) of Connection.
- (h) Procedure to Activate Interconnect:
  - a. In case of an emergency, a written or verbal communication from the TOWN's Town Administrator, or his/her designated representative, setting forth the emergency and estimated time of need of emergency surplus potable water, shall be made and shall be the only request necessary to open the valves. The request shall be made to the City of Lake Worth's Utilities Director or designated representative. If said communication is made verbally, said notice shall be immediately followed by a written communication. Notwithstanding the provisions above, the request by the TOWN to the CITY to turn off the valves and discontinue providing the emergency surplus potable water supply shall be handled by the same procedure.
  - b. If the TOWN's required surplus potable water supply needs lasts more than 24 hours, then within 36 hours of the valve opening, the Director of the TOWN's utility shall transmit a letter to the CITY's Utility Director, outlining the reasons for the required needs, the probable duration of such requirements, the estimated usage in gallons per day and the maximum peak hour request.
  - c. The TOWN expressly acknowledges the right of the CITY to refuse to provide the emergency potable water service, as set forth in this Agreement, if the CITY determines that the provision of such service would not be in its best interest or would constitute a danger to the health, safety and welfare of its citizens. In the event of such refusal, the TOWN hereby expressly waives any and all claims of loss or damage against the CITY.
- 14. Additional/Future Capacity Fees: If additional capacity is required to meet the needs of the TOWN, the TOWN shall be required to pay additional capacity charges as calculated in accordance with Section 18-29 of the CITY Code of Ordinances, and at a cost per ERU as established by Section 18-31 of the CITY Code of Ordinances, for all new water connections within the Service Area(s). It is further agreed that these capacity fees are the property of the CITY but that the TOWN may charge their own additional connection charges, surcharges or

equivalent to its new customers. All additional capacity requirements will be calculated in accordance with the schedule provided in Exhibit "B."

15. Monthly Billed Usage. The TOWN shall be billed the Commodity Rate on a monthly basis for actual metered water service delivered by the CITY in accordance with the following conditions:
  - (a) The CITY shall charge the TOWN a bulk service rate of \$0.303 cents per hundred gallons commencing upon the execution of this Agreement. Future rate changes will be allowed only at the time of the CITY's Water System rate increases. The new rate to be charged will be equal to the current rate plus the monetary change in the rate of the lowest tier residential water rate placed into effect at the time of the new rate change.
  - (b) The CITY agrees to notify the TOWN whenever the CITY advertises for a rate Public Hearing.
  - (c) The CITY agrees to provide the TOWN with written notification of all rate increases upon passage of the rate ordinance or 30-days before rates go into effect, whichever greater. In the case of multiple-year rate authorizations, a separate notice will be sent 30-days prior to each incremental change approval.
  - (d) The TOWN agrees to pay for all potable water received from the CITY and to make payments to the CITY within thirty (30) days from the date the bill is rendered by CITY. A one percent (1%) per month interest charge will be assessed on any outstanding balance thereafter. If payment has not been received after sixty (60) days from the date of the original bill, the CITY may discontinue services provided to the TOWN by this Agreement.
  - (e) A 25% surcharge shall be added to the Commodity Fee for all usage exceeding the Reserved Capacity in any month. However, the CITY is under no obligation to provide potable water in any quantity for which capacity has not been reserved.
  - (f) Payments required herein shall be governed by the provisions of Chapter 218, Part VII, Florida Statutes, the "Local Government Prompt Payment Act," or its successor in function, or as otherwise mutually agreed to between the parties hereto.
16. Presumed Consumption and Required Payment In Case of Billing Meter Failure. Both parties agree that, if at any time a billing meter fails, the TOWN will pay to the CITY at a daily consumption rate equal to the average consumption of the ninety (90) day period prior to the date the meter failed. The CITY shall make all efforts to restore the meter to working order as soon as possible.

17. Termination of Agreement

- (a) Termination for Cause. The parties hereto expressly covenant and agree that in the event either party is in default of its obligations herein, the party not in default shall provide to the party in default ninety (90) days written notice to cure said default before exercising any of its rights as provided for in this Agreement. Failure to cure said default within ninety (90) days following notice may be grounds for termination of this Agreement. Termination of this Agreement by either party shall require thirty (30) days prior written notice to the other party prior to the termination date. The parties may mutually agree to extend the time for cure and/or termination.
  - (b) Termination by Mutual Agreement. This Agreement may be terminated by law or at any time by the written agreement of the CITY and TOWN. The TOWN will not be entitled to a refund of any Capacity Fees or other reimbursements, and all service will be discontinued upon the termination date if so terminated.
  - (c) Termination Upon Expiration: This Agreement shall be considered terminated on the expiration date of the agreement as adjusted by extensions approved in accordance with Paragraph 3 of this Agreement. The TOWN will not be entitled to a refund of any Capacity Fees or other reimbursements, and all service will be discontinued upon the expiration date.
18. Water Shortages. In the event the South Florida Water Management District or other government unit with authority declares a water shortage, then the CITY shall have the right to restrict service to the TOWN by the same percentage, level and/or manner as the CITY restricts service to customers located within the CITY's service area.
19. Water Conservation Program: The TOWN agrees to comply with the CITY's water conservation efforts and implement a water conservation program. This program shall follow industry best management practices to meet conservation goals as set by the CITY for its service areas, or in accordance with regulatory restrictions in effect on the CITY's system. The TOWN shall report its accomplishments annually at the end of each fiscal year to the CITY. Said report shall discuss current and future conservation goals, existing activities and programs relating to water conservation efforts, as well as recommendations for changes that will further enhance opportunities for effective implementation of water conservation within the TOWN's system(s). The CITY shall submit to the TOWN; its goals for the CITY's water conservation program at least 6-months prior to the end of the fiscal year to allow the TOWN time to assess the CITY's program and develop its own program to match the CITY's water conservation program goals.
20. Water Quality - The physical, chemical and biological quality of all waters delivered to the TOWN by the CITY currently meets or exceeds all Federal, State and local laws, regulations and requirements, and the CITY shall take

reasonable steps to maintain the quality of treated waters to the Point of Connection.

21. Employee Status: Persons employed by one party in the performance of services and functions pursuant to this Interlocal Agreement shall have no claim to salary, pension, workers' compensation, civil service, or other employee rights or privileges granted by any other party to its officers and employees.
22. Laws of Florida: This Agreement shall be governed by the laws of the State of Florida notwithstanding contrary principles or conflicts of law, if any, and it shall be and become effective immediately upon execution by both parties. Venue shall be Palm Beach County, Florida.
23. Costs and Attorney's Fees: In the event the CITY or TOWN is required to enforce this Agreement by court proceedings or by instituting suit, the prevailing party shall be entitled to recover from the other party all costs and reasonable attorney's fees including fees on appeal.
24. Force Majeure: In the event that the performance of this Agreement by either party to this Agreement is prevented or interrupted in consequence of any cause beyond the control of either party including, but not limited to, Acts of God or of the public enemy, war, national emergency, allocation of or other governmental restrictions upon the use or availability of labor or materials, rationing, civil insurrection, riot, racial or civil rights disorder or demonstration, strike, embargo, flood, tidal wave, fire, explosion, bomb detonation, nuclear fallout, windstorm, hurricane, earthquake, or other casualty or disaster or catastrophe, said party shall not be liable for such nonperformance. This provision shall not affect the payment terms outlined under paragraphs 2 and 3 of this Agreement.
25. Successors and Assigns: The CITY and the TOWN each binds itself and its partners, successors, executors, administrators and assigns to the other party and to the partners, successors, executors, administrators and assigns of such other party, in respect to all covenants of this Agreement. Neither the CITY nor the TOWN shall assign, sublet, convey, or transfer its interest in this Agreement without prior written consent of the other party. Such consent will not be unreasonably withheld.
26. Severability: If any term or provision of this Agreement, or the application thereof, to any person or circumstance shall, to any extent, be held invalid or unenforceable by any court of competent jurisdiction, then the remainder of this Agreement, or the application of such terms or provision, to persons or circumstances other than those as to which it is held invalid or unenforceable, shall not be affected, and every other term and provision of this Agreement shall be deemed valid and enforceable to the extent permitted by law.
27. Notice: All notices provided for herein shall be in writing and transmitted by mail or by courier, and, if to CITY, shall be mailed or delivered to CITY at:

City of Lake Worth  
7 N. Dixie Highway  
Lake Worth, Florida 33460  
Attn: Susan A. Stanton, City Manager

with copies to:

Rebecca Matthey  
Utility Director  
City of Lake Worth  
1900 2<sup>nd</sup> Avenue North  
Lake Worth, FL 33461

and

Elaine A. Humphreys  
City Attorney  
7 North Dixie Highway  
Lake Worth, FL 33460

and if to Town, shall be mailed or delivered at:

Town of Lake Clarke Shores  
1701 Barbados Road  
Lake Clarke Shores  
West Palm Beach, FL 33406  
Attn: Town Administrator

28. Filing: This Agreement shall be filed with the Clerk of the Circuit Court for Palm Beach County.
29. Amendment and Modification: This Agreement may only be amended, modified, changed, supplemented or discharged by an instrument in writing signed by the parties hereto.
30. Liability:
  - (a) The CITY and TOWN acknowledge the waiver of sovereign immunity for liability in tort contained in Florida Statutes 768.28, the State of Florida's partial waiver of sovereign immunity, and acknowledge that such statute permits actions at law to recover damages in tort for money damages up to the limits set forth in such statute for death, personal injury or damage to property caused by the negligent or wrongful acts or omissions of an employee acting within the scope of the employee's office or employment. The CITY and TOWN agree to be responsible for all such claims and damages, to the extent and limits provided in Florida Statutes Section 768.28, arising from the actions of their respective employees. The parties acknowledge that the foregoing shall not constitute an agreement by either party to indemnify the other, nor a waiver

of sovereign immunity, nor a waiver of any defense the parties may have under such statute, nor as consent to be sued by third parties.

- (b) Should a party be sued for actions that are believed to be the result of the other party, the other party shall be notified of such suit and, thereupon, shall have the duty to defend the suit. The party being sued shall have the right, at its option, to participate in the defense of any third party claim, without relieving the other party of any of its obligations hereunder. If the the other party assumes control of the defense of any third party claim in accordance with this paragraph, that other party shall obtain the prior written consent of the party being sued before entering into any settlement of such claim. Notwithstanding anything to the contrary in this Section, the other party shall not assume or maintain control of the defense of any third party claim, but shall pay the fees of counsel retained by the party being sued and all expenses, including experts' fees, if (i) an adverse determination with respect to the third party claim would, in good faith judgment of the party being sued, be detrimental in any material respect to the reputation of the party being sued; (ii) the third party claim seeks an injunction or equitable relief against the party being sued; or (iii) the other party has failed or is failing to prosecute or defend vigorously the third party claim. Each party shall cooperate, and cause its agents to cooperate, in the defense or prosecution of any third party claim and shall furnish or cause to be furnished such records and information, and attend such conferences, discovery proceedings, hearings, trials, or appeals, as may be reasonably requested in connection therewith.
31. Nothing contained in this Agreement shall be construed to constitute a transfer of powers in any way whatsoever. This Agreement is solely an Interlocal Agreement to provide services as authorized by Chapter 163, Florida Statutes. The governing bodies for the CITY and the TOWN shall each maintain all legislative authority with regard to their respective municipality. All of the privileges and immunities from liability, exemptions from laws, ordinances, and rules; and pensions and relief, disability, workers compensation, and other benefits which apply to the activity of officers, agents, or employees of any public agents or employees of any public agency when performing their respective functions within the territorial limits for their respective agencies shall apply to the same degree and extent to the performance of such functions and duties of such officers, agents, or employees extra-territoriality under the provisions of any such Interlocal Agreement.
32. Waiver: No delay by either party in enforcing any covenant or right hereunder shall be deemed a waiver of such covenant or right, and no waiver by either party of any particular provision hereof shall be deemed a waiver of any other provision or a continuing waiver of such particular provision, and except as so expressly waived, all provisions hereof shall continue in full force and effect.
33. Entirety of Agreement: This Agreement constitutes the entire understanding of the parties with respect to the provision of public water supply services. It may not be modified, or any of its provisions waived, unless such modification

and/or waiver is in writing and is agreed to and signed by both parties. The parties expressly agree that any uncertainties or ambiguities contained herein shall not be construed against or in favor of either party.

34. Indemnity: To the extent permitted by law and subject to the limitations of Florida Statutes, Section 768.28, TOWN agrees to indemnify and hold harmless from and against any loss, damage, liability, claim or obligation of any kind or nature whatsoever, which CITY may incur or which may be asserted against CITY as a result of any actions or conditions on the discharge side of the Point of Connection affecting quality, water service or water availability.

(REMAINDER OF PAGE INTENTIONALLY LEFT BLANK)

IN WITNESS WHEREOF, Town and City have executed or have caused this Agreement, with the named Exhibits attached, to be duly executed in several counterparts, each of which counterpart shall be considered an original executed copy of this Agreement.

ATTEST:

TOWN OF LAKE CLARKE  
SHORES CLERK

By: Mary Pinkerman  
Town Clerk

TOWN OF LAKE CLARKE  
SHORES, BY ITS TOWN  
COUNCIL

By: [Signature]  
Mayor

(SEAL)

APPROVED AS TO FORM AND TO  
LEGAL SUFFICIENCY

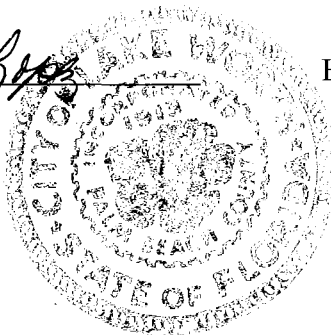
By: [Signature]  
Town Attorney

ATTEST:

CITY OF LAKE WORTH,  
FLORIDA BY ITS CITY  
COMMISSION

By: Pamela J. Lopez  
Pamela J. Lopez, Clerk

By: [Signature] 2/15/11  
René A. Varela, Mayor



(SEAL)

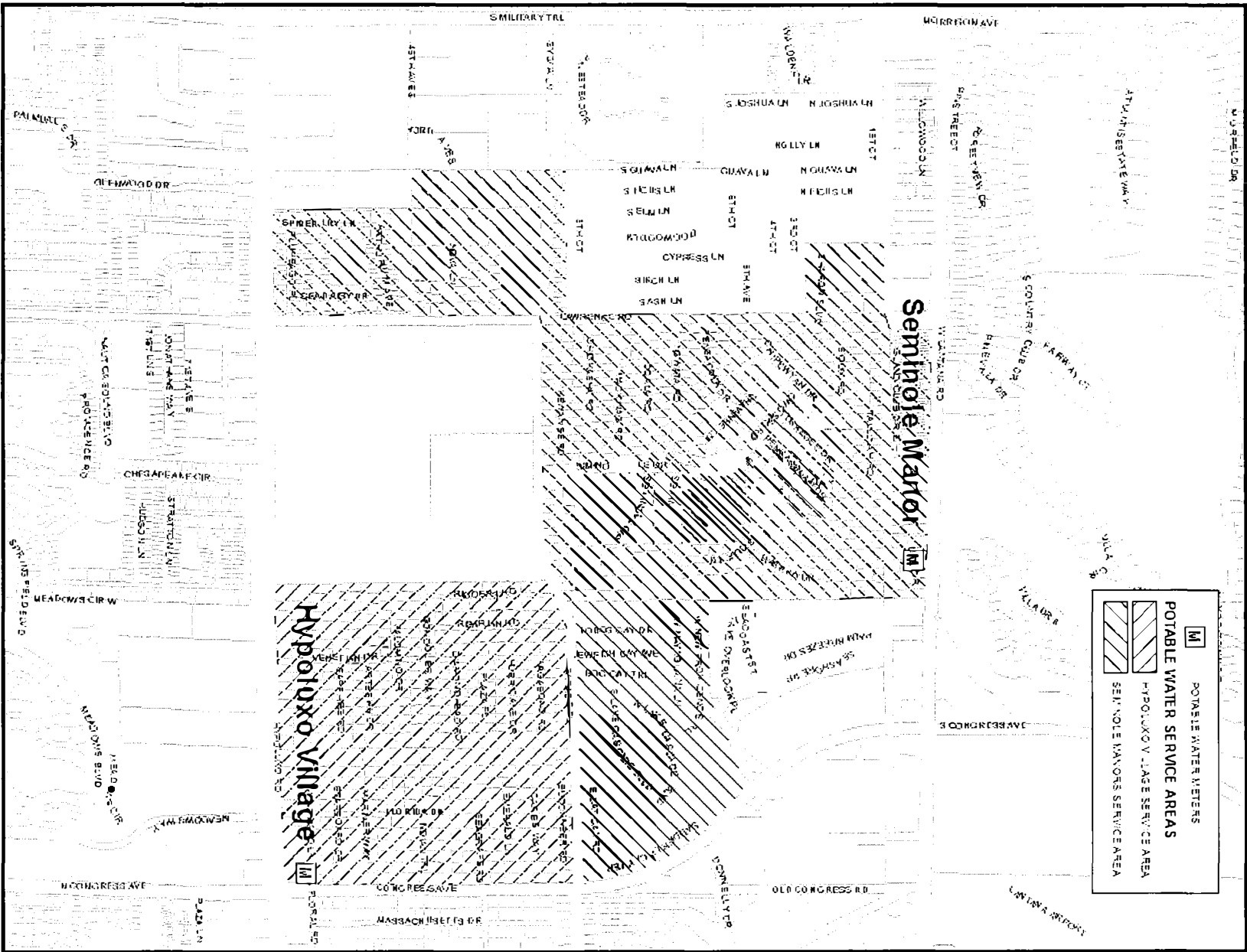
REVIEWED AND APPROVED FOR  
EXECUTION:

APPROVED AS TO FORM AND TO  
LEGAL SUFFICIENCY

By: Elaine A. Humphreys  
Elaine A. Humphreys, City Attorney

By: [Signature]  
Susan A. Stanton, City Manager

EXHIBIT A - SERVICE AREAS.



## EXHIBIT B – GPD CAPACITY CALCULATION SCHEDULE

Type of Structure	Specific Condition or Unit	Water Per Unit (GPD)
Airports, bus terminals, train stations, port & dock facilities:	(a) per passenger	5
	(b) add per employee per 8 hour shift	20
Assembly Halls	(a) per seat	2
Barber and Beauty Shops	(a) per dry service chair	100
	(b) per wet service chair	200
Bar and cocktail lounges (Not including food service)	(a) per seat	20
Bowling alleys (Not including food service)	(a) per lane	100
Camps	(a) day, no food service	25
	(b) luxury resort, per person	100
	(c) labor, per person	100
Camper or RV trailer park	(a) per space	150
Car wash	(a) automatic type	3500
	(b) automatic type (recycled water)	350
	(c) Hand wash	1750
Churches (Not including food service)	(a) per sanctuary seat	3
Dance halls	(a) per person	2
Dentist offices	(a) per dentist	250
	(b) plus per wet service chair	200
Doctor offices	(a) per physician	250
	(b) plus per square foot of office space	0.20
Drive-in theater	(a) per car space	5
Fire station	(a) per bed	100
Health spa (Not including food service)	(a) per square foot	0.35
Hospitals/Nursing Homes (Not including public food service or offices)	a) per bed space	210
Institutions	(a) per person, including resident staff	100
Kennels	(a) per animal space	30
	(b) per veterinarian	250
Laundries	(a) per coin-operated machine	400
	(b) per non-coin operated machine	650
Marinas (Does not include office, repair & leisure facilities)	(a) per boat slip	40
Office Building	(a) per square foot of floor space	0.20
Parks, public with comfort stations	(a) per visitor	10
Pet grooming parlors (Does not include retail sales areas)	(a) per wash basin	200
Recreation/pool buildings	(a) per person	2 (300 gal min)
Residences	(a) Single family, detached (Maximum 3-bedroom 2 1/2 Bath)	350
	(b) Multiple family per dwelling unit	300
	(c) Motel/hotel units, per bedroom	150
	(d) Bedroom additions to SFH	150
	(e) Mobil homes, each	350
Restaurants	(a) open 24 hours, per seat incl bar	50
	(b) open less than 24 hours, per seat incl bar	30
	(c) open less than 24 hours, with drive-thru window, per seat including bar	35
	(d) drive-ins, per space	50
	(e) carry out food service only per 100 square feet	50
Schools: Elementary/Middle	(a) per pupil per day	10
	(b) add for shower/pupil	5
	(c) add for cafeteria/pupil	5
Schools: High School	(a) per pupil per day	15
	(b) add for shower/pupil	5
	(c) add for cafeteria/pupil	5
Schools: Boarding School	(a) per pupil	100
Service stations and auto repair shops	(a) per water closet	250
	(b) plus per service bay	100
Shopping centers and retail shops (Not including food service or laundry)	(a) per square foot of floor space	0.10
Theaters and auditoriums	(a) per seat	5
Warehouse-Mini Storage, with resident manager	(a) per square foot of floor space	0.01
	(b) plus residence	250
Warehouses	(a) per square foot of floor space	0.10

## APPENDIX B

### City of Lake Worth Beach Historical Water Flows

Annual Water Balance Summary														
line #	Utility Name:	City of Lake Worth												
	Permit Name:	Lake Worth Utilities												
	Reporting Period:	2012												
	Water Use Permit #:	50-00234-W												
	Name of Person Completing Form:	Doug Lovelace												
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1.0	Total Raw Water Withdrawn (should match pumpage reports submitted to SFWMD)	139,423,000	120,424,000	154,947,000	138,870,000	140,938,000	124,559,000	144,222,000	149,725,000	120,132,000	114,609,000	120,366,000	126,592,000	1,594,807,000
2.0	Volume of Finished Water Produced	122,078,000	105,174,000	130,094,000	108,686,000	112,531,000	107,714,000	126,753,000	132,491,000	98,380,000	95,311,000	103,648,000	109,998,000	1,352,858,000
3.0	Treatment Losses (subtract line 2 from line 1)	17,345,000	15,250,000	24,853,000	30,184,000	28,407,000	16,845,000	17,469,000	17,234,000	21,752,000	19,298,000	16,718,000	16,594,000	241,949,000
4.0	% Treatment Loss (divide line 3 by line 1)	12.44%	12.66%	16.04%	21.74%	20.16%	13.52%	12.11%	11.51%	18.11%	16.84%	13.89%	13.11%	15.17%
5.0	Total Volume of Water Imported (if applicable)	23,085,000	25,630,000	14,586,000	30,624,000	23,240,000	19,732,000	12,962,000	0	26,716,000	35,218,000	33,656,000	28,794,000	274,243,000
6.0	System Input (Finished Water Produced plus Total Water Imported) (line 2 plus line 5)	145,163,000	130,804,000	144,680,000	139,310,000	135,771,000	127,446,000	139,715,000	132,491,000	125,096,000	130,529,000	137,304,000	138,792,000	1,627,101,000
7.0	Billed Authorized Consumption (total volume of water billed including Exports-if applicable)	133,384,000	126,011,900	122,713,300	121,988,300	124,469,500	117,738,700	115,417,400	117,218,100	112,870,100	113,426,400	116,503,700	132,054,000	1,453,795,400
8.0	Unbilled Authorized Consumption (include estimates of fire protection, line flushing, and other utility-authorized non-billed uses). An estimate of 1.25% of the System Input can be used if no other data is available.	1,814,538	1,635,050	1,808,500	1,741,375	1,697,138	1,593,075	1,746,438	1,656,138	1,563,700	1,631,613	1,716,300	1,734,900	20,338,763
9.0	Total Authorized Consumption (Billed Authorized Consumption plus Unbilled Authorized Consumption) (line 7 plus line 8)	135,198,538	127,646,950	124,521,800	123,729,675	126,166,638	119,331,775	117,163,838	118,874,238	114,433,800	115,058,013	118,220,000	133,788,900	1,474,134,163
10.0	Total Water Losses (Line 6 minus line 9)	9,964,463	3,157,050	20,158,200	15,580,325	9,604,363	8,114,225	22,551,163	13,616,763	10,662,200	15,470,988	19,084,000	5,003,100	152,966,838
11.0	% Water Loss (line 10 divided by line 6)	6.86%	2.41%	13.93%	11.18%	7.07%	6.37%	16.14%	10.28%	8.52%	11.85%	13.90%	3.60%	9.40%

Annual Water Balance Summary														
line #	Utility Name:	City of Lake Worth												
	Permit Name:	Lake Worth Utilities												
	Reporting Period:	2013												
	Water Use Permit #:	50-00234-W												
	Name of Person Completing Form:	Timothy Sloan												
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1.0	Total Raw Water Withdrawn (should match pumpage reports submitted to SFWMD) <b>RO Plant operates at 75% recovery</b>	126,679,000	111,386,000	144,448,000	130,652,000	114,419,000	136,581,000	153,861,000	174,894,000	152,358,000	170,008,000	164,180,000	166,300,000	1,745,766,000
2.0	Volume of Finished Water Produced	108,254,000	95,490,000	125,889,000	115,429,000	99,637,000	117,780,000	131,885,000	148,643,000	130,607,000	145,927,000	141,559,000	144,051,000	1,505,151,000
3.0	Treatment Losses (subtract line 2 from line 1)	18,425,000	15,896,000	18,559,000	15,223,000	14,782,000	18,801,000	21,976,000	26,251,000	21,751,000	24,081,000	22,621,000	22,249,000	240,615,000
4.0	% Treatment Loss (divide line 3 by line 1)	14.54%	14.27%	12.85%	11.65%	12.92%	13.77%	14.28%	15.01%	14.28%	14.16%	13.78%	13.38%	13.78%
5.0	Total Volume of Water Imported (if applicable) <b>Bulk PBC purchase</b>	28,963,000	32,592,000	17,300,000	24,769,000	34,977,000	13,243,000	0	0	0	0	0	0	151,844,000
6.0	System Input (Finished Water Produced plus Total Water Imported) (line 2 plus line 5)	137,217,000	128,082,000	143,189,000	140,198,000	134,614,000	131,023,000	131,885,000	148,643,000	130,607,000	145,927,000	141,559,000	144,051,000	1,656,995,000
7.0	Billed Authorized Consumption (total volume of water billed including Exports-if applicable)	125,214,348	122,358,692	127,005,368	120,441,852	116,205,064	110,862,032	116,476,112	116,365,772	123,569,380	130,372,372	139,116,488	132,393,508	1,480,380,988
8.0	Unbilled Authorized Consumption (include estimates of fire protection, line flushing, and other utility-authorized non-billed uses). An estimate of 1.25% of the System Input can be used if no other data is available.	1,715,213	1,601,025	1,789,863	1,752,475	1,682,675	1,637,788	1,648,563	1,858,038	1,632,588	1,824,088	1,769,488	1,800,638	20,712,438
9.0	Total Authorized Consumption (Billed Authorized Consumption plus Unbilled Authorized Consumption) (line 7 plus line 8)	126,929,561	123,959,717	128,795,231	122,194,327	117,887,739	112,499,820	118,124,675	118,223,810	125,201,968	132,196,460	140,885,976	134,194,146	1,501,093,426
10.0	Total Water Losses (Line 6 minus line 9)	10,287,440	4,122,283	14,393,770	18,003,673	16,726,261	18,523,181	13,760,326	30,419,191	5,405,033	13,730,541	673,025	9,856,855	155,901,575
11.0	% Water Loss (line 10 divided by line 6)	7.50%	3.22%	10.05%	12.84%	12.43%	14.14%	10.43%	20.46%	4.14%	9.41%	0.48%	6.84%	9.41%

Annual Water Balance Summary														
line #	Utility Name:	City of Lake Worth												
	Permit Name:	Lake Worth Utilities												
	Reporting Period:	2014												
	Water Use Permit #:	50-00234-W												
	Name of Person Completing Form:	Timothy Sloan												
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1.0	Total Raw Water Withdrawn (should match pumpage reports submitted to SFWMD) <b>RO Plant operates at 75% recovery</b>	164,203,000	147,788,000	162,226,000	169,559,505	190,971,760	174,391,768	159,102,752	167,467,136	159,873,872	171,704,240	175,137,704	172,924,440	2,015,350,177
2.0	Volume of Finished Water Produced	142,621,500	127,241,200	142,850,700	146,618,800	160,530,400	145,037,300	137,189,600	143,004,300	137,755,000	141,029,900	147,967,600	149,182,000	1,721,028,300
3.0	Treatment Losses (subtract line 2 from line 1)	21,581,500	20,546,800	19,375,300	22,940,705	30,441,360	29,354,468	21,913,152	24,462,836	22,118,872	30,674,340	27,170,104	23,742,440	294,321,877
4.0	% Treatment Loss (divide line 3 by line 1)	13.14%	13.90%	11.94%	13.53%	15.94%	16.83%	13.77%	14.61%	13.84%	17.86%	15.51%	13.73%	14.60%
5.0	Total Volume of Water Imported (if applicable) <b>Bulk PBC purchase</b>													0
6.0	System Input (Finished Water Produced plus Total Water Imported) (line 2 plus line 5)	142,621,500	127,241,200	142,850,700	146,618,800	160,530,400	145,037,300	137,189,600	143,004,300	137,755,000	141,029,900	147,967,600	149,182,000	1,721,028,300
7.0	Billed Authorized Consumption (total volume of water billed including Exports-if applicable)	134,810,200	119,305,000	129,659,300	118,489,300	127,048,600	164,868,170	119,593,400	126,505,300	126,145,800	120,147,000	129,905,300	130,284,200	1,546,761,570
8.0	Unbilled Authorized Consumption (include estimates of fire protection, line flushing, and other utility-authorized non-billed uses). An estimate of 1.25% of the System Input can be used if no other data is available.	80,000	80,000	80,000	62,052	76,946	590,849	90,849	90,849	605,426	79,544	579,544	75,048	2,491,107
9.0	Total Authorized Consumption (Billed Authorized Consumption plus Unbilled Authorized Consumption) (line 7 plus line 8)	134,890,200	119,385,000	129,739,300	118,551,352	127,125,546	165,459,019	119,684,249	126,596,149	126,751,226	120,226,544	130,484,844	130,359,248	1,549,252,677
10.0	Total Water Losses (Line 6 minus line 9)	7,731,300	7,856,200	13,111,400	28,067,448	33,404,854	-20,421,719	17,505,351	16,408,151	11,003,774	20,803,356	17,482,756	18,822,752	171,775,623
11.0	% Water Loss (line 10 divided by line 6)	5.42%	6.17%	9.18%	19.14%	20.81%	-14.08%	12.76%	11.47%	7.99%	14.75%	11.82%	12.62%	9.98%

Annual Water Balance Summary														
line #	Utility Name:	City of Lake Worth												
	Permit Name:	Lake Worth Utilities												
	Reporting Period:	2015												
	Water Use Permit #:	50-00234-W												
	Name of Person Completing Form:	Timothy Sloan												
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1.0	Total Raw Water Withdrawn (should match pumpage reports submitted to SFWMD) <b>RO Plant operates at 75% recovery</b>	169,032,712	155,868,128	190,303,560	185,887,056	184,473,528	175,490,512	184,437,328	185,461,096	161,032,104	170,492,880	175,229,544	177,294,368	2,115,002,816
2.0	Volume of Finished Water Produced	145,163,600	133,349,200	162,145,800	159,569,100	160,470,200	157,009,800	162,224,700	161,911,300	143,718,200	153,706,000	159,967,900	158,055,000	1,857,290,800
3.0	Treatment Losses (subtract line 2 from line 1)	23,869,112	22,518,928	28,157,760	26,317,956	24,003,328	18,480,712	22,212,628	23,549,796	17,313,904	16,786,880	15,261,644	19,239,368	257,712,016
4.0	% Treatment Loss (divide line 3 by line 1)	14.12%	14.45%	14.80%	14.16%	13.01%	10.53%	12.04%	12.70%	10.75%	9.85%	8.71%	10.85%	12.18%
5.0	Total Volume of Water Imported (if applicable) <b>Bulk PBC purchase</b>													0
6.0	System Input (Finished Water Produced plus Total Water Imported) (line 2 plus line 5)	145,163,600	133,349,200	162,145,800	159,569,100	160,470,200	157,009,800	162,224,700	161,911,300	143,718,200	153,706,000	159,967,900	158,055,000	1,857,290,800
7.0	Billed Authorized Consumption (total volume of water billed including Exports-if applicable)	140,595,400	122,882,700	123,452,200	135,090,900	127,790,400	136,301,100	144,708,600	126,404,500	131,426,900	124,439,700	127,982,600	139,924,600	1,580,999,600
8.0	Unbilled Authorized Consumption (include estimates of fire protection, line flushing, and other utility-authorized non-billed uses). An estimate of 1.25% of the System Input can be used if no other data is available.	9,494,500	21,658,500	25,251,950	15,639,950	7,611,900	8,916,150	6,870,500	5,871,600	824,950	131,250	16,035,400	20,421,800	138,728,450
9.0	Total Authorized Consumption (Billed Authorized Consumption plus Unbilled Authorized Consumption) (line 7 plus line 8)	150,089,900	144,541,200	148,704,150	150,730,850	135,402,300	145,217,250	151,579,100	132,276,100	132,251,850	124,570,950	144,018,000	160,346,400	1,719,728,050
10.0	Total Water Losses (Line 6 minus line 9)	-4,926,300	-11,192,000	13,441,650	8,838,250	25,067,900	11,792,550	10,645,600	29,635,200	11,466,350	29,135,050	15,949,900	-2,291,400	137,562,750
11.0	% Water Loss (line 10 divided by line 6)	-3.39%	-8.39%	8.29%	5.54%	15.62%	7.51%	6.56%	18.30%	7.98%	18.96%	9.97%	-1.45%	7.41%

Annual Water Balance Summary														
line #	Utility Name:	City of Lake Worth												
	Permit Name:	Lake Worth Utilities												
	Reporting Period:	2016												
	Water Use Permit #:	50-00234-W												
	Name of Person Completing Form:	Timothy Sloan												
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1.0	Total Raw Water Withdrawn (should match pumpage reports submitted to SFWMD) <b>RO Plant operates at 75% recovery</b>	182,157,000	166,601,000	197,010,000	218,620,000	179,657,000	190,285,000	211,294,000	200,460,000	181,135,000	190,140,000	211,240,000	211,370,642	2,339,969,642
2.0	Volume of Finished Water Produced	148,929,464	139,582,696	159,737,512	166,048,488	166,600,352	155,246,328	177,567,735	166,164,425	153,922,328	161,750,264	173,867,601	162,162,616	1,931,579,809
3.0	Treatment Losses (subtract line 2 from line 1)	33,227,536	27,018,304	37,272,488	52,571,512	13,056,648	35,038,672	33,726,265	34,295,575	27,212,672	28,389,736	37,372,399	49,208,026	408,389,833
4.0	% Treatment Loss (divide line 3 by line 1)	18.24%	16.22%	18.92%	24.05%	7.27%	18.41%	15.96%	17.11%	15.02%	14.93%	17.69%	23.28%	17.45%
5.0	Total Volume of Water Imported (if applicable) <b>Bulk PBC purchase</b>													0
6.0	System Input (Finished Water Produced plus Total Water Imported) (line 2 plus line 5)	149,281,800	140,698,600	160,415,100	162,818,700	166,505,300	152,007,400	174,422,800	165,986,400	153,285,300	160,360,900	172,713,600	163,305,200	1,921,801,100
7.0	Billed Authorized Consumption (total volume of water billed including Exports-if applicable)	141,046,700	124,544,700	129,832,600	131,539,435	139,951,397	142,186,650	137,227,582	147,452,479	134,973,976	132,602,888	126,433,589	151,040,827	1,638,832,823
8.0	Unbilled Authorized Consumption (include estimates of fire protection, line flushing, and other utility-authorized non-billed uses). An estimate of 1.25% of the System Input can be used if no other data is available.	11,151,000	8,730,900	11,535,100	11,297,000	15,600,050	7,968,600	5,335,300	5,978,750	19,018,450	24,330,750	28,019,750	3,142,805	152,108,455
9.0	Total Authorized Consumption (Billed Authorized Consumption plus Unbilled Authorized Consumption) (line 7 plus line 8)	152,197,700	133,275,600	141,367,700	142,836,435	155,551,447	150,155,250	142,562,882	153,431,229	153,992,426	156,933,638	154,453,339	154,183,632	1,790,941,278
10.0	Total Water Losses (Line 6 minus line 9)	-2,915,900	7,423,000	19,047,400	19,982,265	10,953,853	1,852,150	31,859,918	12,555,171	-707,126	3,427,262	18,260,261	9,121,568	130,859,822
11.0	% Water Loss (line 10 divided by line 6)	-1.95%	5.28%	11.87%	12.27%	6.58%	1.22%	18.27%	7.56%	-0.46%	2.14%	10.57%	5.59%	6.81%

Annual Water Balance Summary														
line #	Utility Name:	City of Lake Worth												
	Permit Name:	Lake Worth Utilities												
	Reporting Period:	2017												
	Water Use Permit #:	50-00234-W												
	Name of Person Completing Form:	Timothy Sloan												
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1.0	Total Raw Water Withdrawn (should match pumpage reports submitted to SFWMD) <b>RO Plant operates at 75% recovery</b>	208,939,974	188,072,156	202,528,062	208,932,464	208,196,707	192,610,917	203,031,952	204,459,728	198,385,336	194,597,031	175,764,869	190,208,236	2,375,727,432
2.0	Volume of Finished Water Produced	167,747,576	147,883,818	159,697,358	163,812,056	165,315,504	151,029,976	161,349,752	160,727,704	156,427,792	153,341,368	138,392,136	150,446,832	1,876,171,872
3.0	Treatment Losses (subtract line 2 from line 1)	41,192,398	40,188,338	42,830,704	45,120,408	42,881,203	41,580,941	41,682,200	43,732,024	41,957,544	41,255,663	37,372,733	39,761,404	499,555,560
4.0	% Treatment Loss (divide line 3 by line 1)	19.71%	21.37%	21.15%	21.60%	20.60%	21.59%	20.53%	21.39%	21.15%	21.20%	21.26%	20.90%	21.03%
5.0	Total Volume of Water Imported (if applicable) <b>Bulk PBC purchase</b>													0
6.0	System Input (Finished Water Produced plus Total Water Imported) (line 2 plus line 5)	170,136,200	152,894,700	165,594,500	169,715,000	168,761,000	153,638,100	165,547,500	167,161,900	161,065,200	158,851,800	142,783,000	151,612,400	1,927,761,300
7.0	Billed Authorized Consumption (total volume of water billed including Exports-if applicable)	146,285,852	132,186,726	133,284,397	137,818,600	147,386,128	143,678,796	144,059,652	143,855,074	133,525,879	150,193,537	137,839,626	116,826,127	1,666,940,394
8.0	Unbilled Authorized Consumption (include estimates of fire protection, line flushing, and other utility-authorized non-billed uses). An estimate of 1.25% of the System Input can be used if no other data is available.	16,815,300	12,708,450	15,756,550	14,697,971	14,011,893	21,942,750	15,143,161	26,473,400	27,760,044	17,766,350	9,374,800	16,215,900	208,666,569
9.0	Total Authorized Consumption (Billed Authorized Consumption plus Unbilled Authorized Consumption) (line 7 plus line 8)	163,101,152	144,895,176	149,040,947	152,516,571	161,398,021	165,621,546	159,202,813	170,328,474	161,285,923	167,959,887	147,214,426	133,042,027	1,875,606,963
10.0	Total Water Losses (Line 6 minus line 9)	7,035,048	7,999,524	16,553,553	17,198,429	7,362,979	-11,983,446	6,344,687	-3,166,574	-220,723	-9,108,087	-4,431,426	18,570,373	52,154,337
11.0	% Water Loss (line 10 divided by line 6)	4.13%	5.23%	10.00%	10.13%	4.36%	-7.80%	3.83%	-1.89%	-0.14%	-5.73%	-3.10%	12.25%	2.71%

Annual Water Balance Summary														
line #	Utility Name:	City of Lake Worth												
	Permit Name:	Lake Worth Utilities												
	Reporting Period:	2018												
	Water Use Permit #:	50-00234-W												
	Name of Person Completing Form:	Timothy Sloan												
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1.0	Total Raw Water Withdrawn (should match pumpage reports submitted to SFWMD) <b>RO Plant operates at 75% recovery</b>	183,610,496	185,136,432	209,707,544	206,521,040	181,368,448	169,749,956	185,919,933	205,092,264	196,879,135	204,763,501	187,379,144	179,765,244	2,295,893,137
2.0	Volume of Finished Water Produced	156,633,120	153,826,560	172,924,680	168,896,304	154,426,992	144,419,688	158,434,968	169,469,472	164,369,056	166,033,800	152,003,568	152,522,720	1,913,960,928
3.0	Treatment Losses (subtract line 2 from line 1)	26,977,376	31,309,872	36,782,864	37,624,736	26,941,456	25,330,268	27,484,965	35,622,792	32,510,079	38,729,701	35,375,576	27,242,524	381,932,209
4.0	% Treatment Loss (divide line 3 by line 1)	14.69%	16.91%	17.54%	18.22%	14.85%	14.92%	14.78%	17.37%	16.51%	18.91%	18.88%	15.15%	16.64%
5.0	Total Volume of Water Imported (if applicable) <b>Bulk PBC purchase</b>													0
6.0	System Input (Finished Water Produced plus Total Water Imported) (line 2 plus line 5)	156,633,120	153,826,560	172,924,680	168,896,304	154,426,992	144,419,688	158,434,968	169,469,472	164,369,056	166,033,800	152,003,568	152,522,720	1,913,960,928
7.0	Billed Authorized Consumption (total volume of water billed including Exports-if applicable)	140,188,500	125,833,300	136,456,200	142,412,300	129,916,500	126,253,900	133,941,400	132,649,400	139,855,100	148,954,400	139,422,900	128,782,600	1,624,666,500
8.0	Unbilled Authorized Consumption (include estimates of fire protection, line flushing, and other utility-authorized non-billed uses). An estimate of 1.25% of the System Input can be used if no other data is available.	9,710,900	13,649,350	12,340,400	15,621,044	13,904,200	13,845,500	13,202,450	13,930,674	14,025,895	8,132,527	9,663,712	7,828,400	145,855,052
9.0	Total Authorized Consumption (Billed Authorized Consumption plus Unbilled Authorized Consumption) (line 7 plus line 8)	149,899,400	139,482,650	148,796,600	158,033,344	143,820,700	140,099,400	147,143,850	146,580,074	153,880,995	157,086,927	149,086,612	136,611,000	1,770,521,552
10.0	Total Water Losses (Line 6 minus line 9)	6,733,720	14,343,910	24,128,080	10,862,960	10,606,292	4,320,288	11,291,118	22,889,398	10,488,061	8,946,873	2,916,956	15,911,720	143,439,376
11.0	% Water Loss (line 10 divided by line 6)	4.30%	9.32%	13.95%	6.43%	6.87%	2.99%	7.13%	13.51%	6.38%	5.39%	1.92%	10.43%	7.49%

Annual Water Balance Summary														
line #	Utility Name:	City of Lake Worth												
	Permit Name:	Lake Worth Utilities												
	Reporting Period:	2019												
	Water Use Permit #:	50-00234-W												
	Name of Person Completing Form:	Timothy Sloan												
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1.0	Total Raw Water Withdrawn (should match pumpage reports submitted to SFWMD) <b>RO Plant operates at 75% recovery</b>	188,500,437	168,829,219	193,545,136	202,601,416	203,309,688	198,660,840	211,700,044	208,263,596	192,545,528	229,721,388	194,941,548	196,114,272	2,388,733,112
2.0	Volume of Finished Water Produced	149,067,896	131,718,744	149,745,344	159,345,666	162,053,814	158,514,376	164,670,152	159,640,104	174,426,322	188,562,498	167,497,982	160,748,094	1,925,990,992
3.0	Treatment Losses (subtract line 2 from line 1)	39,432,541	37,110,475	43,799,792	43,255,750	41,255,874	40,146,464	47,029,892	48,623,492	18,119,206	41,158,890	27,443,566	35,366,178	462,742,120
4.0	% Treatment Loss (divide line 3 by line 1)	20.92%	21.98%	22.63%	21.35%	20.29%	20.21%	22.22%	23.35%	9.41%	17.92%	14.08%	18.03%	19.37%
5.0	Total Volume of Water Imported (if applicable) <b>Bulk PBC purchase</b>													0
6.0	System Input (Finished Water Produced plus Total Water Imported) (line 2 plus line 5)	154,961,500	137,421,100	156,829,500	165,546,400	162,727,800	156,884,300	167,212,600	163,048,200	176,993,100	191,920,900	167,497,982	160,748,094	1,961,791,476
7.0	Billed Authorized Consumption (total volume of water billed including Exports-if applicable)	143,406,500	126,193,000	128,644,100	134,736,200	145,258,700	150,783,000	144,521,600	139,622,900	130,344,300	144,056,000	132,357,700	137,583,700	1,657,507,700
8.0	Unbilled Authorized Consumption (include estimates of fire protection, line flushing, and other utility-authorized non-billed uses). An estimate of 1.25% of the System Input can be used if no other data is available.	8,307,500	8,082,450	8,944,550	8,159,300	10,999,750	12,074,100	16,055,886	20,727,495	26,681,175	27,242,200	19,555,880	15,098,200	181,928,486
9.0	Total Authorized Consumption (Billed Authorized Consumption plus Unbilled Authorized Consumption) (line 7 plus line 8)	151,714,000	134,275,450	137,588,650	142,895,500	156,258,450	162,857,100	160,577,486	160,350,395	157,025,475	171,298,200	151,913,580	152,681,900	1,839,436,186
10.0	Total Water Losses (Line 6 minus line 9)	3,247,500	3,145,650	19,240,850	22,650,900	6,469,350	-5,972,800	6,635,114	2,697,805	19,967,625	20,622,700	15,584,402	8,066,194	122,355,290
11.0	% Water Loss (line 10 divided by line 6)	2.10%	2.29%	12.27%	13.68%	3.98%	-3.81%	3.97%	1.65%	11.28%	10.75%	9.30%	5.02%	6.24%