10-Year Water Supply Facilities Work Plan – 2020 Update

January 16, 2020

(May 04, 2020 - SFWMD Comments Incorporated)

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1.0 CHAPTER 1- INTRODUCTION

The State of Florida has enacted legislation to strengthen the linkage between growth and water availability based on specific demands identified in the water supply planning process. This Ten-Year Water Supply Facilities Work Plan (Work Plan) has been prepared for the City of Sunrise (City), located within Broward County (County). It has been prepared in response to the requirements for local governments to incorporate the Work Plan into the Comprehensive Plan. Local governments are required to revise the "Affected Elements" of their Comprehensive Plan within 18 months after the date their Regional Water Supply Plan is adopted along with a submittal for Comprehensive Plan Amendments for review by the appropriate reviewing agencies.

1.1 BACKGROUND

Beginning in 2002 and continuing through passage of the Community Planning Act in 2011 the State of Florida enacted legislation to address the State's water supply needs. The Florida Legislature enacted bills during the 2002, 2004, 2005, 2011, 2012, 2015, and 2016 sessions to address the state's water supply needs. These bills, particularly Senate Bills 360 and 444 (2005 legislative session) significantly changed Chapters 163 and 373 of the Florida Statutes (F.S.) by strengthening the statutory links between the regional water supply plans (RWSPs) prepared by the water management districts and the comprehensive plans prepared by local governments. In addition, these bills established the basis for improving coordination between Regional Water Supply Planning and local land use planning.

The Rule 9J-5, Minimum Criteria for Review of Local Government Comprehensive Plans and Plan Amendments, Evaluation and Appraisal Reports, Land Development Regulations and Determinations of Compliance, Florida Administrative Code (FAC) was repealed in 2011 as part of the changes to Chapter 163, F.S.

The 2018 Lower East Coast Water Supply Plan Update (2018 LECWSP Update) was prepared by the South Florida Water Management District (SFWMD) and approved by the District's Governing Board on November 8, 2018. Therefore, local governments within the Lower East Coast Region are required to amend their comprehensive plans and include an updated Ten-Year Water Supply Facilities Work Plan and related planning elements by May 8, 2020.

As a result, local governments located within an area that has a Regional Water Supply Needs and Sources Plan, must prepare a Ten-Year Water Supply Facilities Work Plan (Work Plan) that ensures linkage between the Regional Water Supply Plan and their individual comprehensive plans. Each Work Plan is required to address infrastructure, conservation, capital improvements, and intergovernmental coordination in addition to water supplier coordination.

Please see **Appendix A**; Growth Policy; County and Municipal Planning; Land Development Regulation, Chapter 163, F.S. Related to Water Supply Planning, provides a summary of regulatory requirements that impact local governments and their water supply planning efforts.

The 2018 LECWSP Update identifies regional water supply issues that continue to influence the water supply planning efforts, the regional water supply planning issues that impact the City of Sunrise along with City's efforts to address these issues are listed below:

- Climate change – The City of Sunrise along with its municipal neighbors understands the need for water utilities and local governments to begin to formalize a coordinated approach to integrate water supply and climate change considerations and work to provide relevant updates to Ten-Year Water Supply Facilities Work Plan and enhance Goals, Objective and Policies (GOPs) of its comprehensive plan.

- Regional Water Availability (RWA) Rule February 6, 2007 – The RWA limits the water withdrawals from Biscayne Aquifer to the maximum quantity during five consecutive years preceding April 2006. Subsequently, the City's Water Use Permit limited the City's Biscayne Aquifer withdrawal to 29.09 MGD on an annual average day basis. Demands in excess of this amount would need to be met by conservation and alternative water supplies.

- Construction of additional storage systems – The C-51 Reservoir project is intending to capture stormwater in wet season and release it during the dry season to recharge the Biscayne Aquifer. The City of Sunrise is one of the participating utilities that has executed agreement with Palm Beach Aggregates (PBA) who owns and operates the construction of the C-51 Reservoir project. Additionally, the City of Sunrise has constructed two Floridan wells and are into permitting phase to be able to re-purpose these wells as Aquifer Storage and Recovery (ASR) wells.

- Expanded use of reclaimed water to meet future water supply demands - In 2011 and 2012, the City performed a feasibility assessment in terms of offsetting non-potable groundwater withdrawals to increase the availability of the Biscayne Aquifer for potable water supply purposes. The City completed 0.99 MGD of reuse facility at Southwest WRF in 2010. The Construction of the first phase of the 4 MGD Reuse facility at the Sawgrass WWTP was completed in 2019.

- Planning and wellfield management to prevent undesirable changes in Floridan Aquifer water - According to the 2018 LECWSP Update, public water supply utilities in the LEC Planning Area are proposing substantial increases in FAS development over the planning horizon. Increased utilization of the FAS will tend to increase the risk of water quality degradation. The City has recognized the risks of changes in water quality and quantity in FAS since construction of Floridan well at Melaleuca site. The City's WUP has allocation at Park City but considering close proximity to the Town of Davie's Floridan wells, the City proactively shifted the two Floridan wells and constructed these wells at the Sawgrass Corporate Parkway. Additionally, the City has plans to convert these wells to ASR wells if feasible.

The City of Sunrise has adopted policies in its comprehensive plan to promote greater water conservation, including discouragement of the use of potable water for irrigation, continuous monitoring of water use within limiting conditions of the consumptive use permit, adopting a level of service consistent with the SFWMD's LEC Water Supply Plan, collaborative projects with neighboring utilities for sharing strained water natural resources, and discouraging excessive water used for construction purposes. The City has replaced many of its plant and system meters to improve water accounting. The City continues to participate in collaborative programs and partnerships with the SFWMD, Broward County and other local utilities for ensuring best management of the regional water supplies, such as service on the C-51 Reservoir Working Groups, the Broward County Conservation Pays program, Broward County's

Naturescape Irrigation Service program, the Southeast Florida Utilities Council, and the National Water Reuse Association and participates in the Broward County Water Matters Day, the City's Earth Day, the Climate Change Summits and other conservation events.

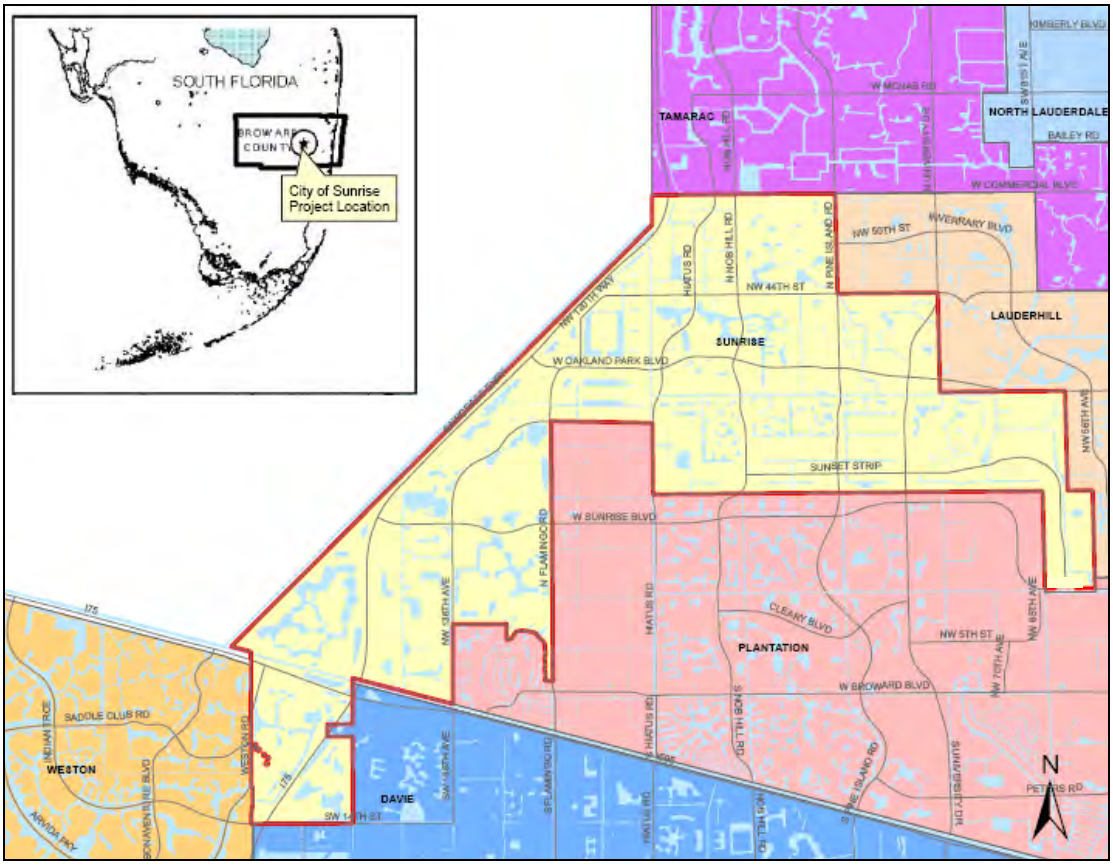
1.2 PURPOSE

The purpose of this Work Plan is to assess the City's current water sources and associated facilities and evaluate their adequacy to meet the projected raw and treated water demands and to develop and adopt a Comprehensive Plan amendment that must include updates to the Work Plan [as outlined in Section 163.3177(6)(c)3., F.S.], and be consistent with the water resource and water supply development projects listed in the 2018 LECWSP Update. The Work Plan must also cover at least a 10-year planning period and identify alternative and traditional water supply development as well as conservation and reuse projects needed to meet the City's projected future demands. The Work Plan will outline alternative water supply sources required to meet projected shortfalls and will present an implementation plan that will guide the City's efforts to develop and maintain sustainable water sources for its overall service area. The work plan will identify the major capital improvements needed for alternative water supply needs and will be incorporated into the City's five-year Capital Improvements Plan (CIP). Development of this Work Plan required coordination between the City's Community Development Department and Utility Department, the South Florida Water Management District (SFWMD), and each of the water receiving local governments in the City's service area (City of Sunrise, Town of Davie, City of Weston, and Town of Southwest Ranches). As required, it is anticipated that this Work Plan will be updated every five years, or within 18 months of a revision to the LECWSP Update.

2.0 CHAPTER 2- WATER SERVICE AREA

2.1 INTRODUCTION

The City of Sunrise, which is located in western Broward County, was incorporated in 1961. As development grew in the area, private water systems located inside and outside the City Limits were acquired and assembled to become part of the regional water service area. Over time, the water service area expanded to encompass an area of more than 67 square miles. The City's municipal boundary map is shown in **Figure 2-1.**



(Source: City of Sunrise, 2014 WSFWP)

Figure 2-1. City of Sunrise Location Map

2.2 WATER SERVICE AREA

The Utility provides water service to approximately 227,700 people, and as described below, serves jurisdictions outside of the City of Sunrise municipal boundary. The City's Utility service area is bounded

by Plantation and Lauderhill utility service areas to the east and south, the Tamarac service area to the north and the Davie, Cooper City and Pembroke Pines service areas to the south. The western boundary of the service area adjoins the South Florida Water Management District (SFWMD) Water Conservation Areas 2B and 3A. The extent of the existing utility service area is shown in **Figure 2-2**. The City of Sunrise municipal limits does not have any areas that are on domestic self-supply system.

2.3 SERVICE WITHIN OTHER LOCAL GOVERNMENT JURISDICTIONS

The City of Sunrise's Utility currently is the sole water service purveyor for the Cities of Weston and Sunrise. It also serves approximately 40 percent of the area encompassed by the Town of Southwest Ranches, roughly 60 percent of the area of Town of Davie and four individual homes in unincorporated Broward County, as listed in **Appendix G**.

The City is responsible for planning, financing, constructing, operating and maintaining the water utilities and public water supply systems that serve the areas shown within **Figure 2-2** and will continue to have total responsibility over the withdrawal, treatment and distribution of potable water within this area. Currently, a portion of the Southwest Ranches area uses private wells and septic systems. This area could potentially become part of the City's future retail service area. **Figure 2-3** shows the potential Future Service Area.

2.4 PRIVATE SUPPLIERS

Non-municipal water service providers are required to have Water Use Irrigation Permits, Major General Water Use Irrigation Permits, Individual Permits, or Major Water Use Permits issued by SFWMD. Permits are issued to allow users to withdraw a specified amount of water, either from the ground, canals, lakes or rivers. This water is typically used to irrigate golf courses, crops, nurseries, residential landscaping or for industrial uses.

Individual users withdrawing Biscayne Aquifer water within the City are identified in **Figure 2-4**. The City of Sunrise Utility does not have any involvement in the planning, financing, construction or operation of the facilities of SFWMD permittees or self-supplied users except for the City owned golf course (The Bridges at Springtree Golf Course) and municipal green space. The City of Sunrise's water utility is responsible for obtaining the City's Bridges at Springtree Golf Course water use permit which withdraws water from two onsite canals.

Appendix B includes an inventory list of potable and non-potable water service providers in addition to self-supplied individuals that are mapped in **Figure 2-4**.

The City of Sunrise and City of Weston municipal limits does not have any areas that are on domestic self-supply system. There are five individual users in Town of Davie and three individual users in Town of Southwest Ranches that are within the existing service area and are on domestic self-supply system.

Additionally, there are eleven individual users in Town of Southwest Ranches that are considered to be in the future service area which are on domestic self-supply system.

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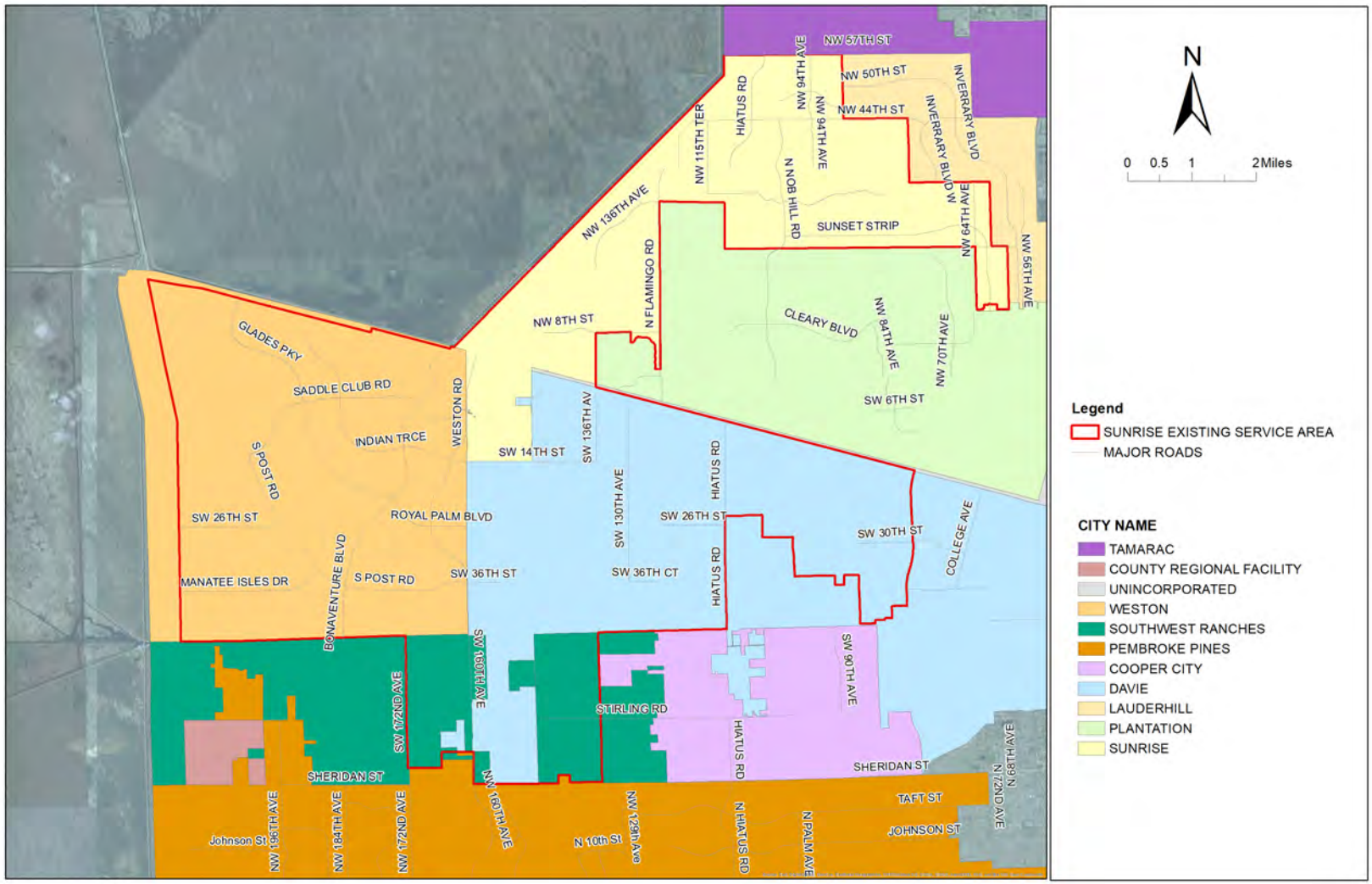
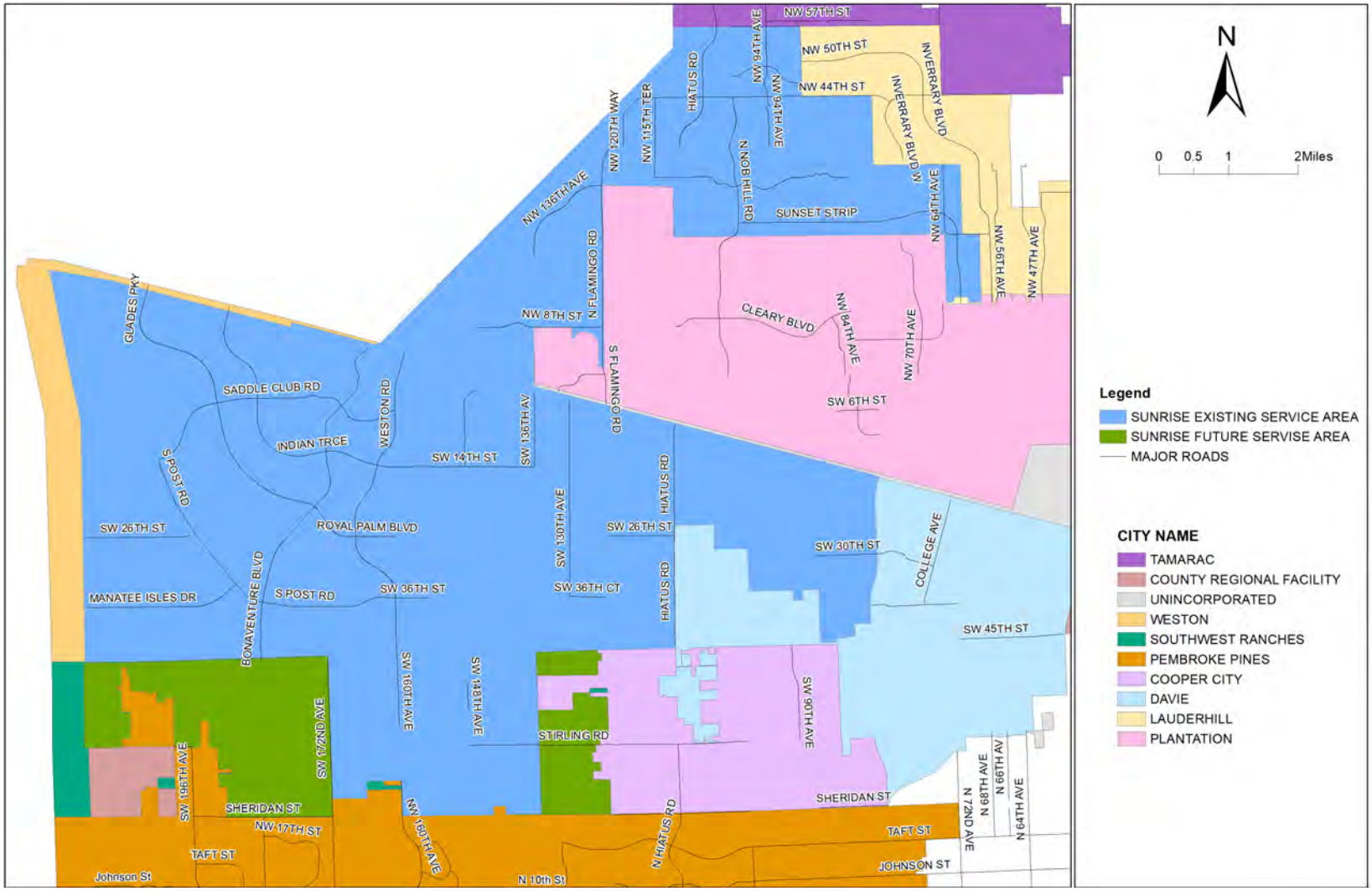


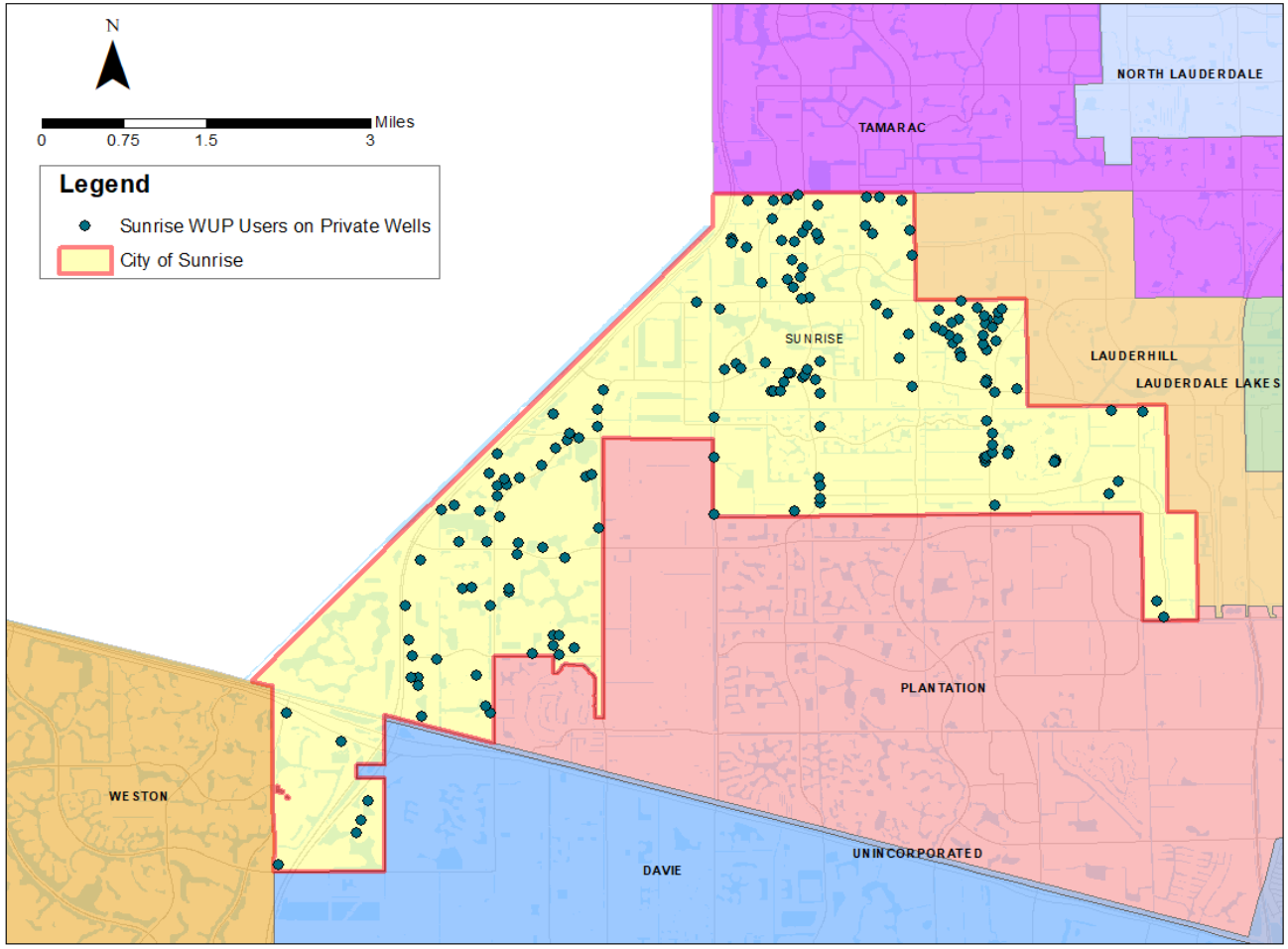
(Source: City of Sunrise, 2014 WSFWP)

Figure 2-2. City of Sunrise Utilities Existing Service Area



(Source: City of Sunrise, 2014 WSFWP)

Figure 2-3. Potential Future Service Area



(Source: City of Sunrise, 2014 WSFWP)

Figure 2-4. Potable and Non-Potable Users within City of Sunrise

3.0 CHAPTER 3 – EXISTING WATER SUPPLY, TREATMENT, STORAGE AND TRANSMISSION, AND DISTRIBUTION FACILITIES

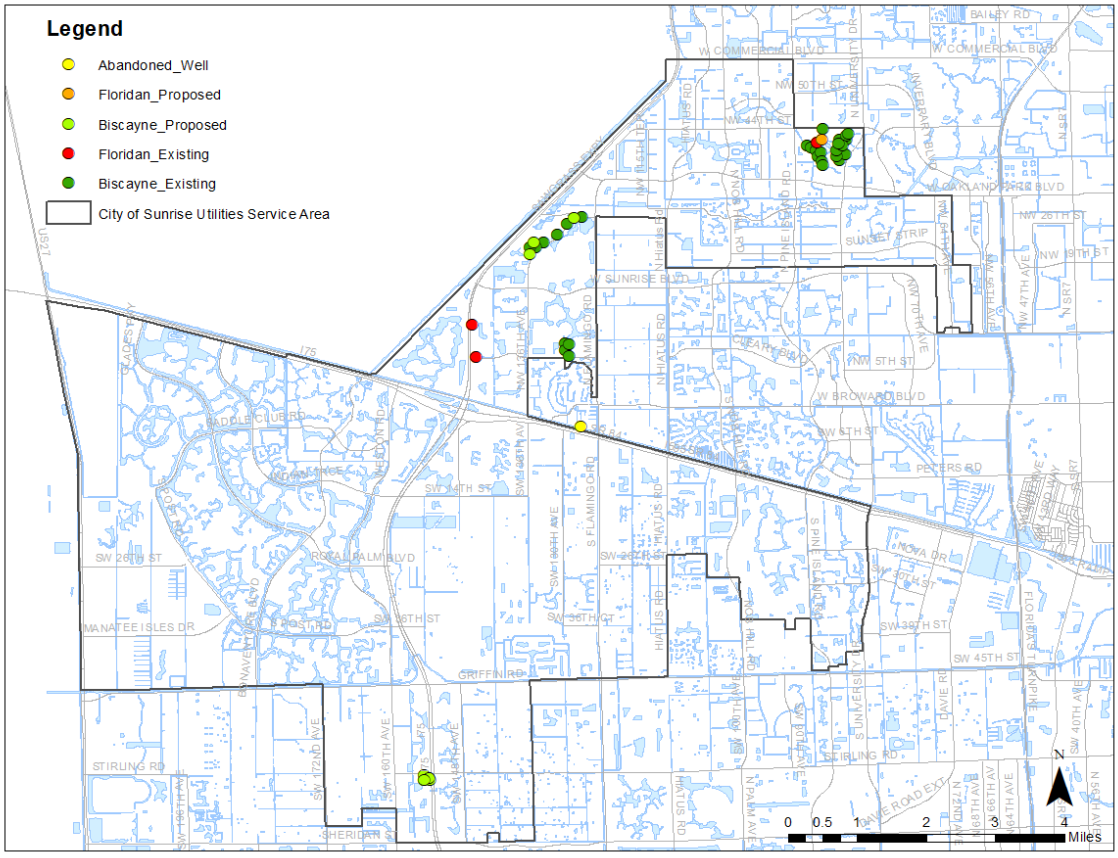
3.1 INTRODUCTION

This section will provide an overview of the City's water supply system, water treatment facilities, and transmission and distribution system.

The City of Sunrise water supply system includes four active wellfields, three water treatment plants, one active remote storage and re-pump facility, and one active Floridan Reverse Osmosis (RO) water treatment process with Floridan supply well (formerly known as Aquifer Storage and Recovery (ASR) well). The Utility's water transmission and distribution system includes approximately 750 miles of water mains ranging in size from 8 to 48 inches in diameter. The City currently has emergency interconnections with the City of Lauderhill, the Town of Davie, the City of Plantation, the City of Pembroke Pines and Cooper City.

3.2 WATER SUPPLY FACILITIES

The City of Sunrise Utilities water supply system withdraws from the Biscayne and Floridan Aquifers. The Biscayne Aquifer facilities have a constructed capacity of 60 MGD with a permitted water use allocation of 29.09 MGD and the Floridan Aquifer facilities have a capacity of 2 MGD with a permitted water use allocation of 10.98 MGD. The City currently operates the following four wellfields: Springtree, Sawgrass (Arena), Sawgrass (Flamingo Park), and Southwest. Melaleuca and Park City wellfields have been decommissioned. The Biscayne and Floridan well field locations are shown in **Figure 3-1**. The Sawgrass and Springtree facilities and wellfields each supply about 97 percent of the entire system demand, while the remaining 3 percent is provided by the Southwest facility. **Table 3-1** presents the capacity of the Biscayne wellfields and **Table 3-2** presents the capacity of the Floridan wellfields that supply each facility. City of Sunrise well description is provided in **Appendix F**.



(Source: City of Sunrise, 2014 WSFWP; SFWMD Geospatial Open Data Website, 2019)

Figure 3-1. Biscayne and Floridan Wellfield Locations

Table 3-1. Biscayne Wellfield Capacity

Wellfield Location	WP Served	Total Installed Capacity (MGD)	Total Installed Firm Capacity (MGD)
Springtree	Springtree	24	22
Sawgrass (Arena)	Sawgrass	18	15
Flamingo Park	Sawgrass	15	11
Southwest	Southwest	3	2
TOTAL		**60**	**50**

(Source: City of Sunrise, 2019)

Table 3-2. Floridan Wellfield Capacity

Wellfield Location	WTP Served	Total* Installed Capacity (MGD)	Total Installed Firm Capacity (MGD)
Springtree	Springtree	2	0
Sawgrass	Sawgrass	6	3
Melaleuca	Sawgrass	3	0
TOTAL		**11**	**3**

*Melaleuca is currently not in service.
(Source: City of Sunrise, 2019)

3.2.1 Springtree Wellfield

3.2.1.1 Biscayne Aquifer Wells

The Springtree wellfield is located at 8350 Springtree Drive on the City's Bridges at Springtree Golf Course. The wellfield consists of a total of 25 Biscayne production wells with 18 wells in operation and 7 wells that have been abandoned. This Biscayne Aquifer wellfield has a total installed pump capacity of 24 MGD.

3.2.1.2 Floridan Aquifer Wells

The Springtree wellfield also consists of one Floridan/ASR well with a total raw water capacity of 2.0 MGD. This well supplies raw water to the Springtree Reverse Osmosis (RO) Water Treatment Plant (WTP).

3.2.2 Sawgrass Arena Wellfield

3.2.2.1 Biscayne Aquifer Wells

The Sawgrass wellfield is located adjacent to the BB&T Center at One Panther Parkway in Sunrise, west of NW 136th Avenue and east of the Sawgrass Expressway (State Road 869). This wellfield was constructed in 1998 and is comprised of six Biscayne wells with a total pump capacity of 18 MGD. This wellfield supplies raw water to the Sawgrass WTP.

3.2.2.2 Floridan Aquifer Wells

Two additional Floridan wells were constructed in 2013 in the Sawgrass Corporate Park. These wells are located west of International Parkway and east of Sawgrass Expressway (State Road 869). One well is located in the median of NW 8th Street while the other is located adjacent to 1340 Concord Terrace, Sunrise and south of Sunrise Boulevard. The City is in process of installing raw water mains from the wells to the treatment plant. The wells are planned to be equipped with wellheads.

3.2.3 Sawgrass Flamingo Park Wellfield

The Sawgrass Flamingo Park wellfield is located at 12855 NW 8th Street, Sunrise. The wellfield consists of four existing wells with a total raw water capacity of 15 MGD. These wells add flow to the Sawgrass WTP.

3.2.4 Sawgrass Melaleuca Wellfield

The Melaleuca wellfield is located at 12630 SW 2nd Street, Plantation. The Melaleuca wellfield has been abandoned for 19 years. There is also a Floridan aquifer well at this site that is not in use and is currently not equipped.

3.2.5 Park City Wellfield

3.2.5.1 Biscayne Aquifer Wells

The Park City wellfield was located at SW 21st Street and Pine Island Road and was abandoned in 2012. This site consisted of seven (7) Biscayne Aquifer wells. The wellfield served the Park City Water Treatment Plant until 2002. The water treatment plant site was demolished in 2012.

3.2.5.2 Floridan Aquifer Wells

Park City wellfield has Floridan allocation of 4.09 MGD. No Floridan well currently exists at this site.

3.2.6 Southwest Wellfield

The Southwest wellfield is located at 15400 Watermill Road in Davie, south of Stirling Road, west of Interstate I-75 on the South West Water Treatment Plant site. The wellfield consists of three Biscayne Aquifer wells with a total raw water capacity of 3 MGD.

3.2.7 Consumptive Use Permit Conditions

The SFWMD regulates the volume of water that can be withdrawn from surface and groundwater through the use of a Consumptive Use Permit (CUP) pursuant to Part II of Chapter 373 of the Florida Statutes. The last CUP issued to the City by the SFWMD was in May 2008. The City is closely working with the SFWMD on alternative water supply projects in conjunction with the renewal of the permit. The last Permit No 06-00120-W included the Springtree, Sawgrass (Arena), Southwest, and Flamingo Park wellfields and allows a combined average withdrawal of 29.09 MGD from the four wellfields and a maximum month withdrawal allocation of 999.30 Million Gallons per Month (MGM). In addition to a system-wide maximum day allocation, the CUP also identifies a maximum day withdrawal for each wellfield as described in **Table 3-3**.

Table 3-3. CUP Biscayne and Floridan Wellfield Maximum Withdrawal

Wellfield Locations	Equivalent Annual Average Day (MGD)	Maximum Monthly Allocation (MGM)
Biscayne Wellfields		
Sawgrass Arena (only)	6.00	206.10
Sawgrass Flamingo Park (only)	11.31	388.50
Springtree	10.70	367.60
Park City (decommissioned)	-	
Southwest Facilities	1.08	37.10
Total	**29.09**	**999.30**
Floridan Wellfields		
Sawgrass RO	4.39	150.8
Springtree RO	2.50	85.9
Park City RO	4.09	140.5
Total	**10.98**	**377.20**

*Limited to minimize an adjacent wetland impact
(Source: City of Sunrise Consumptive Use Permit No. 06-00120-W)

3.3 WATER TREATMENT FACILITIES

The City of Sunrise currently operates three water treatment plants (WTPs) with a total permitted design treatment capacity of 51.5 MGD. The Springtree, Sawgrass, and the Southwest Utilities WTPs are currently active, while the Park City WTP has been put out of service in 2003 and later demolished in 2012. **Figure 3-2** shows the location of the active WTPs. **Table 3-4** includes the treatment facilities design capacity, treatment facilities permitted capacity and system wide average day treated water supply in 2018, from each active facility.

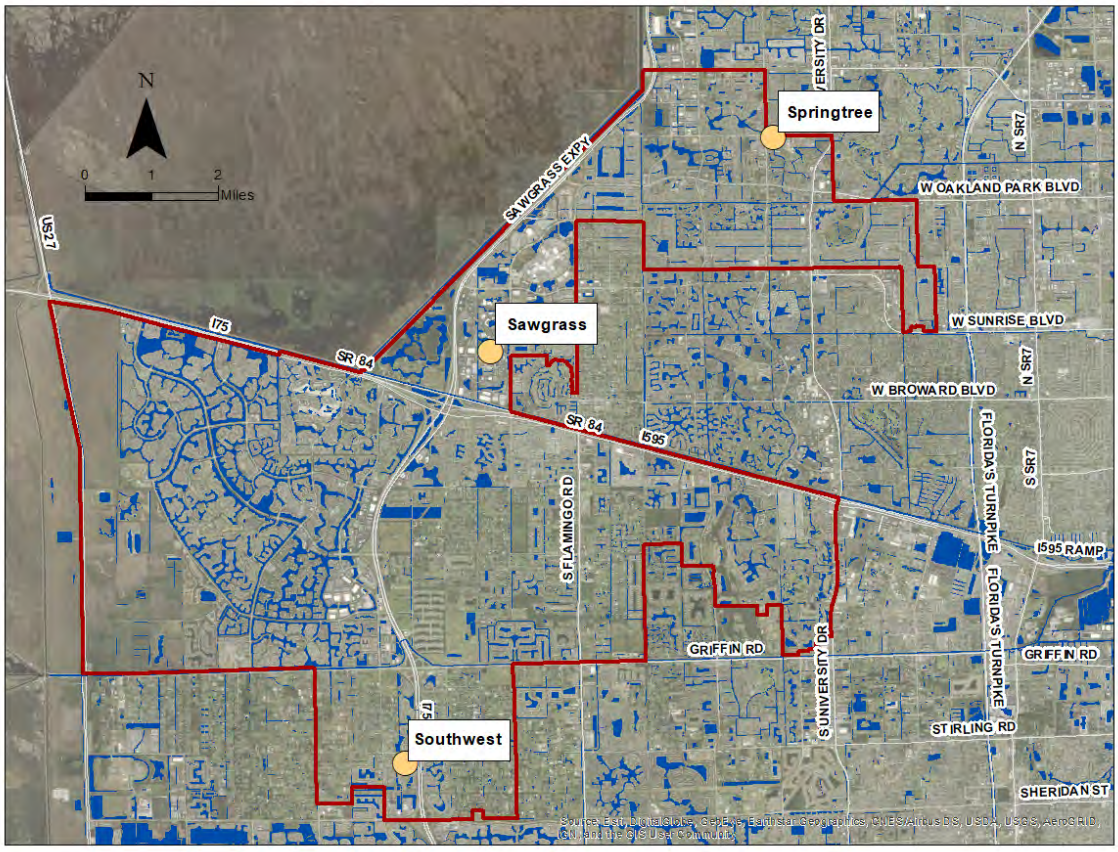
3.3.1 Springtree Water Treatment Plant

The Springtree WTP is located on a 20.6-acre site at 4350 Springtree Drive in Sunrise, located south of NW 44th Street and east of Springtree Drive. The water treatment facility includes a conventional lime-softening treatment facility and a reverse osmosis process. This facility has a total design and permitted treatment capacity of 25.5 MGD. Lime sludge residuals from the softening process are pumped to a lime sludge recovery process where a percentage of water is recycled back to the lime softening units, conserving additional water.

3.3.2 Sawgrass Water Treatment Plant

The Sawgrass WTP, located at 14150 NW 8th street in Sunrise, within the Sawgrass Corporate Park, was constructed in 2000 and expanded in 2003. The plant uses nanofiltration membranes as the primary treatment process with post treatment degasification and disinfection. The plant has been re-rated to a permitted treatment capacity of 24 MGD equaling its hydraulic capacity.

The concentrate produced from the membrane softening process is pumped to an industrial injection well, located on site.



(Source: City of Sunrise, 2019)

Figure 3-2. Water Treatment Plants Locations

Table 3-4. Water Treatment Facility Capacity

	Springtree WTP (MGD)	Sawgrass WTP (MGD)	Southwest WTP (MGD)	System Total (MGD)
Biscayne Treatment Permitted Capacity	24.0	24.0	2.0	50.0
Floridan Treatment Permitted Capacity	1.5	-	-	1.50
Treatment Capacity (Permitted) MGD	25.5	24.0	2.0	51.5
Ave Day Treated Water Supplied MGD	11.8	14.19	1.04	27.03

(Source: City of Sunrise, 2019)

3.3.3 Southwest Water Treatment Plant

The Southwest WTP was built in 1997 and is located at 15400 Watermill Road in Davie, and near the intersection of Interstate 75 and Stirling Road. The water treatment facility is a conventional lime-softening treatment plant with a treatment capacity of approximately 2 MGD. The residual handling systems for this facility consist of one wash water recovery basin (Sav-All Tank) and two sludge lagoons.

3.4 WATER STORAGE FACILITIES

The three water treatment plants each have two ground water storage tanks designed to buffer the water production process from the water distribution system. In addition to the water treatment plant storage, the City maintains one offsite storage facility. This offsite facility is comprised of ground storage tank, re-chlorination system and high service pump that assist with meeting peak hourly flow and fire flow requirements. **Table 3-5** lists the storage capacity at each location and **Figure 3-3** shows the location of the storage tanks.

Table 3-5. Storage Capacity

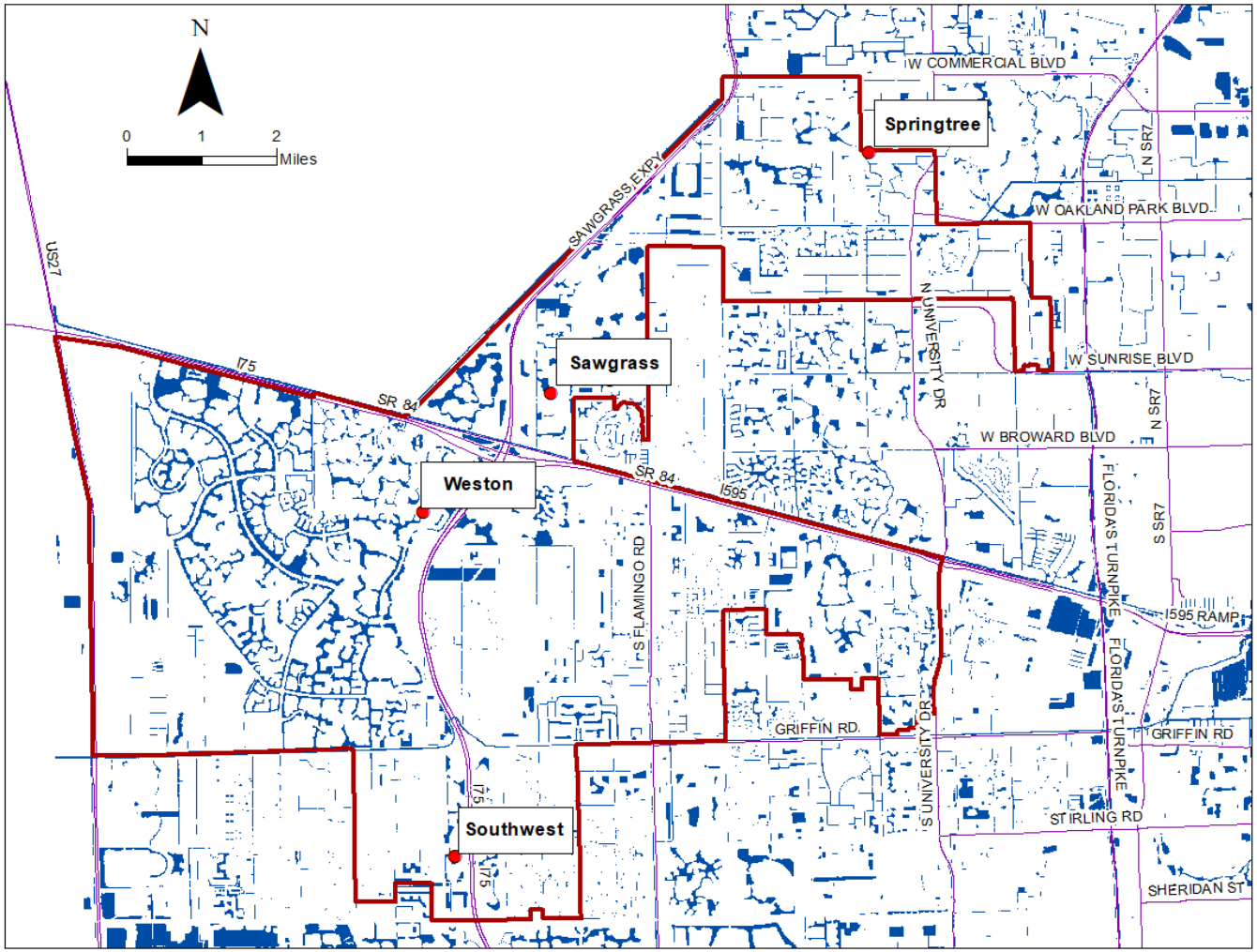
Facility	Capacity (MGD)
Sawgrass	10.0
Springtree	9.0
South West Utilities	1.5
Weston (Indian Trace)	2.0
Melaleuca*	0.0
Bonaventure*	0.0
Total	**22.5**

*Out of Service
(Source: City of Sunrise, 2019)

3.5 WATER TRANSMISSION AND DISTRIBUTION SYSTEM

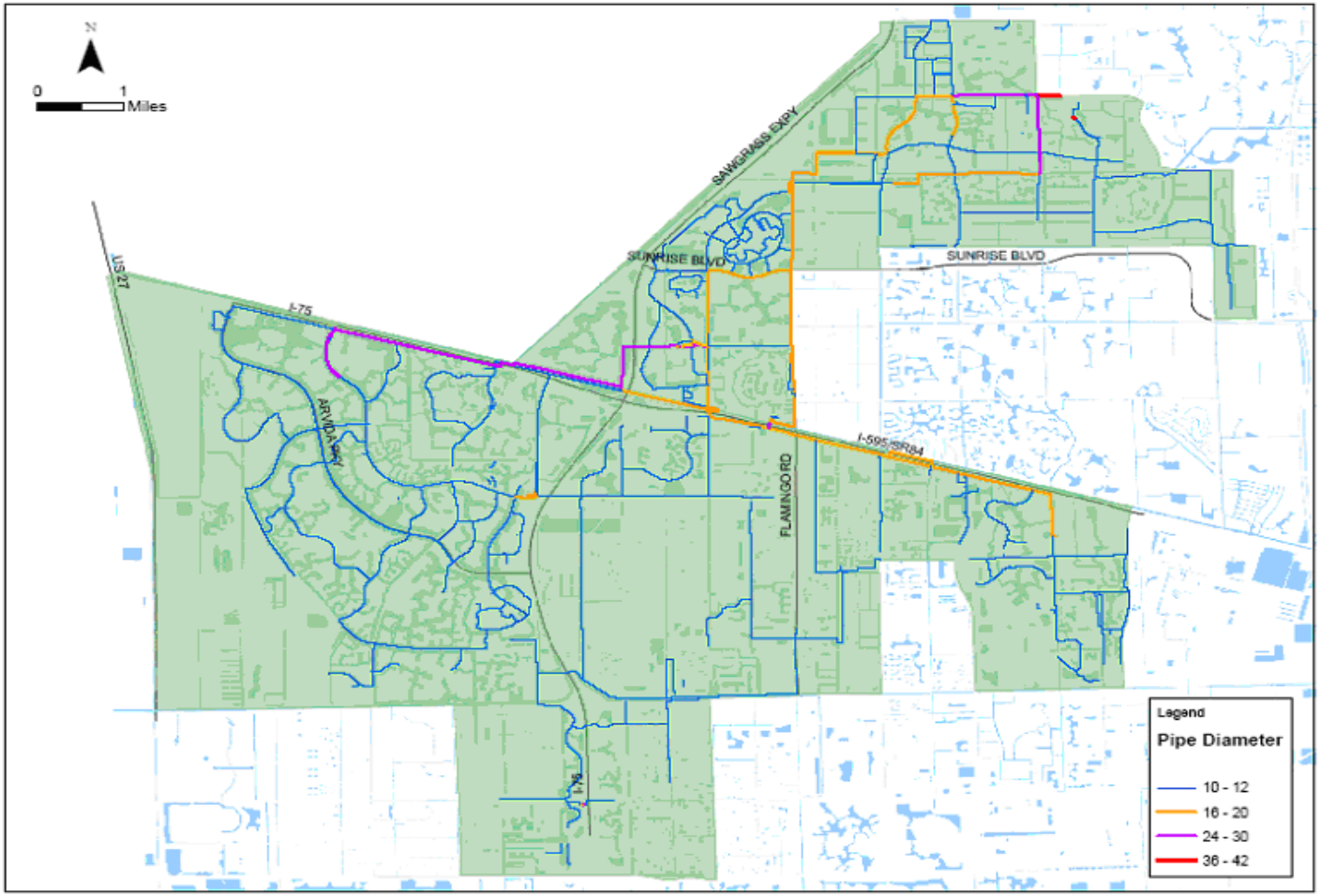
A transmission network of 30- and 24-inch mains runs from the Springtree high service pumps located in the northern part of the City, and south to the Sawgrass WTP facility. The transmission network then branches east and west along I-75 and I-595. No lines larger than 24 inches extend south of the Weston (Indian Trace) storage re-pump facility. The area south of Weston (Indian Trace) is served by mains 16 inches and smaller. **Figure 3-4** illustrates the location of transmission mains.

The City maintains water supply system interconnections for emergency with the City of Lauderhill, City of Plantation, Town of Davie, City of Pembroke Pines and Cooper City. **Appendix C** includes the details of the system interconnections.



(Source: City of Sunrise, 2019)

Figure 3-3. Storage Locations



(Source: City of Sunrise, 2019)

Figure 3-4. Transmission System (Source: City of Sunrise, 2019)

4.0 CHAPTER 4 – POPULATION DATA AND ANALYSIS

4.1 INTRODUCTION

This section evaluates historic and future population projections within the City of Sunrise's regional utility Service Area. The development of these population projections is based upon collaborative efforts between the City of Sunrise, the City of Weston, the Town of Davie and the Town of Southwest Ranches. The population projections have been rounded to the nearest hundred.

4.2 HISTORIC POPULATION DATA

Population within the City of Sunrise Utilities water service area has increased by 7.7% in the last decade. Between 2010 and 2018 growth was experienced in western communities in Broward County such as the City of Weston, the Town of Davie, and the City of Sunrise. **Table 4-1** presents the estimated historical population within the Utility service area.

Table 4-1. City of Sunrise Service Area Historic Population

Year	Population
2010	211,400
2011	213,600
2012	215,800
2013	217,900
2014	220,100
2015	223,300
2016	224,100
2017	225,900
2018	227,700

Note: [1] Historic population data is estimated by an interpolation using LEC WSP 2013 for year 2010 and PFAM 2017 data for year 2020 obtained from Broward County Planning and Development Management Division

4.3 EXISTING AND FUTURE POPULATION DATA

Population projections developed by Broward County are used here. The County predicts population growth with the Broward County Population Forecasting and Allocation Model (BCPFAM) which, in this application, uses the 2016 Bureau of Economics and Business Research (BEBR) data as a base and projects future population at 5-year intervals by applying the Cohort-Survival Methodology. Population projections are further refined based on the City and County review.

The Broward County Population Forecasting Model methodology projects population by assuming that future population is equal to present population plus births, minus deaths, and takes into account net migration. This assumption is applied to various segments of the population based on age, gender, race and ethnicity. Domestic migration rates are obtained from the United States Department of the Treasury's Internal Revenue Service (IRS) and the United States Immigration and Naturalization Service (INS) records and both are used to estimate

international migration. The model methodology has been approved by the State of Florida Department of Community Affairs.

Broward County allocates the population forecast model results into the County's Traffic Analysis Zones (TAZ). TAZ areas provide a small geographic area that allows for allocation flexibility in addition to being the accepted method for transportation and water supply planning. Unlike municipal boundaries, TAZ boundaries are usually bounded by a major roadway or natural features and are relatively consistent in size. Population projections are further allocated by municipality based on the results gathered from the BCPFM and the review of roundtable panel discussions with the City and County officials.

4.4 POPULATION PROJECTIONS

This Water Supply Facility Work Plan uses the Broward County Traffic Analysis Zone (TAZ) model results dated from June 2017 as the basis for its population projections. The existing and future water service area boundaries were juxtaposed with the TAZ areas and the population was calculated based on the intersecting area. In addition, linear interpolation was applied to project intermediate year populations that were not included in the TAZ projections. A review was conducted to identify, assess and incorporate any pending or anticipated zoning and land use changes, as well as significant development projects that could result in additional population and additional water supply demand.

Meetings were held with the Planning Departments of the local governments serviced by the City of Sunrise Water Utility. Following is the summary of intergovernmental coordination:

- The Town of Southwest Ranches indicated that they do not anticipate any major land use changes impacting future population projections. There are two major development under construction, but these do not impact the zoning.

- The Town of Davie does not expect 'The Commons' to be developed at this time. The Town does not anticipate any major land use changes impacting future population projections besides those shown in Table 4-2.

- The City of Weston has Bonaventure west golf course already under development (as Botaniko, a 126 single family home development) and accounted for in the Broward County PFAM 2017. There was a proposal for Bonaventure Resort and Spa re-development for the east portion of the golf course, this proposal was not approved by the Commission. The City of Weston does not anticipate any major land use changes impacting future population projections besides those shown in Table 4-2.

- The City of Sunrise expects new developments listed in Table 4-2 either developed, underway or proposed within its entire service area. Meeting minutes for the intergovernmental coordination carried out in developing this Work Plan are shown in **Appendix E**.

To correlate the City's planned developments with the 2018 LECWSP Update population data, the portion of the City's population falling in each TAZ for each year of the PFAM data set were assessed. From year to year in the 5-year PFAM increments, the population proportions by TAZ change very little (generally less than 5% variability for the proportions). The City's 2018 LECWSP Update service area population data was then distributed to each TAZ to compare the 2018 LECWSP Update growth by TAZ to the City's planned developments. Next, for each of the TAZs where the City has identified projects, the 2020-2040 population growth was compared to the City's new development list:

- The City's new development totals 41,984 people (**Table 4-2**)
- The total LEC projected growth in Sunrise is 20,296 (2020-2040)
- The LEC data for the TAZs where the City has identified new developments includes projected growth of 13,761.

The Broward County PFAM modeling work assigns an upper limit to population for each TAZ, where planned developments that exceed the existing upper limit for the TAZ are redistributed to adjacent TAZs. Therefore, a conservative approach was used to estimate the difference between the 2018 LECWSP Update data and the City's planned developments by subtracting all of the 2018 LECWSP Update projected growth for the Sunrise service area from the growth estimated from the City's planned development results in additional growth of 21,655 between 2020 and 2040. To complete this analysis, the difference between the growth identified in the 2018 LECWSP Update and the City's planned developments was redistributed into the population forecast.

Table 4-2. New Development and Redevelopment Projects

TAZ	Project Name	Population per TAZ	Municipality
468	1.Sureway Moving & Storage 2.Pan American 3.T-Mobile Everglades MSO 4. Commercial Blvd	68	City of Sunrise
469	1. Jafco Respite Center 2. West Commercial Landings	91	City of Sunrise
471	1.Springtree Villas 2.Springtree Center - Walgreens 3.Dollar General at Forum Plaza 4.BJ's Redevelopment	6,222	City of Sunrise
472	1.PINE PLAZA 5.73 AC 2.Skyline Professional Building	2,348	City of Sunrise
474	1.Frusciante	1,215	City of Sunrise
478	1. SGM Total expansion 64,000 gpd 2. METROPICA	7227	City of Sunrise
479	1.BB&T Arena 2. Confidential Development	11,393	City of Sunrise
481	1.WESTERRA 278 gpm 2. Racal Milgo System 1/Sunrise Industrial Park 3.Sawgrass Pointe III	7,489	City of Sunrise

TAZ	Project Name	Population per TAZ	Municipality
492	1.Sunset Square Plaza (With O'Reilly Autoparts)	8	City of Sunrise
493	1.Sunrise Country Club	2,916	City of Sunrise
494	1.Race Trac	15	City of Sunrise
561	1.595 Corporate Park of Commerce 2.Caseyco 3.Sierra Ranch 15600 gpd	308	Town of Davie
562	1.Fieldstone Shops of Davie, fka Tuscan Villas	29	Town of Davie
563	1.Miele-Simonson Estates 2.Flamingo Ranch Estates 3.Han-Mi Baptist Church 4.Kingdom Halls of Davie	58	Town of Davie
564	1.Westridge II 2.North Star Estates	30	Town of Davie
566	1.Commercial & Restaurant Development F	114	Town of Davie
569	1.Pine Island Office Centre	27	Town of Davie
572	1.Artis Senior Living 15120 gpd	163	Town of Davie
573	1.Casuarinas 2.ADDILYN 4,800 GPD	91	Town of Davie
574	1.Fire Station# 86 at Shenandoah- Town of Davie	8	Town of Davie
	2.CSG Sunwest Building E	57	City of Sunrise
575	1.Westgate Square	18	City of Sunrise
576	1.Comm. Dev. & Blatt & Weston - Sunrise Por	57	City of Sunrise
577	1.Botaniko FKA Weston Estates- Bonaventure 2. Bonaventure Resort & Spa Redevelopment (Proposed)	314	City of Weston
580	1.Church of God	13	City of Weston
583	1.St. Katharine Drexel Church Multipurpose Bldg	32	City of Weston
584	1.Paul Lutheran Church - Additional 2.On Fire Communications - Office Building	9	City of Weston
591	1.Vista Lakes Lot 9 2.Silver Springs Ranches, lot 1 3.Live Oak Estates - Septic Tanks (3 homes)	20	Town of Davie
592	1.Leto Estates #4	20	Town of Davie
593	1.Stone Brook Estates 2.Grand Oaks Estates, Davie 3.Hicks Estat 4.Oakhollowes 5.Oak PARK 6600 gpd	121	Town of Davie
596	1.Temple View Estates FKA Shotgun Estates East 2.18:555 ELDRIDGE PARK 3.TEMPLE VISTA 5400 gpd 4.Millstone Ranches 9000 gpd LS 362	213	Town of Davie
597	1.The Palace	308	City of Weston
601	1.Landmark Ranch Estates	50	Town of SW Ranches
602	1.Martin Square (AKA Weston Road Shopping Cntr)	8	Town of Davie
603	1.Residential Developments Adjacent to Dykes Rd	130	Town of SW Ranches
604	1.Health Care Group - Regency P-B 2.Regency Office Park	7	Town of Davie
605	1.Estates of Sunshine Ranches 2. Master's Academy	128	Town of SW Ranches

TAZ	Project Name	Population per TAZ	Municipality
890	1.Windmill Lake Estates AKA Windmill Ranch Estates 2.City of Weston EOC	57	Town of Weston
891	1.Cleveland Clinic Expansion	648	City of Weston
911	1.Meadow View Estates	8	Town of SW Ranches
937	1.Artesia Pods N, T & S	296	City of Sunrise
952	1.Fairway Isles Revised Site Plan - PC Fees paid 2005.	212	City of Sunrise
	TOTAL	**42,544**	

(Source: City of Sunrise, 2019)

Approximately one half of the Town of Southwest Ranches is currently on private wells and is not expected to be on municipal water supply in the near future, as that decision will be driven by customer/ resident's discretion. Projected population per TAZ is presented in **Appendix D**.

Table 4-3. City of Sunrise Service Area Population Projections

YEAR	2020	2025	2030	2040	Service Area
Weston	66,700	68,400	69,700	69,600	Existing
Davie	62,100	63,300	65,000	68,000	Existing
Sunrise	100,000	103,800	107,400	126,000	Existing
SW Ranches	2,400	2,400	2,500	2,500	Existing
SW Ranches	-	-	-	7,100	Future*
Total	**231,300**	**238,000**	**244,600**	**273,100**	

*The potential future service area in SW Ranches is derived from Broward County PFAM 2017 and populations were applied to Sunrise Utilities Service Area starting in 2040.
(Source: Computed by Stantec, 2019)

4.5 VERIFICATION OF POPULATION PROJECTIONS

Population projections computed for this work plan were shared and agreed upon with these local governments served by the City of Sunrise water Utility as part of the intergovernmental coordination carried out to develop this Water Supply Facility Work Plan. The minutes for these meetings are found in **Appendix E**.

These population projections were also compared with the projections for the City's service area in the SFWMD's 2018 LECWSP Update, see **Table 4-4**. Population estimates included in the 2018 LECWSP Update used 2017 BEBR data while the population projections presented in this work plan are based on the published Broward County Population Forecasting Model 2017 which used 2016 BEBR data. The variation is in the range of 0% to 8% in 2040. This variation is a result of many new developments planned within the City service area.

Table 4-4. 2018 LECWSP Update Population Projections for Sunrise Utility Water Service Area

Year	2020	2030	2040
Population	231,288	244,619	251,584

(Source: 2018 LECWSP Update)

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5.0 CHAPTER 5 – WATER DEMAND

5.1 INTRODUCTION

The treated and raw water needs of the City of Sunrise Utilities Water Service Area in the future are presented in this section. The projected demand is based upon the population projections presented in the previous section.

5.2 HISTORIC WATER USE

The average system-wide potable water production recorded at the beginning of year 2011 was 23.8 MGD and this value was approximately 22.45 MGD in 2018 which represents a decrease of 5.6 percent in the past 8 years. System wide historic raw and treated water data are represented in **Table 5-1**. The total pumpage and maximum month pumpage (shown in column A and B) represents historic reported raw water withdrawals to the South Florida Water Management District. The pumpage data is derived from the sum of flow meters at individual water supply wells. The raw water total, average month and maximum month data (shown in column C, D and E) are obtained from the master meter within the plant. There is a minor discrepancy (3%) between the total flow from individual flow meters and master meter at the plant. The maximum to average month ratio (column F) and treated to raw water ratio (column G) are calculated using the data from plant master meter.

Table 5-1. System Wide Historic Raw and Treated Water Records

	Raw Water							Treated Water			
	A	B	C	D	E	F	G	H	I	J	K
	Total (mgy) - Pumpage data	Max Month (mgm) - Pumpage data	Total (mgy)	Avg Month (mgm)	Max Month (mgm)	Max Month / Avg Ratio	Treated / Raw Ratio	Total (mgy)	Avg Month (mgm)	Max Month (mgm)	Max Month / Avg Month Ratio
2011	9779		9802	817	953	1.17	0.89	8683	724	826	1.14
2012			9276	773	850	1.10	0.87	8067	672	744	1.11
2013	9060		9072	756	877	1.16	0.90	8172	681	761	1.12
2014	8792	829	9008	751	847	1.13	0.93	8336	695	801	1.15
2015	9193	836	9495	791	884	1.12	0.91	8621	718	803	1.12
2016	9008	824	9072	756	855	1.13	0.91	8260	688	773	1.12
2017	8853	790	8889	741	820	1.11	0.92	8152	679	733	1.08
2018	9120	826	9122	760	826	1.09	0.90	8196	683	743	1.09

(Source: City of Sunrise, 2019)

Based on historic seasonal treated water demands from year 2011 to 2018, the maximum month demand is 1.08 to 1.14 times the average month demand. Usually, the maximum month occurs between March and May and the minimum month demand usually occurs between September and October.

Historic facility wide peak factors for treated water to raw water, maximum day raw water to average day raw water, and maximum month raw water to average month raw water for the past 8 years is shown in **Table 5-2**. As seen in **Table 5-2**, the system-wide treatment efficiency (product water as a percentage of raw water for the entire Utility System) is approximately 87 to 92%.

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Table 5-2. Historic Peak Factors

Date	Springtree WTP			Springtree WTP (RO)			Southwest WTP			Sawgrass WTP			System Totals		
	Treated /Raw Ratio	Max/Avg Day Ratio	Max/Avg Month Peaking Factor	Treated /Raw Ratio	Max/Avg Day Ratio	Max/Avg Month Peaking Factor	Treated /Raw Ratio	Max/Avg Day Ratio	Max/Avg Month Peaking Factor	Treated /Raw Ratio	Max/Avg Day Ratio	Max/Avg Month Peaking Factor	Treated/ Raw Ratio	Max/Avg Day Ratio	Max/Avg Month Peaking Factor
2011	0.92	1.39	1.09				1.03	1.22	1.08	0.85	1.48	1.24	0.89	1.34	1.17
2012	0.89	1.06	1.06				0.97	1.27	1.14	0.85	1.37	1.20	0.87	1.23	1.10
2013	0.96	1.17	1.05				0.97	1.14	1.06	0.85	1.57	1.27	0.90	1.34	1.16
2014	1.00	1.14	1.06	0.76	5.26	3.38	0.96	1.14	1.10	0.85	1.43	1.11	0.93	1.23	1.13
2015	1.00	1.04	1.15	0.75	1.59	1.40	0.93	1.23	1.06	0.85	1.49	1.09	0.91	1.21	1.12
2016	1.00	1.14	1.17	0.75	1.72	1.58	0.92	1.82	1.07	0.86	1.43	1.09	0.91	1.28	1.13
2017	1.00	1.20	1.04	0.73	3.67	2.79	1.32	3.67	2.79	0.85	1.37	1.10	0.92	1.28	1.11
2018	0.98	1.70	1.16	0.79	3.38	3.11	0.91	21.68	12.02	0.85	1.43	1.09	0.90	1.34	1.09

(Source: City of Sunrise, 2019)

5.3 PER CAPITA USAGE

Based on the total water metered to customers, and the estimated historic population the treated water leaving the plants, the per capita usage computed for the past five years (2014-2018) was 102 gallons per capita per day (gpcd) of treated water at the plant. This is comparable to the per capita usage rate of 93 gpcd at customer connection shown in the Consumptive Use Permit (CUP) application for C-51 Reservoir Project. The per capita usage rate of 102 gpcd treated at the plant is within is within 3.5% of the SFWMD 2018 LECWSP Update data, which shows a treated water per capita rate of 98 gpcd for the City of Sunrise Utility Water Service Area. The City's updated Comprehensive Plan will show the level of service at 102 gpcd treated water at the plant. Section 5.5 Water Demand Projection Methodology describes and shows the per capita use rate for each local government where water service is provided by the City of Sunrise.

5.4 WATER LOSS

Losses considered in the City of Sunrise Water Utility system were of two types, treatment loss and distribution loss. As seen in **Table 5-2**, the system wide treatment loss is at an average of approximately 9% over the past few years. System-wide treatment losses are comprised of losses from three treatment processes; lime softening, reverse osmosis, and nano filtration. Lime softening process offers the lowest loss. These losses are increased for the Sunrise Water Utility as use of alternative water sources such as Floridan brackish water increased, which also increases the need for additional capacity from these alternate treatment processes.

The distribution system losses were computed based on the amount of treated water leaving the plant and the amount of water metered to the customers. The customer water usage was computed from the billing database. While computing the distribution loss, flushing for bacterial clearance and chlorine residual maintenance was assumed 5%. **Table 5-3** shows the system wide transmission and distribution water loss data.

Table 5-3. System Wide Transmission and Distribution Loss

Year	Total Treated	Plant Water Use	Metered to Customers	Total Real and Apparent Water Loss*	Total Real Loss	Total Apparent Loss	Total Losses
	MGY	MGY	MGY	MGY	%	%	%
2014	8266	742	7242	1024	11.94	0.45	12.39
2015	8621	873	7782	839	9.23	0.51	9.74
2016	8260	812	7560	701	7.99	0.49	8.48
2017	8152	841	7480	671	7.72	0.52	8.20
2018	8196	926	7208	741	8.48	0.57	9.00

* Total losses were computed as a total real and apparent water losses. Total real water losses associated with leakage from distribution mains, storage tanks, service connection, etc. Apparent water losses include billing errors, meter inaccuracies, and illegal water consumptions which was assumed in the range of 5% system wide.
(Source: City of Sunrise, 2019)

5.5 WATER DEMAND PROJECTION METHODOLOGY

The forecasting of future water demands for the Sunrise Water Utility Service Area is based on population and per capita water demand projections.

The system-wide demand projections were based on 102 gpcd applied to population forecast for each time horizon until 2040.

Water demand projections were based on population projections and per capita demands. The service area wide demand forecasting was completed by multiplying the per capita water use of 102 gpcd by population forecast data for the entire service area for the years 2020, 2030, 2035, and 2040. Billing data of year 2017 was received to determine percent split by local government to compute demand by local government. Demand per capita per individual local government within the City of Sunrise utility service area was calculated using the 2017 demand split and population split by local government. The per capita demand by local government is shown in Table 5-4. **Table 5-5** shows demand projections for each municipality serviced by the City of Sunrise utilities for years 2020, 2030, 2035, and 2040.

Table 5-4. Water Demand Projection for Each Municipality within the City's Service Area

Municipality	Weston	Davie	Sunrise	SW Ranches	System wide
Per Capita (gpcd)	127	85	98	68	**102**

(Source: Computed by Stantec, 2019)

Table 5-5. Annual Average Day Demand Projections (gallons per day)

City	2020	2025	2030	2040	Service Area
City of Weston	8,455,000	8,666,400	8,830,300	8,901,200	Existing
Town of Davie	5,243,200	5,347,500	5,502,300	5,832,600	Existing
City of Sunrise	9,729,600	10,102,500	10,450,900	12,474,400	Existing
Town of SW Ranches	163,700	165,600	169,300	169,800	Existing
Town of SW Ranches				479,700	Future*
Total**	23,591,500	24,282,000	24,952,800	27,857,700	

* The potential future service area in SW Ranches is derived from Broward County TAZ population projections.
** These demand numbers are rounded to the nearest hundred for individual local governments.
(Source: Computed by Stantec, 2019)

6.0 CHAPTER 6 - WATER SUPPLY FACILITIES WORK PLAN

Our analysis accounts for systemwide demand needs through 2040. A phased incremental approach for keeping pace with demands is usually considered. As explained in this section, demands will be met through traditional and alternative water supplies with existing and planned treatment additions, distribution and storage facilities. In addition, as described in this section, the City will continue to implement several conservation measures, including a reclaimed water system.

The planning for future water sources, treatment, and distribution system improvements for the City of Sunrise Water Utility are presented in this section. The population projections presented in Section 4 and the finished water demands presented in Section 5 were used as the basis for this Water Supply Facilities Work Plan. The projects listed within this Plan are all coordinated with the SFWMD.

6.1 TRADITIONAL WATER SUPPLY PROJECTS

The majority of the anticipated water demand through 2040 will be met by the traditional water supply (Biscayne aquifer), treatment and distribution systems.

The last traditional water supply source project was completed in 2008: Four Biscayne aquifer wells were added to the City's Flamingo Park wellfield with service to the Sawgrass WTP, and a pumping capacity of 15 MGD. The City has submitted the CUP application for C-51 Reservoir project future allocation. This application is under review by the SFWMD.

6.2 ALTERNATIVE WATER SUPPLY DEMANDS

The City of Sunrise currently does not anticipate water demands to exceed supply until year approximately 2040, although plans and designs are underway for a number of alternate water supply projects to stay ahead of the anticipated demands. The City also constructed and commissioned a low pressure 1.5 MGD reverse osmosis (RO) plant at the Springtree Water Treatment Plant facility in April 2014 and completed an interconnect with the Town of Davie in November 2015. Ion exchange is added to provide additional buffering capacity, but results in some additional supply capability.

The future demands will exceed Biscayne aquifer allocation which is fixed at 29.09 MGD based on CUP application, and that alternate water supplies from both the C-51 Reservoir Project and substitution credits from wastewater reuse will address these needs, depending on the success with implementing each alternative.

Table 6-1 illustrates the Plan by which the City meets future demands by alternative water supply source category. This table shows the planned growth using the Broward County population projections and the

average system wide per capita demands equal to 102 gpcd. **Table 6-1** shows yearly demand projections as a function of population forecast and water use rate of 102 gpcd. These demand projections are treated water at the plant prior to purveying to the customers. The recently submitted WUP application has table 3-9 which shows the systemwide Annual Average Finished Demand at the customer point of connection rather than at the treatment plant. **Figure 6-1** shows the City of Sunrise's Water Supply Plan in response to the future demand projections. Permitted raw water allocations for Surficial Aquifer System (SAS) and Floridan Aquifer System (FAS) are shown based on the City existing CUP.

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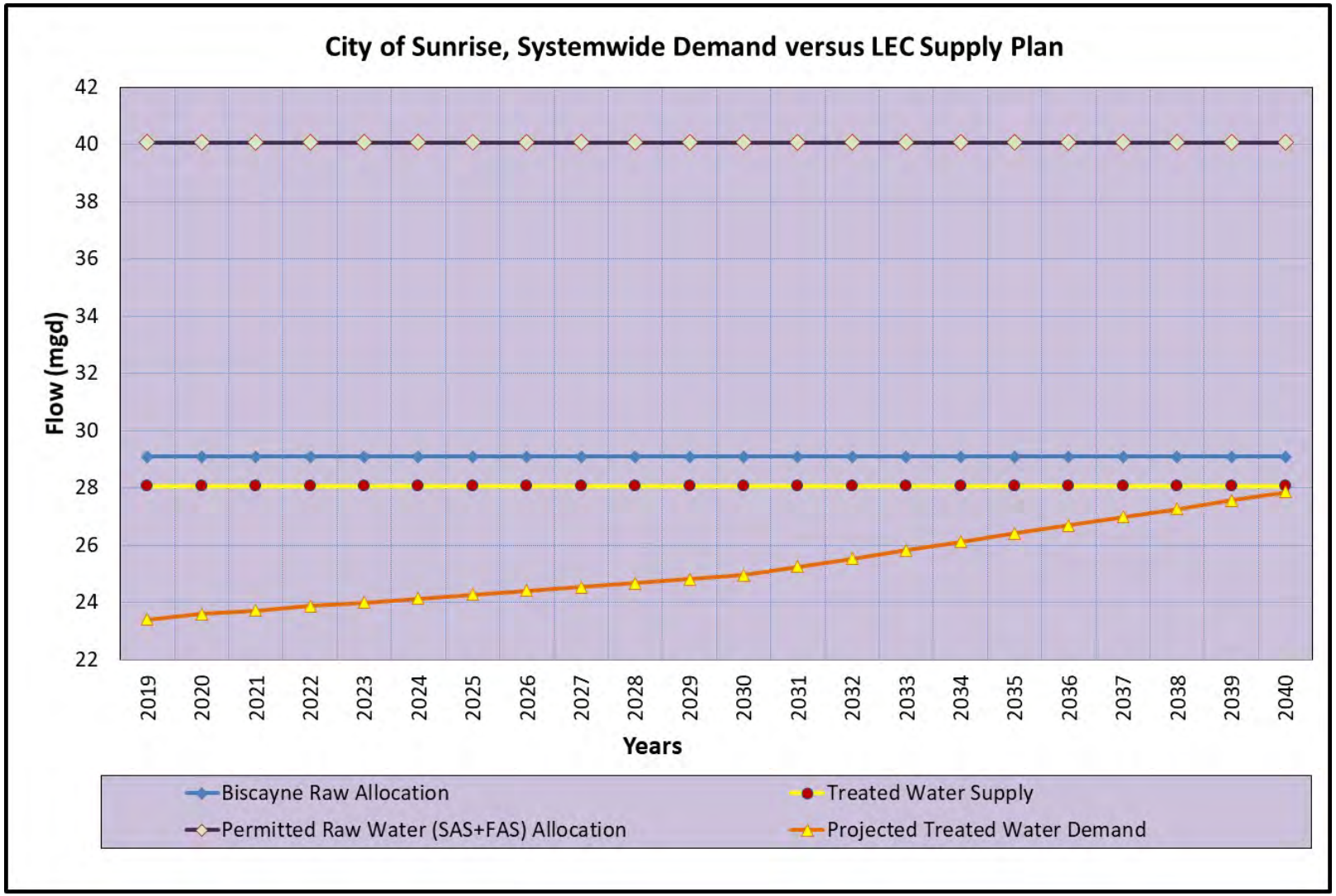
Table 6-1. Sunrise Utilities Finished Water Demand by Source Category

A	B	C	D	E	F	G	H	I	J
Date	Population to be Served	Projected Treated Average Day based on 2017 BCTAZ Population Projection	Biscayne Treated Water Average Equivalent	Floridan Aquifer RO Treated Water	Sawgrass Ion Exchange Treated Water Savings	Total available Treated Water	Treated Water Deficit per year to be Supplied by Alternative Water	Biscayne Raw Water Permitted Allocation	Floridan Raw Water Permitted Allocation
		(MGD)	(MGD)	(MGD)	(MGD)	(MGD)	(MGD)	(MGD)	(MGD)
		C = B x 102gpcd				G= D+E+F	H=C-G		
2019	229,500	23.41	26.14	1.5	0.42	28.06	-4.7	29.09	10.98
2020	231,300	23.59	26.14	1.5	0.42	28.06	-4.5	29.09	10.98
2021	232,600	23.73	26.14	1.5	0.42	28.06	-4.3	29.09	10.98
2022	234,000	23.87	26.14	1.5	0.42	28.06	-4.2	29.09	10.98
2023	235,300	24.00	26.14	1.5	0.42	28.06	-4.1	29.09	10.98
2024	236,600	24.13	26.14	1.5	0.42	28.06	-3.9	29.09	10.98
2025	238,000	24.28	26.14	1.5	0.42	28.06	-3.8	29.09	10.98
2026	239,300	24.41	26.14	1.5	0.42	28.06	-3.7	29.09	10.98
2027	240,600	24.54	26.14	1.5	0.42	28.06	-3.5	29.09	10.98
2028	242,000	24.68	26.14	1.5	0.42	28.06	-3.4	29.09	10.98
2029	243,300	24.82	26.14	1.5	0.42	28.06	-3.2	29.09	10.98
2030	244,600	24.95	26.14	1.5	0.42	28.06	-3.1	29.09	10.98
2031	247,500	25.25	26.14	1.5	0.42	28.06	-2.8	29.09	10.98
2032	250,300	25.53	26.14	1.5	0.42	28.06	-2.5	29.09	10.98
2033	253,200	25.83	26.14	1.5	0.42	28.06	-2.2	29.09	10.98
2034	256,000	26.11	26.14	1.5	0.42	28.06	-1.9	29.09	10.98
2035	258,900	26.41	26.14	1.5	0.42	28.06	-1.7	29.09	10.98
2036	261,700	26.69	26.14	1.5	0.42	28.06	-1.4	29.09	10.98
2037	264,600	26.99	26.14	1.5	0.42	28.06	-1.1	29.09	10.98
2038	267,400	27.27	26.14	1.5	0.42	28.06	-0.8	29.09	10.98
2039	270,300	27.57	26.14	1.5	0.42	28.06	-0.5	29.09	10.98
2040	273,100	27.86	26.14	1.5	0.42	28.06	-0.2	29.09	10.98

(Source: Computed by Stantec, 2019)



(Source: Computed by Stantec, 2019)

Figure 6-1. City of Sunrise Demand Versus 2018 LECWSP Update (102 gpcd)

6.3 ALTERNATIVE WATER SUPPLY PROJECTS

The City recently completed the construction of 3 MGD ion exchange facility to save additional raw water and improve the finished water quality at the Sawgrass WTP. The Sunrise Water Utility has completed a few and has planned several alternate water supply projects for phased delivery. The Sunrise Water Utility remains an active participant in the implementation of the C-51 Reservoir Project and has completed and moved forward with a wastewater reuse program with projects at its Southwest and Sawgrass WWTPs. There are private wells for irrigation within the City's municipal boundary. By installing a reuse facility and pipeline within the local government area, the City would look to replace the irrigation permits and thereby terminate or reduce the allocation of existing users and claim an applicable offset credit. By extending the reuse pipeline, the City may also have an opportunity to offset potable water use for irrigation with reclaim water there by reducing the per capita. The City has planned multiple phases of reuse distribution piping projects originating from the Sawgrass WWTP site in its capital improvement plan. The City has finalized the modeling for offset quantification and has not initiated the WUP application for changes related to reclaim water use.

The City has an array of projects underway for the purpose of supplementing its traditional water supply with alternate water supplies. Since 2008, the City has implemented a 2.0 MGD of Floridan Aquifer supply capacity at the Springtree Facility, with a plant capable of producing 1.5 MGD of finished water from the reverse osmosis treatment system. During peak month conditions, the total of the City's existing Biscayne Aquifer allocation and existing Floridan Aquifer supply and treatment infrastructure will be exceeded within the next 5 to 10 years. After implementation and confirming success of the C-51 Reservoir Project, the City will compare the actual costs of the C-51 Reservoir Project and Floridan Aquifer supplies and will increase their alternative water supply facilities accordingly. Also, the City has completed a potable water emergency interconnect with the Town of Davie (connecting with their Floridan aquifer supply source) that could provide a back-up for demand spikes. Other individual AWS project statuses are described below:

6.3.1 Sawgrass Recovery Increase – Conservation Project I

This project was part of the WSFP-2008 and completed on schedule. The City's Sawgrass nano-filtration water plant was constructed and fully operational in 2002. Since that time, the plant was operating at 75 percent recovery. As part of the facility plan development, the City planned to increase the recovery of the plant closer to 82 percent to reduce the water lost through the concentrate reject stream. This process change was initiated by the City operations staff on February 18, 2010. The increase in recovery results in addition of approximately 1 MGD of potable water from the same raw water allocation. Treatment of 17.31 MGD of raw water, as limited by the CUP, at 75 percent recovery, results in approximately 13 MGD of treated water. Increasing the recovery to 85 percent increases the available treated water to 14 MGD, an additional 1 MGD of treated water. This project was completed on March 30, 2010.

6.3.2 Sawgrass WTP – Conservation Project II

The City pilot tested recovery of nanofiltration concentrate blend with Floridan Aquifer raw water.

Recovery Blend Pilot Project

The City commenced a recovery blend pilot project in November 2008 with a project cost of $497,000. The intent of the pilot project was to investigate the opportunity for additional treatment of the nano-filtration concentrate with a blend of highly brackish Floridan water using reverse osmosis technology in an effort to capture additional water from the waste stream prior to deep well injection. This process was envisioned to extract up to an additional 2 MGD from the reject stream for potable use. The RO pilot system study was completed in December 2009. The result of the study determined that the blending of brackish water with nano-membrane reject caused premature fouling and required excessive cleaning of the RO membrane treatment unit. These operational challenges were determined to be too significant for this process to be implemented at full scale, compared to other alternatives.

Ion Exchange Project

The City explored the potential for an alternative conservation project using ion exchange treatment of Biscayne raw water with the goal to save an additional raw water. On February 25, 2011 the City authorized design engineers to conduct bench scale testing and develop the Basis of Design (BODR) for the ion exchange project. In April 2011, design engineers reported that due to high iron content in the raw water from the Sawgrass wellfields, a pretreatment step was necessary prior to the ion exchange process. In 2017, the City decided to initiate design of the Sawgrass ion exchange project proposed in 2011, but limiting capacity to half the capacity of the originally envisioned two phased, 6 MGD build out capacity. This project provides ion exchange of a 3 MGD side stream that will blend with membrane softened water, which aims to reduce the cost to approximately $7 million. This project is being constructed and undergoing testing in December 2019. The project provides enhanced water quality by retaining sufficient hardness and alkalinity in the treated water to improve treated water stability. It also offers the additional benefit of reducing raw water losses at this facility (about 15% of source water is lost through membrane softening) since the ion exchange technology wastes only a small quantity of raw water. It is estimated about 0.4 MGD of finished water will be conserved by this project.

6.3.3 Sawgrass Reverse Osmosis (RO) (Phase I, II, and III)

Floridan Test Wells and RO Treatment Projects

The City installed two (2) Floridan test wells within the Sawgrass International Corporate Park, which were completed in March 2013. After installation, the City confirmed reasonable water quality in 2013 to support use of these wells.

Although the City completed design of a reverse osmosis treatment project (3 MGD) on February 25, 2011,the City postponed construction of this expansion since demands reduced and other alternatives appeared to present more cost effective and beneficial potentials (such as the Sawgrass Ion Exchange and the C-51 Reservoir Project).

6.3.4 Sawgrass WTP ASR

The two Floridan Test Wells installed in the Sawgrass International Corporate Park in 2012-13 have the potential to be developed into raw water ASR wells to augment the existing Biscayne

aquifer supply to this facility. Seasonal use would mean recharge during the wet season and withdrawal during the dry season to help meet peak demands. The City is evaluating ASR cycle testing of the Southern Floridan test well, SGF-1 initially to determine performance characteristics. Depending on the results of the cycle testing, the City may consider whether developing an ASR system consisting of one or more of these Floridan wells which can serve this beneficial use as an expanded source available during times of drought.

A project is currently underway which includes a raw water transfer pipeline, ASR pumping systems, control and monitoring systems, and wellhead to convert Floridan well SGF-1 to an ASR well along with associated systems. The raw water main project is currently under construction and is expected to be completed by mid-2020. The wellhead project is under permitting and is expected to be advertised in early-2020

6.3.5 Springtree WTP RO – Phase I

The City supplemented its alternate water supply needs by using the existing ASR well at the Springtree water treatment plant. As part of permit modifications, the City now has Floridan water withdrawal allocation of 2 MGD via the ASR well. The design and bidding of a skid mounted unit was completed in March 2012. This project was completed in April 2014. The ASR to Floridan conversion and RO skid project supplied 1.5 MGD of treated water on an annual average day basis. Due to unfavorable water quality in the well, the RO is currently not in service.

6.3.6 Park City RO – Phase I & Phase II

The City commenced the Park City regional wellfield project, consisting of aquifer testing, on September 19, 2008 with an authorization to design consultants for the design package. The design was completed and in the bidding phase when in October of 2010, the SFWMD allocated Floridan water to the Town of Davie in the vicinity of the Nova educational complex. The SFWMD staff report (for the permit approval) estimated an additional drawdown of 20 (+) feet on the Sunrise Park City Regional Wellfield.

The City became concerned that the combined drawdown from the Davie wells with the City of Sunrise's proposed Park City Floridan wells would have caused the water quality to deteriorate, and such risk was too high to justify the capital investment by city of Sunrise. Thus, the City does not intend to move forward with this project as indicated in Exhibit 12 of the WUP and WSFP–2008.

6.3.7 C-51 Reservoir Project

The C-51 Reservoir Project is a regional water supply project currently being developed privately with intentions for transfer to a water control authority and operation by the South Florida Water Management District through capacity allocation agreements and water use permit allocations. Active participants in this regional project are currently considering the demands and potential opportunity for longer term permit issuances of longer than 20 years for supplementing traditional Biscayne aquifer allocations, and the additional water supply would come from captured and re-directed stormwater that would otherwise be pumped to tide. The City remains an active participant in the development and implementation of the C-51 Reservoir Project. Preliminary

investigations into the benefits and costs for this project to assist with addressing its long-term water supply demands appear to be attractive. The City has a Capacity Allocation Agreement with Palm Beach Aggregates, LLC – developer of the C-51 Reservoir Project in Palm Beach County for 5 MGD of C-51 Reservoir Phase 1 storage and has submitted an application for Water Use Permit renewal in order to secure a C-51 Reservoir Project offset to the SFWMD. The application is currently under review by SFWMD.

6.3.8 Southwest WRF – Phase I

The City completed rehabilitation improvements, increased the permitted capacity from 0.45 MGD to 0.99 MGD and added a 0.99 MGD tertiary treatment process for irrigational quality (IQ) reuse in June 2016. This project increased capacity by 0.54 MGD in addition to adding tertiary treatment. The City rehabilitated two of the four existing infiltration basins (ponds) at the Southwest WWTP in a project completed between April 30, 2010 and December 20, 2010.

The size of the upgrade is limited by the ability to percolate water through the infiltration basins. Phase II of the project as indicated in Exhibit 12 of the WUP will not be carried out due to limitation of infiltration rates through existing basins. The upgraded 0.99 MGD plant has been operational since June 2016 producing high level disinfected wastewater which is disposed of via the existing percolation ponds.

6.3.9 Sawgrass Water Reclamation Facility (WRF) - Phase I

The existing Sawgrass Wastewater Treatment plant is permitted for a capacity of 20 MGD on an annual average day basis. The City planned and has moved forward with facility improvements for addition of a 2 MGD HLD tertiary facility to produce irrigational quality (IQ) reuse water. This project includes tertiary treatment, storage and high service pumping facilities. Offsite distribution of IQ water is under construction for completion by 2020. The treatment process has a peak capacity of 4 MGD and was completed in early 2019.

6.4 ALTERNATIVE WATER SUPPLY DEVELOPMENT SCHEDULE

The City of Sunrise Water Utility has planned several alternative water supply projects within its 5 year Capital Improvement Plan and 10 year Water Supply Plan. The City has Capacity Allocation Agreement with Palm Beach Aggregates, LLC and has an application for Water Use Permit renewal in order to secure a C-51 Reservoir Project offset.

Based on data presented in **Figure 6-1**, the City has sufficient capacity in the system to meet the average day demands for approximately the next ten years and no new infrastructure project to meet the future supply need over ten years is anticipated.

6.5 CONSERVATION PROGRAMS

Recognizing that water conservation preserves both the natural resources as well as capital resources; the City of Sunrise is committed to continuing and expanding on successful track record of conservation. The following conservation programs are underway:

6.5.1 Water Conservation Public Education Program

The City's water conservation public education program is highly engaged in the community and:

- Promotes conservation under its Good and Green initiative. The City of Sunrise shares water conservation tips for customers on the City's website and in the *Good and Green* email newsletter which goes out to over 2,000 community members.
- Water conservation education flyers are stocked at the City Hall information kiosk, posters are hung at each Utility Payment Center, and post are made via our social media platforms. Provides a means by which customers can conduct a home water audit from the City's website. The website has a typeable Water Audit Form pdf and computes the usage rate for the customer. This assists with helping to target one's conservation efforts;
- Distributes conservation information in water billings;
- Produces conservation education articles for the City's monthly magazine;
- Promotes conservation through school outreach programs and career fair events;
- Participates in the FSAWWA's Drop Savers Water Conservation Poster Contest by engaging all schools who will participate throughout the entire water service area;
- Promotes water conservation at community events including: Broward County Water Matters Day, City of Sunrise Earth Day, Schools Career Days, National Night Out, Sunrise Cultural Festival, Sunrise Arts & Crafts Festival, and the Sunrise Back to School Roundup. Toilet leak detection tablets, and toilet tank bags are given out at these events along with print material to promote water conservation.
- The City hosts "Gardening For Wildlife" Workshops to educate residents.

6.5.2 An Outdoor Water Use Conservation Program

The City of Sunrise has an outdoor water use conservation program that includes:

- Limited Irrigation Hours – The City of Sunrise Code of Ordinances, Article III, Section 15-85 Year round restrictions on landscape irrigation supports the all-year, 2-day-a-week landscape irrigation restrictions imposed by the SFWMD and the Broward County Environmental Protection and Growth Management Department (EPGMD), as defined in Subsection 373.069(2)(e) of the Florida Statutes (F.S.). Landscape irrigation from 9 a.m. to 4 p.m. has been eliminated except for low-volume systems and low-volume self-canceling nozzle hand watering (Broward County, Florida, Code of Ordinances, Part II, Chapter 36, Section 55).

- The Broward County NatureScape Irrigation Service Program – The City of Sunrise participates in the program whereby customers are encouraged to embrace Florida-friendly landscaping practices that conserve water, reduce runoff of fertilizers, and minimize need for pesticides. One goal of the program is reduced water consumption through efficient irrigation and environmentally friendly landscaping while targeting large properties such as parks, schools, and residential complexes. This program involves significant funding and marketing efforts to promote water conservation by City customers and should result in reduced water demands and costs in return. In 2019, the City of Sunrise participated in the pilot program for the Residential Irrigation Rebate Program with 55 applicants, 17 site visits and evaluations and 10 residential properties received rebates to upgrade their irrigation systems. The City signed a new agreement in 2020 with the County to implement the Residential Irrigation Rebate Program fully.

    - The City of Sunrise uses Florida-friendly landscape principles for public works projects such as median strips, parks, and utility common areas. The City of Sunrise Code of Ordinances, Article VIII: Functional Landscaping supports the use of Florida-friendly landscaping principles by encouraging the circuiting of irrigation systems for low and high-water use areas and allowing relaxation of irrigation overlap requirements for use of Florida-friendly landscaping or native plant material.

- Plant it Forward Program: The City of Sunrise offers a residential beautification and increase tree canopy program with an approved budget of $40,000 per year (program launched in 2020). Sunrise has been a Tree City, USA since 1988 and continues to meet annual requirements, and celebrates Arbor Day in conjunction with our Sunrise Earth Day Festival.

- "Be a Butterfly Hero" campaign: The City of Sunrise promotes Florida-Friendly Landscaping through this campaign. The City hosts “Gardening For Wildlife” Workshops to educate residents. In 2019, a total of 1,193 plants and trees were given to the community at City events and workshops. In addition, 150 “Trees for Wildlife” seedlings were distributed at events throughout the year.

- Rain Sensor Overrides - The City of Sunrise Code of Ordinances, Article VIII, Section 16-163(b): Irrigation System requires irrigation controllers to be switched to manual operation during periods of increased rainfall and automatic lawn sprinklers to include a rain sensor device to override the irrigation cycle of the sprinkler system once adequate rainfall has occurred. This ordinance also requires that sprinkler heads irrigating high water demand landscaped areas be on a separate zone from plantings requiring less water and non-potable water is required when determined available for irrigation purposes.

- Automatic Flushing Devices - The City of Sunrise has installed automatic water flushing devices at 20 hydrants throughout the City’s water distribution system to improve water quality while saving approximately 10 million gallons of water per year. Emergency Interconnects - The City of Sunrise has emergency interconnections with the City of Lauderhill, City of Plantation, Town of Davie, City of Pembroke Pines, and Cooper City.

6.5.3 Water Conservation Based Rate Structure

The City of Sunrise has been proactive with its rate structures and has incentivized residents to pursue conservation.

- The City of Sunrise uses an increasing block rate structure for residential customers to encourage potable water conservation. In addition to the monthly base charge, residential water rates are $4.09 per 1,000 gallons used up to 30,000 gallons and $5.18 per 1,000 gallons used over 30,000 gallons. The commercial water rate is $4.32 per 1,000 gallons.

- The City is currently working with a financial consultant to develop additional blocks for and further refine the City's rates to include approximately five tiers and continue to promote conservation.

6.5.4 Water Loss Reduction Program

The City of Sunrise takes pride in its water loss reduction program. The SFWMD requires that utilities monitor unaccounted-for water (UFW), also known as non-revenue water (NRW) losses, in their distribution systems. The goal is to be less than 10 percent. Losses above this level prompt a mandatory leak detection program.

The City, from 2010 to 2018, applied considerable efforts toward renewing and replacing several of its wells and well head equipment (including meters) at its Springtree Water Treatment Plant and wellfield, and is continuing to apply these same efforts at the Southwest Water Treatment Plant to update and improve accuracy of measurement of well water pumped to these facilities. Additionally, in-plant meters have been replaced at the Sawgrass Water Treatment Plant.

Since 2013, the City has been evaluating several different advanced metering infrastructure (AMI) platforms and has even installed four separate pilot systems to evaluate advertised capabilities of fixed and cellular networked AMI endpoints and associated software. The City is currently completing business case analyses of and preparing to initiate a meter replacement program through a request for proposal process, which would improve the City's accounting of water and allow customers the capability to monitor and further conserve use on their own.

Finally, during this fiscal year, the City of Sunrise has purchased leak detection equipment (sounding devices and correlators) and plans to purchase 20 to 30 additional digital loggers in order to better identify and resolve existing leaks within the City's water distribution system. The City will dedicate three staff members to train, equip and report on progress made in the identification of leaks between the treatment plants and meter points so as to reduce leakage from mains and service lines. These efforts are being taken in addition to implementing one to two community water system replacements (renewing the communities with the oldest or most deteriorated mains where operations staff has the most repeat visits for leak repairs or main and service failures) per year in the City's 5-year Capital Improvement Program. Through these comprehensive leak reduction efforts, the City has been able to reliably reduce its unaccounted-for water under 10% from previous levels which were approaching 15%, but with expectations of reducing these even further as these programs progress and build additional expertise and achievements through increased efficiency of operations.

6.5.5 An Indoor Water Conservation Program

The City of Sunrise has a vibrant indoor water conservation program that includes:

- Broward Water Partnership's Water Conservation and Incentives Program, Conservation Pays – The City of Sunrise is one of 17 city and water utilities comprising the Broward Water Partnership. The City's participation commenced in October 2011 and continues today. This program involves significant funding and marketing efforts to promote water conservation by customers results in reduced water demands and costs in return. This popular program was recently expanded to include multifamily housing units, not-for-profit agencies, and commercial buildings, as well as single-family homes. Qualifying Sunrise utility customers are encouraged to take advantage of the following benefits:

    - Toilet rebates: Eligible utility customers may replace old toilets that use more than 1.6 gallons of water per flush (gpf) with a WaterSense® certified, high-efficiency toilet (HET) that uses 1.28 gpf or less. WaterSense® dual-flush toilets must also use 1.28 gpf or less for both flush options. Up to two rebates may be provided for up to $100 each, or the cost of the HET, whichever is less. To date, over 3,700 toilet rebates been provided and the City routinely authorizes HET installations that may exceed the budgeted annual funding by transferring from other budgeted funds to cover these expenses, because this conservation is in such high demand by our customers and so important to the Utility and the City leadership.

    - Low-flow faucet aerators, shower heads, and restaurant pre-rinse spray valves: This incentives program entails free yearly distribution of low-flow faucets, low-flow aerators, and low-flow showerheads to residential customers, and low-flow pre-rinse spray valves to commercial customers. This initiative will save water by replacing inefficient plumbing fixtures with high-efficiency fixtures.

- Ultra-Low Volume Plumbing - The City of Sunrise has adopted Florida Building Code: Plumbing Section, Chapter 4, which requires the adoption of ultra-low volume plumbing fixtures in all new construction. Plumbing fixtures shall be 80 pounds per square inch (psi) pressure; toilets, 1.6 gpf; shower heads, 2.5 gallons per minute (gpm); and faucets, 2.2 gpm at 60 psi.

- Water Conservation Tips - these are shared with the public on the City's website and via other methods presented in 1. Water Conservation Public Education Program. These water conservation tips include:

    - Looking for labels on appliances or equipment with the WaterSense™ label.

    - Fixing a leak.

    - Shortening your showers.

    - Going low-flow as stated previously.

    - Turning off the tap while brushing your teeth.

- Testing your toilet tank for any leaks.
- Washing only when you have a full load.
- Throwing tissues in the trash rather than the toilet.
- Picking plants that require low water or are drought tolerant.
- Using water-saving drip irrigation for your landscaping.
- Watering your lawn in the early morning.

The City of Sunrise has been able to reduce the water usage rate of 127 gallons per capita per day in 2008 to 102 gallons per capita per day. This implies a drop in water use rate of 19.6% over last 12 years, majority of which could be resulting from conservation. While conservation is a major factor in the reduction of water usage rate, there are various other factors such as abundant rainfall, lack of consecutive dry seasons, conservation rate structure, increase in water rates, land use changes and so forth.

Table 6.2 below provides an analysis of the existing water conservation efforts and the applicable policies and programs of the SFWMD, Broward County and 2018 LECWSP Update.

Table 6-2. Conservation Programs Level of Participation and Outcomes

Specific District and County Policies or Goals	City of Sunrise Participation Analysis	City of Sunrise Participation Outcome	Recent Updates or Improvements Needed
Education, Outreach and Marketing – Required by Conservation Goals of the SFWMD, Broward County & 2018 LECWSP Update	The reach of the City of Sunrise conservation education and outreach programs is vast. The City reaches customers through the City's website, the utility bill inserts, the *Good and Green* email newsletter which goes out to over 2,000 community members, social media posts, and through in-person engagement at community events.	It is not feasible to quantify water savings achieved from water conservation education and outreach programs. However; some noteworthy signs of program effectiveness include: As the water conservation knowledge of customers improves, they are much more likely to then participate conservation rebates and other programs offered by the utility. The City of Sunrise is the leading City in Broward County with the largest number of rebates claimed in the Conservation Pays program.	The City is satisfied with the current level of conservation outreach and education programs and they are in line with the local and reginal goals; however, the City has recently invested in expanding the City's sustainability efforts and continued or additional outreach and education will be conducted. The Sustainability Action Plan adopted in 2019 called for supporting increased awareness of sustainable concepts through community outreach and identification of opportunities for improvement.

Specific District and County Policies or Goals	City of Sunrise Participation Analysis	City of Sunrise Participation Outcome	Recent Updates or Improvements Needed
		With effective education and outreach, customers are more likely to make better decisions on their own water usage. In the past 12 years, the City has experienced a reduction in per capita consumption from 127 gpcd to 102 gpcd (a 19.6% reduction). The schools outreach and education further promote greater household participation in a water utility's conservation strategy.	
Cost Share Funding Programs – Required by Conservation Goals of the SFWMD, Broward County & 2018 LECWSP Update	The City actively participates, promotes and funds Cost Share programs such as: Conservation Pays for toilets rebates and other conservation tools, NatureScape Irrigation Service Program for free irrigation system evaluation and upgrade rebates, the "Plant it Forward Program" to provide free trees and the "Be a Butterfly Hero" which provides free plants and garden planting materials. In past Broward County Water Matters Day events, the City has given out 55 gallon Rain Barrel collectors. Overall, the City spends approximately $115,000 per year on these Cost Share Funding programs.	The City of Sunrise is the leading City in Broward County with the largest number of rebates claimed in the Conservation Pays program. Broward County estimates that City of Sunrise utility customers have saved over 523 million gallons of water from fiscal year 2012 through 2019. The NatureScape irrigation evaluations result in an average of 20% irrigation water savings per location. As with water conservation education and outreach efforts, some of the cost share funding programs resulting water savings are difficult to quantify so a full count of water savings is not available.	The City is satisfied with the current level of cost share programs and they are in line with the local and reginal goals and programs. A recent expansion of these efforts came from the Sustainability Action Plan adopted in 2019 which called for a 10% reduction in potable water consumption by 2022 in the City owned facilities such as governmental operations facilities and City parks. The City has been actively retrofitting water fixtures to achieve this goal.
Mobile Irrigation labs – Required by Conservation Goals of the SFWMD, Broward County & 2018 LECWSP Update	The City participates in the local Irrigation Lab from Broward County called NatureScape Irrigation Service (NIS)Program. It offers free irrigation system evaluations and upgrade rebates.	The NatureScape irrigation evaluations result in an average of 20% irrigation water savings per location, however, cumulative water savings for this program are not feasible to quantify.	The City currently participates in the Mobile Irrigation Labs program promoted by the District and County and the City's participation satisfies the local and regional goals for this program.

Specific District and County Policies or Goals	City of Sunrise Participation Analysis	City of Sunrise Participation Outcome	Recent Updates or Improvements Needed
			In 2019, the City of Sunrise participated in the NIS pilot program for residential units with 55 applicants, 17 site visits and evaluations and 10 residential properties received rebates to upgrade their irrigation systems. The City signed a new agreement in 2020 with the County to implement the Residential Irrigation Rebate Program fully.
Consumptive Use Permit (CUP) Requirements	The City of Sunrise has implemented all necessary programs, protocols, provisions and reporting required to meet all CUP conditions related to water conservation and water accountability. These include: Average Day Flows compliance, adoption of rules 40E-21 and 40E-24 into The City of Sunrise Code of Ordinances, Article III, Section 15-84 & 15-85, calibration of raw water meters, reporting of monthly withdrawals, reporting of water loss and continued leak detection program, implementation water use conservation plan, development of alternative water supply and wastewater reuse.	The City of Sunrise complies with all CUP conditions for water conservation and water accountability. The City of Sunrise has developed a Standard Water Conservation Plan which complies with the requirements of the District. The requirements per the District's Applicant's Handbook include: 1) A water conservation public education program 2) An outdoor water use conservation program 3) The selection of a rate structure designed to promote the efficient use of water by providing economic incentives 4) A water loss reduction program, if water losses exceed 10% 5) An indoor water conservation program	No improvements or updates are required since all CUP conditions are met and continue to be met through established programs, protocols, provisions and reports. Updates will be made in the future as required by updates to the CUP conditions or State, regional or local policies and goals change

6.6 REUSE PROGRAMS

City completed a reuse feasibility study in 2009 which determined that approximately 2.0 MGD of reuse was feasible in the vicinity of the Sawgrass and Springtree WWTP. In 2011 and 2012, the City performed another feasibility assessment in terms of offsetting non-potable groundwater withdrawals to increase the availability of the Biscayne Aquifer for potable water supply purposes. The City completed 0.99 MGD of reuse facility at Southwest WRF in 2010. The Construction of the first phase of the 4 MGD Reuse facility at the Sawgrass WWTP was completed in 2019. The reuse program is targeting large users with private irrigation wells or pumps near the City's Biscayne Aquifer wellfields.

6.7 INTERGOVERNMENTAL COORDINATION

In preparation of this document, coordinated with a number of governmental agencies, hence that the findings and conclusions of this Plan are the result of information exchange and an understanding of the implications associated with this Plan. Specifically, staff from the City's Planning and Utilities Department met with the South Florida Water Management District, Broward County, the Town of Davie, the City of Weston and the Town of Southwest Ranches. Through these meetings, we jointly developed the population projections and water demand projections upon which this Plan is based; furthermore, we established the basis for continued communication as future growth occurs.

6.7.1 Ongoing Coordination Activities with All Water Service Receiving Local Governments

The City of Sunrise has actively participated in Broward County's Water Advisory Board by having Assistant Deputy Mayor Neil C. Kerch be an alternate board member. The Deputy Mayor and Utilities Director actively participate in the board meetings. The Utilities Director also serves as a member of the Boards Technical Advisory Committee. The purpose of the board is to advise and make recommendations to the Broward County Board of County Commissioners in matters relating to the development, use and management of water resources within Broward County which may include, but are not limited to, water supply, water conservation, ground water recharge, reuse of wastewater effluent, and stormwater management.

Additionally, the City of Sunrise Utilities staff is actively engaged in local professional groups such as The Southeast Florida Utility Council (SEFLUC) which provides a communications, networking, and support structure for member utilities for matters related to water supply and wastewater management services. The City of Sunrise's Assistant Director served on the board as Chairperson in 2014, and the City of Sunrise's Plant Operations Engineer served on the board as Chairperson in 2017. SEFLUC is heavily involved in matters related to regional water management issues such as legislation, projects funding, and planning. During the 2017-2018 Lower East Coast Plan development efforts, SEFLUC hosted meetings with the SFWMD staff for

coordination and membership input. Other professional groups related to water supply include Florida Water Environment Association (FWEA) and WateReuse Florida.

6.7.2 Needs for Additional Coordination Activities

The above-mentioned local planning and professional groups serve as additional means of continued coordination with all local governments receiving water from the City. Based on the most recent coordination meetings for this update, no pending issues were identified between the City of Sunrise and the local governments receiving water from City. Therefore, no additional coordination activities are identified at this time other than the continuous engagement as described above. In the most recent coordination meetings, the consensus of the local government representatives was that the most recent data and data projections, current and future plans, policies and goals were discussed and all parties had an agreement and common understanding of these items and no further discussions were required unless changes in the items discussed arose in the future.

6.7.3 Coordination with LEC Plan Update

The City of Sunrise actively participates in LEC Plan Updates and provides information and coordination as requested by the District. In the most recent coordination meetings, no pending issues were identified between the parties involved.

6.7.4 Information on Memoranda of Understanding, Bulk Service Agreements and Contracts

Following is a summary of the agreements between the City of Sunrise and the municipalities that are within its service area.

City of Weston – The City provides water service to the City of Weston ("Weston") on both a wholesale and retail basis. The City of Weston does not provide utility service within its corporate boundaries. With respect to wholesale service, the City provides water and wastewater service to the Indian Trace Community Development District (the "ITCDD"), a community development district located solely within the corporate boundaries of Weston. The ITCDD receives wholesale service from the City pursuant to the Bulk Sale of Water and Sewer Services Agreement dated October 29, 1980, as amended (the 'ITCDD Agreement"). The ITCDD Agreement was entered into for a term of thirty (30) years and is set to expire on June 30, 2023, with such agreement being automatically renewed for an additional term of thirty (30) years unless ITCDD notifies the City five years in advance of its intent to not renew the agreement.

The City also provides retail service to the remainder of Weston. This service area was previously served by the Bonaventure Utilities Corporation water and wastewater utility system (the "Bonaventure System"), a privately-owned system. The City purchased the Bonaventure System in 1976. At the time of purchase, the service area was located in unincorporated Broward County; subsequent to the purchase, the City of Weston annexed the service area into its city limits. Since the City owned the Bonaventure System and provided retail utility service to such customers prior to such annexation, the City has the authority to provide utility service within the City of Weston. The parties do not have a franchise agreement or any other similar agreement

that allows the City to operate this component of the utility in the municipal boundaries of the City of Weston.

Town of Davie – the City provides water and wastewater service to the western portion of the Town of Davie ("Davie") on a retail basis. Pursuant to the terms and conditions of a Settlement in the Civil Cases between Davie and the City dated May 6, 1987 (the "Davie Agreement"), the City was granted the right to provide water and wastewater service within a portion of the corporate limits of Davie. The Agreement does not contain a date of expiration and it is assumed by the City that it has a perpetual right to provide utility service to this portion of the Town of Davie. Subsequent to the execution of the Davie Agreement, the parties have entered into a series of amendments to such agreement which allowed the City to expand its water and wastewater service area located within the Town of Davie. Each amendment essentially identified the additional service area and customer base that the City would be authorized to serve. As part of this authorization to provide service within Davie, the City purchased the South Broward Utility, Inc. water and wastewater system (the "SBU System") a portion of which system was located in the Town Davie and a portion of which was located in unincorporated Broward County which later became the Town of Southwest Ranches.

Town of Southwest Ranches – the City provides water service to the Town of Southwest Ranches on a retail basis. At the time of purchase of the SBU System, the service area was located in unincorporated Broward County; subsequent to the purchase, the Town of Southwest Ranches became incorporated. Since the City owned the SBU System and provided retail water service to such customers prior to the incorporation of this area by the Town of Southwest Ranches, the City has the authority to provide water service to the Town of Southwest Ranches. The parties do not have a franchise agreement or any other similar agreement that allows the City to provide water service in the municipal boundaries of Southwest Ranches.

Park City – the City purchased the privately owned Pine Island Utilities Corporation water and wastewater system in 1974. The area served by such system was referred to as Park City and was located at the time of acquisition by the City in unincorporated Broward County. Since the acquisition of this utility system, the Town of Davie has annexed the Park City service area into its corporate limits; however, the City still provides utility service for this service area.

6.8 CAPITAL IMPROVEMENT ELEMENT

The City has initiated development of a reuse water system that will initially target large users in the western portions of the utility service area. The City intends to apply for the water to retire existing CUPs and substitute them with reuse water. The retired CUPs could be transferred to the City's Biscayne wells with a substitution credit (volumes for credit is to be determined as part of the application process) that results in alternative water supply for the City without impacting the regional system. The City has completed construction of 1 MGD of reuse water at Southwest WWTP as well as completed the construction of 4 MGD of reuse facility at Sawgrass WWTP.

The City also anticipates participating in the C-51 Reservoir Project for additional alternative water supply. The schedule for construction and commissioning the first phase of the reservoir is

dependent on factor outside the control of the City, but likely to occur within the 10-year planning horizon.

The City is financially prepared to develop it reuse water system and participate in C-51 Reservoir Project as the demands materialize.

6.9 GOALS, OBJECTIVES, POLICIES

6.9.1 Existing Goals Objectives and Policies

The following are the existing goals, objectives and policies compiled from the City's 2018 Comprehensive Plan and are in support of the City's Ten-Year Water Supply Facilities Work Plan. New additions to the GOPs are shown with an underlined format while deletions are shown with a strike through format in the text below.

PLANNING AND INTERGOVERNMENTAL COORDINATION

- The City of Sunrise shall adopt and implement the Ten-Year Water Supply Facilities Work Plan to increase the coordination between land use and future water supply planning within 18 months of the adoption of the Lower East Coast (LEC) Water Supply Plan, as required by Chapter 163, Florida Statutes. (Future Land Use Element, Policy 14.1.2).

- The City of Sunrise will provide immediate and ongoing coordination with the South Florida Water Management District (SFWMD) to ensure that the City's plans, requirements and related actions contained in the Ten-Year Water Supply Facilities Work Plan are consistent with the Lower East Coast (LEC) Regional Water Supply Plan (Intergovernmental Coordination Element, Policy 1.1.19).

- The City of Sunrise shall coordinate the Comprehensive Plan and its implementation with the State, the South Florida Regional Planning Council (SFRPC), Broward County and adjacent municipalities, as well as the School Board of Broward County (SBBC), the South Florida Water Management District (SFWMD), and all applicable special districts, as needed (Intergovernmental Coordination Element, Objective 1.1).

- The City of Sunrise will review reports and plans prepared by the South Florida Water Management District (SFWMD), the Broward County Solid Waste Disposal District (BCSWDD) and the Central Broward Water Control District (CBWCD), and identify potential conflicts with the City's adopted Comprehensive Plan (Intergovernmental Coordination Element, Policy 1.1.12).

- The City of Sunrise, in cooperation with the appropriate federal, state, county and other local governmental agencies, shall encourage the appropriate coordinated level of service (LOS) facilities and services. The City of Sunrise shall continue to provide utility services to governments with which the City has executed agreements and will continue to exchange information with surrounding local governments regarding relative items

affecting the standing of such service agreements (Intergovernmental Coordination Element, Objective 1.2; Policy 1.2.4).

- Where appropriate and feasible, the City of Sunrise's Ten-Year Water Supply Facilities Plan shall include ongoing collaborative approaches with other local governments for long term alternative water supply source use and water treatment technology. The City of Sunrise will hold annual meetings with local governments in the City's Water Service Area and the South Florida Water Management District (SFWMD) to discuss forecasted populations, service area expansions, review of land use changes that increase water supply demand, and review the implementation of conservation reuse programs and alternative water supplies. (Infrastructure Element, Policy 1.1.12; Intergovernmental Coordination Element, Policy 1.1.21).

- The City of Sunrise will continue to provide centralized wastewater, solid waste, drainage and potable water facilities and services to meet existing and projected demands identified in this plan; as such the City will not permit septic tanks and potable wells. (Infrastructure Element, Goal 2).

- The City of Sunrise shall ensure and identify the consistency of local level of service (LOS) standards by contacting all local governments in which water service is provided and obtain current information, including: populations, LOS, service areas, and water supply facilities, and evaluate if future modification to either the service agreement or LOS standards should be included in subsequent Comprehensive Plan amendments. (Intergovernmental Coordination Element, Policy 1.2.5).

- The City of Sunrise shall negotiate or renew inter-local agreements with local governments in which water is supplied, ensuring contractual agreement of the adopted level of service (LOS) standards, service area, populations and time periods for services provided. (Intergovernmental Coordination Element, Policy 1.2.6).

- The City of Sunrise shall participate in updates to the Broward County Population Forecast and Allocation Model (PFAM), prepared by Broward County, to ensure projections accurately reflect existing and anticipated development within the City. City staff will provide information relating to land use, housing, and building permits to the appropriate person(s) in order to enable the County to develop coordinated and consistent population projections. (Intergovernmental Coordination Element, Policy 1.4.2)

- Upon adoption of the Broward County Population Forecast and Allocation Model (PFAM) into the Broward County Land Use Plan (BCLUP), the City of Sunrise shall review the final projections to ensure the population estimates and projections, prepared by Broward County, accurately reflect existing and/or anticipated future development within the City. (Intergovernmental Coordination Element, Policy 1.4.3)

- The City of Sunrise shall continue to review proposed comprehensive plan amendments of adjacent municipalities and Unincorporated Broward County which may affect the anticipated needs for wastewater and/or potable water services. (Intergovernmental Coordination Element, Policy 1.4.6)

- The City of Sunrise shall review the level of service (LOS) standards adopted, or amended, by all adjacent local governments that receive water from the City. (Intergovernmental Coordination Element, Policy 1.2.7).

- Concurrency Management System: Public facilities and services will be available at a level of service (LOS) established within the City of Sunrise Comprehensive Plan concurrent with impacts of development (Concurrency Management System). (Future Land Use Element, Objective 10.4).

- The City shall administer a Concurrency Management System to effectively manage new growth and to ascertain whether necessary facilities identified within the Capital Improvement Element are being constructed in accordance with the schedules therein and to measure the development capacity of such facilities in a given area at a given time. This review of public facilities shall cover at least a five (5) year period. (Future Land Use Element, Policy 10.4.1).

- To ensure that the necessary facilities and services are available concurrent with the impacts of development, the City shall continue to implement, and amend as necessary, the City of Sunrise Code of Ordinances. (Future Land Use Element, Policy 10.4.3).

- Amendments to the City of Sunrise Future Land Use Map proposing industrial uses that could result in contamination of the aquifer shall be discouraged within wellfield protection zones of influence (as identified by the Broward County Wellfield Protection Ordinance). (Future Land Use Element, Policy 14.1.4).

- Provide immediate and ongoing coordination of water supply planning and land use planning activities of the City of Sunrise with municipalities receiving water from the City and provide water to ensure that the water needs of the City's residents and other municipalities within the City's Water Service Area are met. (Future Land Use Element, Objective 14.5).

- Maintain consistency between the demand calculations in the City of Sunrise's Ten-Year Water Supply Facilities Work Plan and the population projections contained in the Future Land Use Element. (Future Land Use Element, Policy 14.5.1).

- Provide ongoing monitoring of water demands and applications related to future land use plan amendments located within the City's Water Service Area as defined in the City of Sunrise's Ten-Year Water Supply Facilities Work Plan. (Future Land Use Element, Policy 14.5.2).

- The City of Sunrise shall provide timely amendments to its Code of Ordinances in order to encourage water conservation through a tiered water and wastewater fee structure, which effectively discourages the use of water for all but essential needs by increasing the rates for abnormally high usages by types of use (i.e. business, residential, landscaping, etc.). (Future Land Use Element, Policy 14.5.3).

- The City of Sunrise will provide the South Florida Water Management District (SFWMD) with all required reports based on the Ten-Year Water Supply Facilities Plan, including on

the status of the development of new alternative water supply facilities. (Intergovernmental Coordination Element, Policy 1.1.20).

- Aquifer protection through responsible land use and activity. To protect aquifers and groundwater resources and prevent pollution the City will discourage septic tanks and potable wells. (Infrastructure Element Objective 3.2, Policy 3.2.1).

LEVEL OF SERVICE

- Levels of Service (LOS) and Concurrency Management: The City of Sunrise shall implement procedures to ensure that at the time a development order or permit is issued, adequate facility capacity is available or will be available when needed to serve the development prior to issuance of a building permit. (Infrastructure Element, Objective 1.1).

- The following level of service (LOS) standards are hereby adopted and shall be used as the basis for determining the availability of facility capacity and the demand generated by a development:

FACILITY	LEVEL OF SERVICE (LOS) STANDARD
Potable Water	Annual average daily flow shall not exceed 90 percent (90%) of design capacity of the combined treatment plants The system shall maintain the capacity to produce and deliver ~~127~~ 102 gallons per person per day. (Infrastructure Element, Policy 1.1.1)
Wastewater	Annual average daily flow shall not exceed 90 percent (90%) of design capacity of each treatment plant. The system shall maintain the capacity to collect, treat and dispose of ~~110~~ 93 gallons per person per day (Infrastructure Element, Policy 1.1.1).

- The City of Sunrise hereby adopts by reference the ~~10-Year~~ Water Supply Facilities Work Plan, prepared by Stantec Consulting Services, Inc., dated January ~~2015~~ 2020, for a planning period of not less than 10 years. The 10-Year Water Supply Facilities Work Plan addresses issues that pertain to water supply facilities and requirements needed to serve current and future development within the City of Sunrise Utility Service Area. The City shall review and update the Work Plan at least every five (5) years within eighteen (18) months after the governing board of the South Florida Water Management District (SFWMD) approves an updated Regional Water Supply Plan. Any changes affecting the 10-Year Water Supply Facilities Work Plan shall be included in the annual update to the Five-Year Schedule of Capital Improvements to ensure consistency between the Infrastructure Element and the Capital Improvements Element (Infrastructure Element, Policy 1.1.13).

- Assure that adequate water supplies and potable water facilities meeting the adopted level of service (LOS) shall be in place and available to serve new development no later than the issuance of a building permit. (Infrastructure Element, Policy 1.1.7).

- The City of Sunrise, in cooperation with the appropriate federal, state, county and other local governmental agencies, shall encourage the appropriate coordinated level of service facilities and services. The City of Sunrise shall continue to provide utility services to governments with which the City has executed agreements and will continue to exchange information with surrounding local governments regarding relative items affecting the standing of such service agreements (Intergovernmental Coordination Element, Objective 1.2; Policy 1.2.4).

COMPLIANCE

- Monitor water usage for compliance with the City of Sunrise's Consumptive Use Permit. (Infrastructure Element, Policy 1.1.8).

- Maintain a Water Supply Facilities Work Plan for at least a 10 year planning period addressing the water supply facilities necessary to serve existing and future development within the City's water service area. (Infrastructure Element, Policy 1.1.10).

- Wellfields: Protect the quality and quantity of the City of Sunrise's potable water supply and eliminate the presence of all regulated substances, as defined in Chapter 27, Article XIII, Broward County Wellfield Protection Ordinance, as amended, Broward County Code of Ordinances from the potable wellfield zones of influence of Sunrise's existing and planned wellfields, as depicted on the Wellfields Map (Figure A-2). (Future Land Use Element, Objective 14.1).

- Update adopted level of service (LOS) for consistency with the South Florida Water Management Districts (SFWMD) Lower East Coast (LEC) Water Supply Plan when proposing or amending the Ten-Year Water Supply Facilities Work Plan. At a minimum, this coordination shall take place within eighteen (18) months following an update to the LEC and be documented in the text of the Water Supply Facilities Work Plan. (Infrastructure Element, Policy 1.1.11).

CAPITAL IMPROVEMENTS

- Projected demands for the Five-Year Schedule of Capital Improvement needs for public facilities, will be met by undertaking projects listed in the Capital Improvement Element and by scheduling projects as identified in the Infrastructure and analysis. (Infrastructure Element, Objective 2.2).

- The annual summaries of facility capacity and demands information prepared by the Utilities Department shall be used to evaluate the need for timing, location and type of projects to extend or increase the capacity of existing facilities. (Infrastructure Element, Policy 2.2.1).

- All projects required to meet projected demands shall be scheduled in the Capital Improvements Element of this plan in accordance with the requirements of Section 163.3177(3), Florida Statutes, and in compliance with the Ten-Year Water Supply Facilities Work Plan.(Infrastructure Element, Policy 2.2.2).

- Wastewater: Annual average daily flow shall not exceed 90 percent (90%) of design capacity until buildout. The system shall maintain the capacity to collect, treat and dispose of ~~110~~ 93 gallons per person per day (Capital Improvements Element, Policy 1.2.1).

- Potable Water: Average daily flow shall not exceed ninety percent (90%) of design capacity of the combined treatment plants. The system shall maintain the capacity to produce and deliver ~~127~~102 gallons per person per day. (Capital Improvements Element, Policy 1.2.3).

- The City of Sunrise shall adequately fund and make capital improvements through the City's Renewal and Replacement Program necessary to keep its present public facilities in good condition and to accommodate new development, within sound fiscal practices. (Capital Improvements Element, Policy 1.2.10).

- The City of Sunrise shall provide adequate potable water and wastewater facilities meeting the adopted level of service (LOS) and available to serve new development concurrent with the impacts of development, or that development orders and permits shall be specifically conditioned on the availability of facilities and services necessary to serve the proposed development prior to the issuance of a Certificate of Occupancy. (Capital Improvements Element, Policy 1.2.11).

- The City of Sunrise shall implement the water supply projects described in the Ten-Year Water Supply Facilities Work Plan. These improvements shall be incorporated into the Capital Improvements Element and the City's budget on an annual basis. (Capital Improvements Element, Policy 1.2.12).

CONSERVATION

- The City of Sunrise shall continue to use multiple programs for year-round water conservation. (Conservation Element, Policy 1.6.1).

- The City of Sunrise shall work with the South Florida Water Management District (SFWMD), Broward County, municipalities, independent drainage districts, and neighboring counties to plan for and develop additional surface water storage and conveyance improvements for supply, including those for the C-51 Reservoir project (Conservation Element, Policy 1.6.11).

- The City of Sunrise shall adopt water conservation measures similar to those adopted by the South Florida Water Management District (SFWMD) in the Lower East Coast (LEC) Water Supply Plan. (Future Land Use Element, Policy 14.1.3)

- The City of Sunrise is committed to support the C-51 Reservoir Project, identifying potential demands from ~~thirty~~ ~~30~~ fifty (50) year population projections and will participate in a collaborative process with Broward County, Fort Lauderdale and other willing cities in Broward, Palm Beach and Miami-Dade counties for delivery of this alternative water supply program of projects (Intergovernmental Coordination Element, Policy 1.1.24).

- Conserve potable water by pursuing implementation of the water conservation practices described in the Ten-Year Water Supply Facilities Work Plan (Infrastructure Element, Objective 2.3).
- Irrigation with potable water will be discouraged. (Infrastructure Element, Policy 2.3.1).
- Continue to implement a monitoring plan for construction water usage through the installation for temporary meters. (Infrastructure Element, Policy 2.3.2).
- Increase rates for abnormally high usages by type of business or residential use. (Infrastructure Element, Policy 2.3.3).
- The City of Sunrise shall coordinate as needed with the South Florida Water Management District (SFWMD) to evaluate the development and potential implementation of a program for the voluntary conservation of water through rationing or restricting usage periods. (Infrastructure Element, Policy 2.3.4).
- Require low volume water saving fixtures. (Infrastructure Element, Policy 2.3.5).
- Continue to evaluate other methods of encouraging water conservation such as the reuse of reclaimed water as provided in the 10-Year Water Supply Facilities Plan. (Infrastructure Element, Policy 2.3.6).
- The City of Sunrise shall immediately provide conservation measures by implementing process improvements associated with treatment of water from the Sawgrass plant to increase treatment efficiency by five percent (5%) and reduce water lost from the water treatment process. (Infrastructure Element, Policy 2.3.7).
- The City of Sunrise shall use land development regulations to preserve key natural groundwater aquifer recharge areas. The City of Sunrise shall not allow development identified as non-complying to Broward County Ordinance 89.6 and which does not protect or conserve existing fisheries, wildlife habitats, lakes, floodplains, and wetlands. (Conservation Element, Policy 1.3.3).
- In order to protect and preserve the Biscayne Aquifer the City of Sunrise will utilize alternative water supplies to supplement the City's consumptive use permit water withdrawal allocation. (Conservation Element, Policy 1.3.6).
- The City of Sunrise shall provide for emergency conservation of water in accordance with the plans of the South Florida Water Management District (SFWMD) and the City's Ten-Year Water Supply Facilities Work Plan. (Conservation Element, Objective 1.6).
- The City of Sunrise shall immediately implement emergency measures for conservation of water resources when required or requested by the South Florida Water Management District (SFWMD). Conservation action shall include but not be limited to: a program for the voluntary conservation of water through restricting usage periods and/or rationing. Nonessential water usage such as lawn watering and other outdoor activities would be limited to certain days of the week and times of the day as required by the SFWMD. (Conservation Element, Policy 1.6.2).

- The City of Sunrise shall continue to require through the Land Development Code (LDC) requiring Florida Friendly plantings in all new developments and redevelopment, which will reduce the overall amount of all types of water to be used for irrigation purposes. (Conservation Element, Policy 1.6.3).

- The City of Sunrise shall continue the usage monitoring campaign which includes the identification of potential sources of illegal water uses (i.e. construction activity, non-metered facilities, etc.). Penalties for illegal water use should continue to be enforced by the City. If necessary, to encourage conservation by the public, an awareness campaign in conjunction with the SFWMD will be publicized. (Conservation Element, Policy 1.6.4).

- The City of Sunrise should encourage conservation by the public through an educational awareness campaign supporting environmental education program (Conservation Element, Policy 1.6.7).

- The City of Sunrise shall provide timely amendments to its Land Development Code (LDC) to encourage water conservation through a tiered water and waste water fee structure, which effectively discourages the use of water for all but essential needs by increasing the rates for abnormally high usages by types of use (e.g. business, residential, landscaping, etc.). (Conservation Element, Policy 1.6.5).

- The City of Sunrise shall continue to support the Broward NatureScape Program, which promotes landscapes that conserve water, protect water quality, and creates wildlife habitat in new development and redevelopment. (Conservation Element, Policy 1.6.6).

- In an effort to reduce water usage, the City of Sunrise shall immediately utilize measures outlined in the Water Conservation Ordinance for Landscape Irrigation and Florida Department of Environmental Protection's (FDEP) Florida Statewide Comprehensive Water Conservation Program for Public Water Supply. (Conservation Element, Policy 1. 6.8).

- The City of Sunrise shall require new development and redevelopment to implement automatic self-actuating water conservation measures, to be utilized year-round during periods of declared drought. These conservation measures include restricted water use for irrigation purposes to the hours indicated in the South Florida Water Management District's (SFWMD) Comprehensive Water Conservation Plan. (Conservation Element, Policy 1.6.9).

- The City of Sunrise shall continue to seek conservation measures for implementing process improvements associated with treatment of water from the City's water and wastewater treatment plants (WWWTP) to increase treatment efficiency and reduce water lost from the water treatment process. (Conservation Element, Policy 1.6.10).

- The City of Sunrise shall work with the South Florida Water Management District (SFWMD), Broward County, municipalities, independent drainage districts, and neighboring counties to plan for and develop additional surface water storage and conveyance improvements for supply, including those for the C-51 Reservoir project (Conservation Element, Policy 1.6.11).

REUSE

- Groundwater Recharge: The City of Sunrise shall continue to protect the function of designated aquifer recharge areas through implementation of the following policies and land development regulations. (Infrastructure Element, Objective 3.1).
- Natural groundwater aquifer recharge areas will be maintained to provide for quality groundwater recharge. (Infrastructure Element, Policy 3.1.1).
- The City of Sunrise will coordinate with local, state and federal agencies to achieve regional aquifer recharge protection objectives. (Infrastructure Element, Policy 3.1.3).
- The City of Sunrise shall participate in the development and implementation of aquifer recharge area protection programs to meet national, state or regional objectives. (Infrastructure Element, Policy 3.1.4).
- The City of Sunrise shall work the South Florida Water Management District (SFWMD), municipalities, independent drainage districts and neighboring counties to plan and develop additional surface water storage opportunities including the C-51 Reservoir Project in Palm Beach County and the water preserve areas in western Broward County. (Infrastructure Element, Policy 3.1.5).

6.10 CONCLUSIONS

The City of Sunrise Water Utility has a long standing practice for planning and developing a water system capable of meeting all the needs of its customers, both current and future. This is evidenced by its construction and operation of a water system capable of meeting not only today's demands but also demands through 2040.

As the South Florida Water Management District determined that the Biscayne Aquifer water resource can no longer be relied upon to supply future growth demands as follows from passage of the Water Availability Rule, the City has prepared to draw upon alternative water sources to meet future needs, as well as implemented measures to enhance efficiency and prevent losses, and are preparing to deliver beneficial wastewater reuse projects and participate in the C-51 Reservoir Project to make up any shortfalls. These projects along with our inter-governmental coordination, and active conservation measures which range from policies and programs that include the guidance of sound land use planning, development, and landscaping; as well as consumer outreach, education, assistance (incentives) and enforcement combine to position the City to be responsive to its water supply needs.

In summary, the City has prepared this Plan to ensure its water supply and facilities will meet its future demands. We have prepared this Plan as per State and regional coordination requirements specifically, as per the South Florida Water Management District's 2017 regional Lower East Coast Water Supply Plan, and local governments are required to update and adopt their Water Supply Facilities Work Plan by May 2020, and attendant updates to local Comprehensive Plans accordingly.

In preparing this Plan, the water supply and demand projections were formulated through assessment of population growth projections and anticipated water demand. The projections were matched to the data in the SFWMD's Lower East Coast Plan and to Broward County's population projections, and robust inter-governmental coordination was conducted with the local governments within the service area to review for any planned land use amendments or developments that may impact projections and require consideration in planning.

This Water Supply Work Plan, as formulated matches alternative source water development with water demand growth. The result is a Plan that the City can fund from cash reserves if desired for the next five years. It is a plan that satisfies the requirements of its Consumptive Use Permit and meets projected growth. Additionally, the plan is designed to minimize the City's risk by providing significant flexibility with the timing of new facilities thus minimizing capital outlay until it is actually needed.

Regulatory compliance was also considered in the development of this Plan. In particular, the Plan to meet projected growth and future demand builds off of the conditions and requirements of Consumptive Use Permit. In addition, the City's Plan incorporates measures integrating related regulatory requirements and policy objectives, such as those around water conservation.

Table 6-3. Comparison of Facility Capacity and Anticipated Future Permitted Amount

	2020	2025	2030	2040
Population Served	231,300	238,000	244,600	273,100
Average Daily Demand (Finished) (MGD)[1]	23.6	24.3	24.9	27.9
Demand per Capita Finished (GPCD)	102	102	102	102
Available Facility Capacity (MGD)	51.5	51.5	51.5	51.5
Facility Capacity Surplus (Deficit)[2]	27.9	27.2	26.6	23.6
Anticipated Permitted Amount (MGD Annual Avg.)[3]	31.09	31.09	31.09	31.09
Anticipated Permitted Surplus MGD (Deficit)[4]	4.47	3.82	3.11	0.20

[1]MGD = Million Gallons per Day

[2] Calculated by subtracting Average Daily Demand from Available Facility Capacity

[3] Calculated as treated water by subtracting Average Daily Demand and additional DRI demand (as of December 2007) from Permitted Amount

[4]The currently permitted raw water amount is 29.09 MGD. The City has applied for Consumptive Use Permit for C-51 Reservoir Project allocation. For the purpose of this calculation, existing Biscayne Aquifer allocation is at 29.09 MGD and Floridan Aquifer is at 2 MGD. Additional water demands will be met by implementing reuse, C-51 Reservoir Project source supply associated credits, and additional permitted withdrawal from Floridan Aquifer. (Source: Computed by Stantec, 2019)

Table 6-4. City of Sunrise, Alternative Water Supply Project Capital Costs (No Capital is Currently Required for Alternative Water Supply Projects)

	Expenditure[1] (In Millions of Dollars)						
Project Name	**Funding Source**	**2020**	**2021**	**2022**	**2023**	**2024**	**Five Year Totals**
C-51 Reservoir Project	BP[2]	-	-	-	-	-	-
Sunrise Golf Course Reuse Main Extension	Fund 465	2.257	-	-	-	-	2.257
Reuse Distribution System – SICP,	Fund 465	-	-	-	-	-	-

Sawgrass Mills & Artesia (Phase II)							
Reuse Distribution System – SICP, and Markham Park (Phase III)	Fund 465	-	-	-	0.2	9.66	9.86
SGF-1 Aquifer Storage and Recovery conversion	Fund 465	-	-	0.095	0.173	0.173	0.441
Springtree Floridan Supply Well	Fund 465	-	-	0.025	0.025	0.025	0.075

1. Source: Adopted Five-Year Capital Improvement Program – Fiscal Year 2019/2020
2. Bond Proceeds
(Source: City of Sunrise, 2019)

Appendix A GROWTH POLICY; COUNTY AND MUNICIPAL PLANNING; LAND DEVELOPMENT REGULATION, CHAPTER 163, F.S. RELATED TO WATER SUPPLY PLANNING

Appendix B CITY OF SUNRISE PRIVATE POTABLE, AND PRIVATE AND PUBLIC NON-POTABLE WATER USE PERMITS

Appendix C **WATER SUPPLY SYSTEM INTERCONNECTIONS**

Appendix D SUNRISE UTILITY SERVICE AREA POPULATION PROJECTIONS BY TAZs

Appendix E **INTERGOVERNMENTAL MEETING MINUTES**

Appendix F CITY OF SUNRISE WELL DESCRIPTIONS

Appendix G **CITY OF SUNRISE UNINCORPORATED PROPERTIES**