and core sample data (84 wells at 33 sites), the hydrogeologic framework of the Floridan Aquifer system in Eastern Broward County was delineated. This effort helped to construct unique cross-sections and maps representing the stratigraphic and hydrogeologic units of the Floridan Aquifer system in urban Broward County. An additional component of the project was to complete seismic profiling along approximately 14 miles of the Hillsboro Canal, which resulted in seismic reflection data that were then correlated to the borehole geophysical data (Reese et al., 2014).

The results offer better definition of the stratigraphic and hydrogeologic characteristics of the aquifer, which will improve upon the selection of new well locations or for water storage options, such as ASR. Building on the successful use of seismic profiling in the first study, Phase 2 of this Feasibility Study was commissioned and completed in 2017 (Cunningham et al., 2018). It further refined the hydrogeologic framework and regional extent of information by collecting 80 miles of high-resolution seismic profiles from canals in Broward County along with well logs and cores or cutting from 44 wells. Mapping of the Oldsmar, Avon Park, and Arcadia formations was completed over the 425 square mile study area. In addition, many unconformities that might identify faults that are either near-vertical reverse faults or karst collapse structures throughout the County were identified. Water utilities in these areas may consider further studies around these features when planning project near their vicinities.

D. Broward County Water Partnership

The Broward County Water Partnership is an ongoing High Efficiency Toilet Replacement and Water Conservation Incentives Program. Broward Water and Wastewater Services are media partners in the Countywide Water Conservation Incentives Program, launched in 2011. This program has provided approximately 4,500 high efficiency toilets with an estimated water savings of 450 thousand gallons per day. The program utilizes monthly promotional material, public service announcements, radio adds, etc., to promote a consistent water conservation messaging throughout the partner service areas. This covers almost 80 percent of Broward County. Historically, this program has been supported, in part, through the SFWMD's Water SIP and Cooperative Funding Programs, which have provided $277,000 in matching funds through 2018. Neither of these programs are currently funding the partnership.

Additionally, BCWWS' High Efficiency Toilet Rebate Program has been in existence since 2010 and has offered over $250,000 in billing credits for replacing 2,500 water wasting toilets. This effort is supported by $30,750 of matching funds from the SFWMD. Promotion of this program throughout the BCWWS service area will continue through this next five-year planning period unchanged.

E. NatureScape Irrigation Service

The NIS water conservation program provides irrigation system evaluations for large properties in 20 cities and water districts. The NIS team conducts a test of the irrigation system and provides comprehensive recommendations for improving overall efficiency - saving water, reducing runoff of pollutants, and keeping canals and water bodies clean in our urban areas. The program has saved more than 1.5 billion gallons of water since 2005. In 2019, the program initiated a new residential incentive program to offer rebates for outdoor irrigation systems updates.

BCWWS CAPITAL IMPROVEMENTS

This section provides a brief description of the BCWWS Capital Improvements Program and Policies for Water Supply.

A. Work Plan Projects

The 2020 Work Plan includes the listing of public and regional water supply projects and programs over the next 10-year period (at a minimum) that may be necessary to serve the BCWWS service area and large users. The following sections include additional information related to the development of traditional and AWS sources, and conservation and reuse initiatives that are being advanced to support water resource and water supply protections.

Broward County, as a Water Supply Entity, is responsible for the implementation of the water supply development projects identified in the 2018 LECWSP Update, as approved by the SFWMD Governing Board in November 2018. BCWWS reviewed the information in the 2018 LECWSP Update pertaining to the AWS projects. BCWWS determined that, because additional water supply above what is currently permitted by the SFWMD is not needed in the next 20-year period, the District 1 and District 2A/North Regional WTP expansion and Floridan Aquifer development projects would be unfunded in the County's Capital Improvement Plan. These projects will be re-evaluated and re-established as funded projects when the need for additional water supply arises.

BCWWS continues to evaluate raw and finished water demands throughout their utility service areas and provide the SFWMD with annual progress reports regarding the status of the AWS projects. Table WS23 and Table WS24 below summarize the AWS and water conservation projects contained in the 2018 LECWSP Update that are directly related to BCWWS' water supply development. Table CI-F, excerpted from the 2019 Broward County Capital Improvement Plan, is provided below for comparison.

The County projects listed in Chapter 8, Table 8-1, of the 2018 LECWSP Update are described below with an update on the project status.

- District 1A Treatment Plant Expansion and Floridan Aquifer Development. (RO, WTP, Floridan Wells, and a Disposal Well) Two Floridan Test/Production wells were completed in 2014 and found to have a Total Dissolved Solids concentration greater than 7,000 mg/L. The County is re-assessing the potential production capacity and water quality of the Upper Floridan source for ASR use. The District 1A 3 MGD Treatment Plant

Expansion project has been unfunded and will be evaluated annually for future funding based on projected water demands.

- District 2A Treatment Plant Expansion and Floridan Aquifer Development. (RO, WTP, Floridan Wells, and a Disposal Well) The addition of 6 MGD of RO treatment, concentrate disposal, development of a Floridan Aquifer source, and raw water transmission piping and pumping facilities project has been unfunded and will be evaluated annually for future funding based on projected water demands.
- C-51 Reservoir Project Phase 1 – North Regional Wellfield. BCWWS has entered into an agreement for capacity allocation in Phase 1 of the C-51 Reservoir Project with Palm Beach Aggregates and may, in the future, modify the existing CUP to add 3 MGD of C-51 Reservoir Project offset water to create more operational flexibility between the District 2A and North Regional Wellfields.
- C-51 Reservoir Project Phase 1 – South Regional Wellfield. BCWWS has entered into an agreement for capacity allocation in Phase 1 of the C-51 Reservoir Project with Palm Beach Aggregates and has a CUP allocation for 3 MGD of C-51 Reservoir Project offset water to offset the SR Wellfield raw water demands for the 3A/3BC service area. The C-51 Reservoir Project is scheduled to begin construction in September 2019 and be operational by October 2021.
- Broward Water Conservation Programs. The conservation programs detailed in the previous sections have a water savings goal of reducing the per capita consumption by 10 gallons per day by 2029, as established in the 2019 IWRP update.

Table WS30 Proposed Potable and Non-Potable Public Water Supply Development Projects Listed in SFWMD 2018 LECWSP Update

Implementing Entity	Project Name	Project Description	Project Capacity (MGD)	Total Capital ($M)	Est. Date Complete
POTABLE - FLORIDAN AQUIFER SYSTEM					
BCWWS	District 1 Water Supply Improvement Alternatives	Construct Floridan Aquifer System water supply wells, connecting raw water transmission main, and RO treatment facility	3.00	5.6	2025
BCWWS	District 2 Water Treatment Plant Expansion	Construct Floridan Aquifer System water supply wells, connecting raw water transmission main, and RO treatment facility	6.00	33.3	2026
Fort Lauderdale	Dixie Floridan Aquifer System Water Supply/Treatment Facility	Expansion of the Peele-Dixie nanofiltration Water Treatment Plant to include RO treatment	6.00	22.9	2030
Hollywood	RO Train E	Installation of new RO train	2.00	2.0	2030
Hollywood	Floridan Aquifer System Wells F14 and F15	Construction of 2 Floridan Aquifer System wells	4.00	3.0	2034
NONPOTABLE - STORAGE/ASR					
BCWWS	South Regional Wellfield C-51 Reservoir Project Phase 1 Recharge Offset	BCWWS and PBA agreement for capacity allocation in C-51 Reservoir Project Phase 1 for BCWWS South Regional Wellfield (Authorized under Current CUP)	3.00	13.8	2020
BCWWS	District 2/ North Regional Wellfield C-51 Reservoir Project Phase 1 Recharge Offset	BCWWS and PBA agreement for capacity allocation in C-51 Reservoir Project Phase 1 for BCWWS North Regional Wellfield (not yet under CUP)	3.00	13.8	2026
Dania Beach	BCWWS South Regional Wellfield C-51 Reservoir Project Phase 1 Recharge Offset	Dania Beach and PBA agreement for capacity allocation in C-51 Reservoir Project Phase 1 for BCWWS South Regional Wellfield (Authorized under Current CUP)	1.00	4.6	2023
Hallandale Beach	BCWWS South Regional Wellfield C-51 Reservoir Project Phase 1 Recharge Offset	Hallandale Beach and PBA agreement for capacity allocation in C-51 Reservoir Project Phase 1 for BCWWS South Regional Wellfield (Authorized under Current CUP)	1.00	4.6	2023

Table WS31 **Water Conservation Projects Listed in SFWMD 2018 LECWSP Update**

Project Name	Entity Name	Project Type	Fiscal Year	Proposed Water Savings (MGY)
USEPA WaterSense HET Replacement/ Credit Program	Broward County Board of County Commissioners	Indoor Plumbing	2013 – 2017	18.3
HET Rebate Program	Broward Water Partnership	Indoor Plumbing	2013 – 2017	42.2
NIS Smart Irrigation Tech. Retrofit Program	Broward Water Partnership	Irrigation	2015 - 2017	66.8

B. Capital Improvements Element (CIE) /Schedule

The purpose of the CIE is to evaluate the need for public facilities as identified in other Comprehensive Plan elements. The CIE also includes cost estimates for improvements for which the County has fiscal responsibility; an analysis of the fiscal capacity of the County to finance and construct improvements; and financial policies to guide the funding of improvements to address needs identified in other Comprehensive Plan elements. The CIE also ensures that an adequate concurrency management system is implemented by the County pursuant to Section 163.3180, F.S. The CIE shows how infrastructure needs identified in other elements of the Comprehensive Plan will be funded. The Element contains a list of the various improvement projects for public infrastructure that are scheduled in the next five years, including the Transportation Improvement Program (TIP), potable water, sanitary sewer, drainage, recreation, aviation, Port Everglades, beach re-nourishment, transit, community development, and public school facilities.

The focus of the CIE Policies is to:

- Evaluate and proactively plan for the County's infrastructure needs
- Plan and implement adaptation strategies for short and long-term climate change events and impacts
- Implement and regulate infrastructure in a sustainable manner
- Monitor feasibility of construction of improvements
- Coordinate and collaborate with state, regional and local agencies and governments on infrastructure funding strategies

The Broward County Comprehensive Plan (Plan) describes how the County will provide required services to meet the current and future needs of the community and economic development, while protecting the natural environment. This policy document provides a coordinated approach to making many decisions regarding land use and the location of development, the extension of urban services, the placement of community facilities,

adaptation to climate change impacts and others. The Plan is composed of 18 Elements that contain GOP organized by topics. Each Elements' Support Document contains the data and analysis used in developing the GOP. The Plan also contains a map series that generally describes existing or future conditions related to the Plan's Elements. The principles and strategies contained in the GOP guide the County's future decisions to help ensure that we are prepared to meet challenges today and in the future. The Plan is a "living" document that is updated to respond to changing conditions in matters such as population, technology, organizational structure, the economy, and climate. The process of developing and updating the plan is a community-wide effort that requires compiling and analyzing new data, jointly developing coping strategies, and amending the GOP. The County's current Comprehensive Plan documents were adopted March 28, 2019 and are available on the web at:

https://www.broward.org/BrowardNext/Pages/ComPlanDocs.aspx

BCWWS planning is conducted on a 10-year cycle to identify system improvements necessary to accommodate future growth and to address regulatory changes. Comprehensive planning efforts were first initiated in 1988 with the "Water and Wastewater Master Plan", which was revised in 2004. The Plan addressed the need for facility improvements based upon anticipated build-out conditions in each of the BCWWS service areas over a 20-year planning horizon. The Alternative Water Supply and the Effluent Disposal and Reclaimed Water master plans were completed in 2010. The plans identify treatment plant improvements and/or expansions needed to accommodate the projected population and new regulatory requirements. The Retail Facilities Master Plan was completed in 2016 to analyze retail distribution and collection network improvements the through year 2040. A Regional Wastewater System Master Plan effort is underway and should be completed by 2021. Broward County CIP incorporates the various master plan recommendations into a 5-Year Capital Program. Projects are funded through BCWWS revenue bonds and pay-as-you-go funding supported with user fees.

The Adopted Broward County Capital Program FY19-23 outlines the anticipated capital projects for the Fiscal Year 2019 through 2024 planning period. Water and Wastewater Services projects are listed in the Enterprise Capital Section under Water & Wastewater Five Year Summary and Project Descriptions which can be accessed on the web at:

https://www.broward.org/Budget/Archives/Documents/EnterpriseFundsCapitalFY19Adopted.pdf

GOALS, OBJECTIVES AND POLICIES

Existing GOP of the recently adopted BrowardNEXT2.0 Comprehensive Plan (2019) were reviewed to determine if any updates would be needed to meet new and existing statutory requirements, as well as for consistency with the 2020 Work Plan. The following issues were considered:

- Implementation of the work plan
  - Policies implementing the work plan by incorporating the work plan into the Comprehensive Plan or adopting the work plan by reference
- When adopting the work plan by reference, the policy must identify the title and author of the document and clearly indicate what provisions and edition of the document are being incorporated [Section 163.3177(1)(b), F.S.]
- Concurrency provisions for water supply availability
- Water conservation programs and activities specific to the local government
- AWS projects
- Local governments must incorporate into the Sanitary Sewer, Solid Waste, Drainage, Potable Water, and Natural Groundwater Aquifer Recharge element AWS project(s) selected from the those identified in the applicable regional water supply plan, pursuant to Section 373.709(2)(a), F.S., or proposed by a local government under Section 373.709(8)(b), F.S. [Section 163.3177(6)(c)(3), F.S.]
- Reclaimed water programs
- Level of service standards specific to the local government
  - Update and/or review the level of service standards. The level of service standards need to be consistent throughout the Comprehensive Plan and work plan
- Population projections
- Update and/or review the population projections. The projections should be consistent throughout the Comprehensive Plan and work plan update. If they are not consistent, explain why
- Water supply/source needs and demands
- Intergovernmental coordination with the SFWMD, water suppliers, and other local governments, including areas that cross jurisdictional boundaries. Identify any joint planning areas and joint infrastructure service areas related to water supply
- Incorporation of the work plan into the Comprehensive Plan
- Incorporation of another local government's or water supplier's work plan into the Comprehensive Plan
- Sector Plan coordination and implementation

The BrowardNEXT 2.0 Comprehensive Plan Elements already includes several GOP that support the County's Water Supply Facilities Work Plan and the requirements of Chapters 163 and 373, F.S. The supporting GOP can be found within the following elements:

- Capital Improvements (CI)
- Climate Change (CC)
- Conservation (C)
- Coastal Management (CM)
- Intergovernmental Coordination (IC)
- Water Management (WM)

More specifically, the selected GOP reflect the County's commitment to water supply planning and water resource protections and are inclusive of any recommended changes that will be made. The GOP listed below are organized by issue topic, as discussed above.

Issue #1 – Implementation of the Work Plan

OBJECTIVE WM1 Water and Wastewater Services
Broward County's Water and Wastewater Services (WWS) will provide raw water, potable water, sanitary sewer, surface water, and storm water management services within the agency's designated service areas that are cost-effective, equitable, adequate, and sustainable, while meeting applicable federal, state, and local design, construction, and operational standards and regulations.

POLICY WM1.1 WWS will provide potable water and sanitary sewer to current and future customers of the WWS systems using cost-effective, equitable, and adequate potable water, and sanitary sewer infrastructure and facilities that meet applicable federal, state, and local standards.

POLICY WM1.2 WWS will maintain funding for systems improvements identified in the Broward County Capital Improvements Program (CIP) to alleviate potable water and sanitary sewer deficiencies within its service area.

POLICY WM2.1 Within eighteen (18) months of the adoption of an update to the SFWMD LECWSP, utilities located within Broward County will update and adopt their 10-Year Water Supply Facilities Work Plans, pursuant to Chapters 163 and 373 of the Florida Statutes, to incorporate the Regional Alternative Supply Plan and to evaluate water resource needs, identify water supply deficiencies, and plan for alternative water supply sources and projects to serve existing and new development within the County.

Issue #2 – Concurrency for Water Supply Availability

POLICY BMSD 1.1.5 Future land uses shall be coordinated with the availability of public facilities and services.

OBJECTIVE BMSD 1.2 Future Land Use Map Amendments

Proposed amendments to the BMSD Future Land Use Map shall be evaluated based on the availability of public facilities and services, site suitability, compatibility with surrounding uses, complete streets, transportation infrastructure, affordable housing, and potential impacts on natural resources.

POLICY BMSD 1.2.1 Future land use amendments shall include the minimum amount of land needed to ensure:

1. Adequate facilities and services are available to support the uses
2. The site is suitable for the proposed use
3. Mobility options of the site are suitable for the proposed use and are designed using Complete Streets Principles outlined in the Transportation Element
4. Urban Sprawl is discouraged
5. Sufficient affordable housing is provided to meet the needs of the area
6. The proposed use is compatible with surrounding uses

POLICY BMSD 1.2.2 Availability and capacity of the following public facilities and services shall be considered:

1. Potable water
2. Sanitary sewer
3. Solid waste
4. Roads, sidewalks, and bicycle facilities
5. Public transit
6. Drainage
7. Parks and recreation facilities
8. Hurricane shelters and evacuation routes
9. Public Schools

OBJECTIVE CI1 Evaluate and Proactively Plan for the County's Infrastructure Needs. The Capital Improvements Element (CIE) will be reviewed and updated annually to reflect the County's budget process to ensure it includes the resources and improvements required to address present infrastructure deficiencies and future infrastructure needs, as discussed in other Elements of this Comprehensive Plan. These deficiencies and needs are addressed in the Capital Improvements Program (CIP) on Tables CI-A through CI-N.

POLICY CI1.1 Capital projects will be evaluated using the following criteria:

1. Elimination of hazards that impact public health and safety,
2. Promotion of efficient development and prevention of urban sprawl,
3. Level of impact on operating budget,
4. Protection of prior infrastructure investments,
5. Consistency with County plans and the plans of other agencies,
6. Elimination of existing deficiencies,
7. Maintenance of adopted levels of service (LOS),
8. Availability of funds and reflection of sound fiscal policies,
9. Implementation of County Commission adopted goals,
10. Climate resilience.

POLICY CI1.2 Continue implementation of approved master plans as outlined within the Transportation, Water Management, Solid Waste, Public Schools Facilities, Airport, and other Comprehensive Plan Elements.

POLICY CI1.8 Continue to allocate funds for the replacement and renewal of infrastructure in an amount which will minimize operating costs and maximize the life of the infrastructure.

POLICY CC2.7 Broward County shall update the assessment of public investments and infrastructure at risk from sea level rise and other climate change related impacts every 5 years. Specifically, the County shall analyze vulnerability to facilities and services, including but not limited to: buildings; water and wastewater treatment plants, transmission lines and pumping stations; storm water systems; roads, rail, bridges, and all transportation and transit infrastructure; power generation facilities and power transmission infrastructure; critical airport and seaport infrastructure; hospitals; city halls; and police and fire stations.

POLICY WM2.8 Broward County will identify water infrastructure at risk from unified sea level rise projections of 9 to 26 inches (timeframe of 2010 to 2060) and other climate change related impacts by 2025 and update this assessment every 5 years.

Issue #3 – Water Conservation Programs

POLICY CC3.8 Broward County, in conjunction with its municipalities, shall promote species diversity, the planting of native and drought-tolerant landscapes, and sustainable urban forestry practices in order to protect the health and resiliency of our natural resources to the impacts of climate change.

POLICY CC3.9 Broward County shall continue to implement the NatureScape Broward program and encourage the use of native and non-invasive, subtropical, and rare native plants

in the urban landscape in order to promote water and energy conservation while creating a climate resilient landscape. Furthermore, these plants should be salt, wind, and drought tolerant, where appropriate, and maintained consistent with NatureScape Broward and Florida-Friendly Landscaping Best Management Practices.

POLICY CC5.9 Broward County, through the Master Partnership Agreement with the School Board of Broward County, shall continue to support existing County and municipal education and outreach programs including, but not limited to: energy efficiency and water conservation; waste reduction and recycling; urban forests and native landscaping; and air quality and GHG reduction. The County will also support education and outreach programs on other sustainable issues and work cooperatively to link these overlapping themes with local climate impacts in all educational materials and messages.

POLICY WM1.8 WWS will continue to implement a leak detection program, conservation-oriented utility service rate structure, and other conservation measures required by Broward County ordinance.

POLICY WM1.9 WWS will maintain comprehensive water use profiles for service area customers including customer class, utility rate profiles, water usage patterns, and seasonal variations to increase the effectiveness of conservation efforts by focusing methods on those elements with the greatest water savings potential. WWS will reference the water use profile to expand and/or implement programs that promote conservation of water resources such as toilet rebates and water use analyses.

POLICY WM2.2 In order to protect and conserve the Surficial Aquifer System and limit demands on the regional water management system, the Broward County Environmental Protection and Growth Management Department (EPGMD) will continue to investigate and promote the development of alternative water supply strategies such as: 1. Continued promotion of water conservation; 2. Brackish water aquifer development; 3. Storm water capture, storage, and reuse; 4. Aquifer recharge; 5. Aquifer Storage and Recovery (ASR); 6. Reclaimed water use; 7. Improvements to the secondary canal infrastructure; 8. Additional regional surface water storage; and 9. Other technologies and management strategies consistent with the goals of the most recently adopted LECWSP Update and Broward IWRP.

POLICY WM3.27 Broward County will advocate for water conservation measures in building practices and will implement programs to support plumbing retrofits, toilet rebates, Florida-friendly landscaping and Florida Yards and Neighborhoods best management practices (BMPs), and water conservation education.

POLICY WM3.32 Broward County will protect aquifers from depletion through water conservation and preservation of the functions of high recharge areas including, but not limited to, the water conservation areas and water preserve areas.

POLICY WM3.33 Broward County will continue to enforce Chapter 39, "Zoning," Article VIII, "Landscaping for Protection of Water Quality and Quantity," of the Broward County Code of Ordinances, which reflects the NatureScape Broward program principles that promote the use of native and Florida Friendly landscaping and the preservation of native habitats in support of sustainable urban landscapes and the conservation of water resources.

POLICY WM4.8 Broward County will coordinate with Broward County entities, FDEP, and EPA in the implementation of Florida's Ocean Outfall Law requirements, per Section 403.086, Florida Statutes, and support and promote collaborative regional and sub-regional water resource and supply strategies, water resource development, conservation, and reclaimed water projects that provide economies of scale and regional benefits, with special emphasis on those areas that currently contribute to the volume of wastewater being discharged through open ocean outfalls, with the goal of achieving 60% reuse of water currently discharged via outfalls by the year 2025.

POLICY WM4.17 Broward County, in partnership with local municipalities and water and wastewater entities, will continue to develop and implement programming for Countywide water conservation and initiatives, including the Conservation Pays Program, Water Matters education and outreach programs, NatureScape Broward, and the NatureScape Irrigation Services, to promote water and energy conservation.

Issue #4 – Alternative Water Supply Projects

POLICY WM1.4 WWS shall identify and plan for development of alternative water supplies by the year 2025 sufficient to meet public water supply needs through the year 2040.

POLICY WM2.1 Within eighteen (18) months of the adoption of an update to the SFWMD LECWSP, utilities located within Broward County will update and adopt their 10-Year Water Supply Facilities Work Plans, pursuant to Chapters 163 and 373 of the Florida Statutes, to incorporate the Regional Alternative Supply Plan and to evaluate water resource needs, identify water supply deficiencies, and plan for alternative water supply sources and projects to serve existing and new development within the County.

POLICY WM2.2 In order to protect and conserve the Surficial Aquifer System and limit demands on the regional water management system, the Broward County Environmental Protection and Growth Management Department (EPGMD) will continue to investigate and promote the development of alternative water supply strategies such as: 1. Continued promotion of water

conservation; 2. Brackish water aquifer development; 3. Storm water capture, storage, and reuse; 4. Aquifer recharge; 5. Aquifer Storage and Recovery (ASR); 6. Reclaimed water use; 7. Improvements to the secondary canal infrastructure; 8. Additional regional surface water storage; and 9. Other technologies and management strategies consistent with the goals of the most recently adopted LECWSP Update and IWRP.

POLICY WM3.25 Broward County will encourage the use of reclaimed water as an integral part of its wastewater management program and evaluate the costs and benefits of adaptation alternatives to increase efficiency and optimize the capacity of existing reclaimed water facilities where economically, environmentally, and technically feasible.

POLICY WM3.26 Broward County will continue public education, coordination, and program support for the expansion of beneficial use of reclaimed water, while encouraging regional reuse projects.

POLICY WM4.7 Broward County will coordinate regionally to advance the use of the IWRP and Regional Reuse Master Plan tools to increase flood protection, water quality treatment, water supply sources, storm water storage, wetland sustainability, ground water recharge, use of reclaimed water for irrigation, aquifer recharge, and environmental enhancement, where technically, environmentally, and economically feasible, to protect water resources and develop climate resilience.

POLICY WM4.8 Broward County will coordinate with Broward County entities, FDEP, and EPA in the implementation of Florida's Ocean Outfall Law requirements,¬ per Section 403.086, Florida Statutes, and support and promote collaborative regional and sub-regional water resource and supply strategies, water resource development, conservation, and reclaimed water projects that provide economies of scale and regional benefits, with special emphasis on those areas that currently contribute to the volume of wastewater being discharged through open ocean outfalls, with the goal of achieving 60% reuse of water currently discharged via outfalls by the year 2025.

Issue #5 – Reclaimed water programs

POLICY CC2.17 Broward County should develop, in conjunction with local municipalities and businesses, a sustainable and energy-efficient materials economy through cooperative materials management systems and infrastructure, in order to maximize the recovery and reuse of waste, water, wastewater, and other materials in ways that capture their economic value, conserve embedded energy, and minimize net life-cycle emissions of GHG and other pollutants.

GOAL WATER MANAGEMENT

Broward County will manage its water resources and infrastructure using a collaborative, equitable, and cost-effective integrated approach that optimizes potable water supplies, wastewater, reclaimed water, storm water, existing infrastructure, and natural systems to meet the short- and long-term needs of the County's residents, businesses, visitors, tribal communities, and the environment while addressing water management challenges associated with climate change.

POLICY WM1.6 WWS will continue to use the development review process outlined in the Broward County Land Development Code to require applicants for development permits within the Broward County utility districts to enter into an agreement to connect to existing potable water, sanitary sewer, and reclaimed facilities. When adequate facilities, based on the adopted level of service (LOS) standards, are not available and no fiscally feasible plan to construct or expand facilities is proposed, Broward County may require the developer to construct improvements to the potable water, sanitary sewer, and reclaimed water reuse systems, as necessitated by the proposed development.

POLICY WM1.11 WWS will encourage the coordination and development of North Regional Wastewater Treatment Plant regional reclaimed water projects in accordance with Florida's Ocean Outfall Law requirements, Section 403.086, F.S.

POLICY WM2.2 In order to protect and conserve the Surficial Aquifer System and limit demands on the regional water management system, the Broward County Environmental Protection and Growth Management Department (EPGMD) will continue to investigate and promote the development of alternative water supply strategies such as:

1. Continued promotion of water conservation;
2. Brackish water aquifer development;
3. Storm water capture, storage, and reuse;
4. Aquifer recharge;
5. Aquifer Storage and Recovery (ASR);
6. Reclaimed water use;
7. Improvements to the secondary canal infrastructure;
8. Additional regional surface water storage; and
9. Other technologies and management strategies consistent with the goals of the most recently adopted LECWSP Update and Countywide IWRP.

Issue #6 – Level of service standards

OBJECTIVE CI3 Implement and Regulate Infrastructure in a Sustainable Manner. Land use decisions and development orders will be issued based on the planned availability of resources to provide sufficient improvements to maintain adopted LOS.

POLICY CI3.1 Future development will bear a proportionate share of the cost of providing infrastructure required to maintain adopted LOS standards contained in other elements of this Comprehensive Plan.

POLICY CI3.2 Recommendations on proposed land use changes will be based on an analysis of infrastructure planned to support the area.

POLICY CI3.3 Development orders will be issued based on the availability of infrastructure required to maintain the adopted LOS discussed in other elements of this Comprehensive Plan.

POLICY CI3.5 Public facilities required to eliminate existing deficiencies for which the County is financially responsible will be included in the County's annually adopted five-year CIP.

POLICY CI3.6 The County will construct infrastructure necessary to maintain the adopted LOS standards as identified in the respective elements of the Broward County Comprehensive Plan.

POLICY WM1.6 WWS will continue to use the development review process outlined in the Broward County Land Development Code to require applicants for development permits within the Broward County utility districts to enter into an agreement to connect to existing potable water, sanitary sewer, and reclaimed facilities. When adequate facilities, based on the adopted LOS standards, are not available and no fiscally feasible plan to construct or expand facilities is proposed, Broward County may require the developer to construct improvements to the potable water, sanitary sewer, and reclaimed water reuse systems, as necessitated by the proposed development.

Broward County staff proposes to amend Policy WM3.1 to meet the requirements of Section 163.3164(28), F.S. regarding establishment of Level of Service Standards (LOSS). Proposed text changes appear underlined; proposed deletions appear as strikethroughs.

POLICY WM3.1 LOS standards for potable water and sanitary sewer facilities will be the FDEP permitted capacity of the facilities. The LOS standard for water treatment plants will be expressed as maximum monthly flow and the LOS standard for wastewater treatment plants will be expressed as average daily flow. Facility per person levels of service standards (LOSS) may vary due to water treatment type, demographics, irrigation acreage, and age and condition of the system. For planning purposes, the maximum LOSS for any County facility shall be 150 gallons/person/day.

POLICY WM3.2 Prior to approval of a building permit, Broward County Environmental Engineering and Permitting Division (EEPD) will require the appropriate water and sanitary sewer supplier(s) to submit a signed form that states whether adequate water supplies and sanitary sewer collection services will exist and be available to serve the new development no later than the anticipated date of issuance of a certificate of occupancy.

Water Management Element Support Document

Table WM-1

BCWWS Retail Potable Water Level of Service Standards

Facility	Level of Service Standard
Raw Water Supply	Maximum Day Plus In-Plant Uses
Treatment Plant	Maximum Day
Finished Water Storage	40% of Maximum Day demand to cover operational (10%) and emergency (30%) storage; plus fire protection storage of 630,000 gallons (3500 GPM for 3 hours)
Transmission/Distribution System	The most stringent of: (1) Peak Hour at 45 psi residual pressure, or (2) Maximum Day Plus Fire Flow at 25 psi residual pressure.

BCWWS Land Development Standards contain the methodology currently used to determine if the level of service standard can be met. BCWWS changes the methodology administratively from time to time as new information becomes available.

Issue #7 – Population Projections

The following policies exist in the BrowardNEXT2.0 Comprehensive Plan:

> Policy WM1.5 Retail Water and Wastewater Master Plan will be updated to establish projected water and wastewater needs. (no mention of population projections)
>
> Also, references are included in WME Support Document by supplier.

Other related policies include:

> POLICY IC4.2 Broward County will utilize the Public Schools Staff Working Group and the School Oversight Committee to collaborate with the School Board of Broward

County, Florida, and Broward County municipalities to plan and make decisions pertaining to:

1. Population projections

2. [...]

POLICY IC5.1 Broward County shall coordinate its Potable Water Element with the South Florida Water Management District's Lower East Coast Water Supply Plan.

The 1989 Broward County Comprehensive Plan originally included policies that were located in Administration Element (Policies 1.2.1, 1.2.2.) were inadvertently deleted with the repeal of the Administration Element as part of BrowardNEXT2.0 adoption. This included the following policies:

Policy 1.2.1 The Planning Services Division (PSD) shall continue to use the Broward County Population Forecasting Model as the methodology for generating population estimates and projections and assigning the population.

Policy 1.2.2 The PSD shall, on at least an annual basis, provide population estimates and projections for Broward County, including the Unincorporated Area.

Broward County is in the process of adding a new Objective and related policies in the Intergovernmental Element that is anticipated to be adopted prior to the adoption of the WSFWP and states as follows:

OBJECTIVE IC10 Coordinate Broward County's Population Forecasts and Municipal Allocations with County Municipalities and Relevant Agencies.

Broward County shall continue to coordinate the allocation of population and demographic data and forecasts with County municipalities and relevant state and regional agencies.

POLICY IC10.1 Broward County's Planning and Development Management Division (PDMD) shall continue to use the Broward County Population Forecast and Allocation Model to distribute County forecasts published by University of Florida's Bureau of Economic and Business Research (BEBR) to develop local municipal and Transportation Analysis Zones (TAZs) population estimates and projections.

POLICY IC10.2 PDMD shall continue to regularly coordinate the allocation of population and demographic data and forecasts with County municipalities and relevant state and regional agencies and publish on the County's demographic data website.

POLICY IC10.3 PDMD shall, on at least an annual basis, provide population estimates for Broward County and its municipalities, including the Broward Municipal Services District, from official sources such as the US Census and BEBR.

Issue #8 – Water Supply/Source Needs and Demands

POLICY CC2.19 Broward County shall encourage local municipalities to develop policies to improve resilience to coastal and inland flooding, salt water intrusion, and other related impacts of climate change and sea level rise in their Comprehensive Plans, Sustainability Action Plans, Vision Plans, Storm Water Master Plans, Adaptation Action Areas Plans, Climate Change Plans, and other city-wide plans.

POLICY CC3.7 Broward County shall continue to support local environmental restoration, mitigation, and adaptive management initiatives, including those related to Everglades restoration, and coordinate with other State, regional, and national strategic planning efforts to improve the resiliency of natural lands and systems to climate variability and change.

POLICY CC4.8 Broward County shall create and maintain the Broward County Green Infrastructure Map Series to illustrate elements of green infrastructure identified as critical for meeting the County's goals for GHG reduction, renewable energy production, aquifer protection and surface water management, coastal habitat protection, enhanced green spaces, healthy food access, and other resource protection and health and safety goals shared by the greater Broward community.

POLICY CM1.1 Broward County shall limit the specific and cumulative impacts of development or redevelopment upon wetlands, water quality, water quantity, wildlife habitat, living marine resources, and the beach dune system through the review of development applications.

OBJECTIVE C3 Protect and Maintain Water Quality. To improve the water quality and supply throughout Broward County by protecting the County's Water Conservation Areas.

POLICY C3.5 Broward County will support projects within the Water Conservation Areas that reduce seepage losses from the Water Conservation Areas, improve water supply and quality, and establish a buffer between the Everglades and developed areas.

POLICY C6.12 Broward County shall appropriate adequate funds to provide for the enhancement, maintenance, and conservation of publicly-owned natural lands, wetland mitigation areas, and water recharge areas.

POLICY C6.13 Broward County shall pursue opportunities for the restoration and/or enhancement of degraded natural areas, including but not limited to, reforestation, restoration of shorelines or dunes, restoration of natural hydrology, or removal of non-native vegetation and prescribed burning.

POLICY C8.2 Broward County shall integrate wetlands into regional stormwater drainage/water management practices to provide necessary hydrology.

POLICY WM1.5 WWS will update the Retail Water and Wastewater Master Plan by 2026 to establish projected potable water and sanitary sewer infrastructure and facility needs through 2040 and, if required, update approximately every ten (10) years to meet state and local requirements.

OBJECTIVE WM2 Planning for Water Resources and Infrastructure. Broward County's water resources planning will be guided by the goals, objectives, and recommendations provided in Broward County's Countywide Integrated Water Resources Plan (IWRP), along with related plans that provide support for climate resilience and the long-term water resource needs of the Broward community and which further support the Comprehensive Everglades Restoration Plan (CERP), SFWMD Lower East Coast Water Supply Plan (LECWSP), and South East Florida Climate Compact's Regional Action Plan (RCAP), as updated.

POLICY WM2.5 Broward County will continuously update the future conditions map series, including wet season groundwater elevation and future condition flood elevation maps, to reflect impacts of projected sea level rise and climate change for planning and regulatory purposes.

POLICY WM2.7 Broward County will support ongoing and enhanced development of regional hydrologic models, the integration of downscaled climate data, and continuous data collection to help predict and track the impacts of sea level rise and changing rainfall patterns on groundwater levels, saltwater intrusion, and drainage infrastructure to support local planning and projects.

POLICY WM3.3 Potable water facilities will be designed, constructed, maintained, and operated with consideration given to sea level rise and in such a manner as to protect the functions of natural groundwater recharge areas, natural drainage features, and groundwater levels, without inducing the inland movement or upwelling of saline water into Underground Sources of Drinking Water (USDW), as defined in Chapter 62-528, F.A.C., and SFWMD Basis of Review for Water Use, as referenced in Chapter 40E-2, F.A.C.

POLICY WM3.4 Broward County will work to protect existing wellfields, water supplies, surface or subsurface storage facilities, control structures, water and wastewater treatment plants, and transmission infrastructure from increased coastal flooding, sea level rise, saltwater intrusion, and other potential future climate change impacts, and support utility efforts to plan infrastructure replacement and relocation, as needed.

POLICY WM3.5 Broward County will continue to coordinate with municipalities and other agencies on source-water (wellfield) monitoring and protection programs, and proactively address potential impacts on the coastal aquifer from increased chlorides due to flooding of

coastal and tidally influenced bodies of water that may occur with more intense storms, rising sea levels, increased drought, and other impacts of climate change.

POLICY WM3.6 Broward County will continue to maintain, implement, and enforce the County Wellfield Protection Ordinance (Wellfield Protection, Article XIII, Chapter 27, Broward County Code of Ordinances), will conduct wellfield inspections to locate possible contamination sources, and ensure abatement of identified sources. The County will also revise, as necessary, its Wellfield Protection Ordinance to reflect results from modeling studies and revisions to delineation criteria.

POLICY WM3.7 Broward County will continue to implement regulations governing storm water management in conjunction with the Wellfield Protection Regulations and prohibit direct storm water discharges to surface and ground water within Zone 1 and Zone 2 of wellfield zones of influence, as designated on the Wellfield Protection maps.

Issue #9 – Intergovernmental coordination with the District, water suppliers, and other local governments. Identify any joint planning areas and joint infrastructure service areas related to water supply.

POLICY IC1.1 Broward County will coordinate with the Broward League of Cities and the Broward Legislative Delegation, as appropriate, for the following purposes: 1. Develop and implement joint infrastructure service or planning areas, especially to address issues associated with climate change and sea level rise; 2. Establish a permanent funding mechanism to support affordable housing; and 3. Support the implementation of the Low Tax Opportunity Zones, as established in the federal Tax Cut and Jobs Act of 2017, to encourage long-term investment and job creation in targeted communities by reducing taxes for many job creators. Low Tax Opportunity Zones enhance local communities' ability to attract businesses, developers and financial institutions to invest in targeted areas by allowing investors to defer capital gains taxes through investments in federally established Opportunity Funds.

OBJECTIVE IC5 Ensure Adequate Water Supply and Maintain Nature Systems Broward County shall continue to coordinate its Comprehensive Plan with the plans of other local and regional agencies to ensure adequate water supply and maintenance of natural systems.

POLICY IC5.1 Broward County shall coordinate its Potable Water Element with the South Florida Water Management District's Lower East Coast Water Supply Plan.

POLICY IC7.8 Broward County shall continue to collaborate with and support local and regional planning entities to ensure that local municipal comprehensive plans, regional strategic plans, disaster mitigation plans, water management plans, and transportation plans are updated to

provide for a sustainable environment and reflect the best available data and strategies for adapting to future climate change impacts.

OBJECTIVE IC8 Coordinate the Establishment, Maintenance, and Implementation of Capacity and Quality Level of Service Standards, Broward County shall continue to coordinate the establishment, maintenance, and implementation of capacity and quality level of service standards.

POLICY IC8.4 Broward County will participate in the Water Advisory Board, including its Technical Advisory Committee and Surface Water Coordinating Committee, to coordinate potable water, wastewater, and water management level of service standards.

POLICY WM1.3 WWS will work to provide potable water and sanitary sewer service to incorporated areas contiguous to the WWS service area when service is not anticipated to be provided by others and in the absence of legal constraints on the use of revenues.

POLICY WM2.3 Broward County will work with the SFWMD, municipalities, independent drainage districts, and neighboring counties to plan and support the development of additional regional surface water storage, including the C-51 Storage Reservoir in Palm Beach County and the water preserve areas in western Broward County under the CERP.

POLICY WM2.6 To guide and support local water resources planning, management, and investments for climate resilience, Broward County will work with local, State, and federal water management agencies and others to create, develop, and implement a suite of water resources and infrastructure planning tools, including the IWRP, the Countywide Reuse Master Plan, and regional and local hydrologic models of surface water and groundwater.

Issue #10 – Incorporate Work Plan into Comprehensive Plan

Broward County staff proposes to amend Policy WM2.1 to meet the requirements of Chapters 163 and 373, F.S., and in this manner incorporate the Water Supply Plan by reference into the Comprehensive Plan. Proposed text changes appear underlined; proposed deletions appear as strikethroughs.

POLICY WM2.1 ~~Within eighteen (18) months of the adoption of an update to the SFWMD LECWSP, utilities located within Broward County will update and adopt their 10-Year Water Supply Facilities Work Plans, pursuant to Chapters 163 and 373 of the Florida Statutes, to incorporate the Regional Alternative Supply Plan and to evaluate water resource needs, identify water supply deficiencies, and plan for alternative water supply sources and projects to serve existing and new development within the County~~. Broward County hereby adopts by reference the Broward County Water Supply Facilities Work Plan (2020 Work Plan), dated April

21, 2020 (see Attachment A of the Water Management Element), for a planning period of not less than 10 years. The 2020 Work Plan addresses issues that pertain to water supply facilities and requirements needed to serve current and future development within the County's water service area. The County shall review and update the work plan at least every 5 years, within eighteen (18) months after the adoption of an update to the SFWMD LECWSP. Any changes to occur within the first 5 years of the work plan shall be included in the annual Capital Improvements Plan update to ensure consistency between the Water Management Element and the Capital Improvements Element.

Additional Supportive Comprehensive Plan Policies

GOAL CAPITAL IMPROVEMENTS ELEMENT

The County will provide sufficient and efficient infrastructure within its service areas to meet the standards set forth within the Comprehensive Plan elements by preserving, modifying, and replacing existing infrastructure and providing new infrastructure when required due to growth, development, and climate change impacts.

POLICY CI2.1 Broward County, in conjunction with its municipalities and partner agencies, will work to ensure that adaptation to climate change impacts, especially sea level rise, is incorporated into the planning, siting, construction, replacement, and maintenance of public infrastructure in a manner that is cost-effective and that maximizes the use of the infrastructure throughout its expected life span.

POLICY CC2.12 Broward County, in conjunction with its municipalities and partner agencies, shall make the practice of adapting the built environment to the impacts of climate change an integral component of all planning processes, including but not limited to: comprehensive planning, building codes, life-safety codes, emergency management, land development and zoning regulations, water resource management, flood control and storm water management, coastal management, and community development.

POLICY CC4.5 Broward County, in cooperation with local academic and governmental agencies, should perform a green roof pilot study to evaluate the feasibility of green roofs in Broward County and determine the appropriate plant palette, maintenance requirements, and potential water conservation benefits.

POLICY CC5.9 Broward County, through the Master Partnership Agreement with the School Board of Broward County, shall continue to support existing County and municipal education and outreach programs including, but not limited to: energy efficiency and water conservation; waste reduction and recycling; urban forests and native landscaping; and air quality and GHG reduction. The County will also support education and outreach programs on other sustainable

issues and work cooperatively to link these overlapping themes with local climate impacts in all educational materials and messages.

POLICY IC5.2 Broward County shall coordinate its Conservation Element with the Comprehensive Everglades Restoration Plan.

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APPENDIX G

CITY OF FORT LAUDERDALE WATER SUPPLY FACILITIES WORK PLAN 2025 UPDATE, DRAFT

Hazen and Sawyer
4000 Hollywood Blvd., Suite 750 N
Hollywood, FL 33021 • 954.987.0066

City of Fort Lauderdale Water Supply Facilities Work Plan 2025 Update

Draft

June 19, 2025

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List of Acronyms

Acronym	Definition
AAD	Annual Average Day
ASR	Aquifer Storage and Recovery
BCWPA	Broward County Water Preserve Areas
BWP	Broward Water Partnership
CAA	Capacity Allocation Agreement
C&SF	Central and Southern Florida
CIP	Community Investment Plan
CUSMP	Comprehensive Utility Strategic Master Plan
FAS	Floridan Aquifer System

List of Acronyms

Acronym	Definition
FDEP	Florida Department of Environmental Protection
F.S.	Florida Statutes
GPCD	Gallons per capita day
GTL	George T. Lohmeyer
HLD	High Level Disinfection
IX	Ion Exchange
LEC	Lower East Coast
LOSOM	Lake Okeechobee System Operating Manual
MFL	Minimum Flow and Minimum Water Level
MGD	Million Gallons per Day
MGY	Million Gallons per Year
MW	Monitoring Well
NIS	NatureScape Irrigation Service
NGVD-29	National Geodetic Vertical Datum of 1929
PFAM	Population Forecast and Allocation Model
PLCWC	Prospect Lake Clean Water Center
RO	Reverse Osmosis
RWA	Regional Water Availability
SFWMD	South Florida Water Management District
TAZ	Traffic Analysis Zones
TDS	Total Dissolved Solids
UFA	Upper Floridan Aquifer
USACE	United States Army Corps of Engineers
USGS	United States Geological Survey
WRDA	Water Resources Development Act

List of Acronyms

Acronym	Definition
WTP	Water Treatment Plant
WUP	Water Use Permit

Executive Summary

Introduction

This executive summary provides the key findings in the City of Fort Lauderdale Water Supply Facilities Work Plan 2025 Update. This document is an update to the City's year 2020 Water Supply Facilities Work Plan.

Background

Chapter 163, Part II, Florida Statutes (F.S.), requires local governments to prepare and adopt 10-Year Water Supply Facilities Work Plans into their comprehensive plans within 18 months after the South Florida Water Management District (SFWMD) approves a regional water supply plan or its update. The 2023-2024 Lower East Coast Water Supply Plan Update (2023-2024 LEC Plan Update) was adopted by the District's Governing Board on September 23, 2024. Therefore, local governments within the Lower East Coast Region are required to amend their comprehensive plans and include an updated 10-year Water Supply Facilities Work Plan and related planning elements by February 22, 2026.

The State of Florida requires that the 10-year Water Supply Facilities Work Plan 2025 Update address the development of traditional and alternative water supplies and management strategies, including conservation and reuse. The data and analyses, including population projections and water demands must span at least a 10-year planning period and be consistent with the 2023-2024 LEC Plan Update. The data presented herein are for the planning period through the year 2045.

Water Service Area

The City of Fort Lauderdale is the single largest purveyor of potable water in Broward County. The utility's service area encompasses a total area of 43 square miles, approximately one-tenth the total area of urban Broward County. The City's water service area includes customers within the following jurisdictions:

- City of Fort Lauderdale
- Broward County
- Town of Davie
- Town of Lauderdale by the Sea
- City of Lauderhill
- Village of Lazy Lake

- City of North Lauderdale
- City of Oakland Park
- Village of Sea Ranch Lakes
- City of Tamarac
- City of Wilton Manors
- Port Everglades

Figure ES-1 depicts the water service area along with key City water infrastructure.

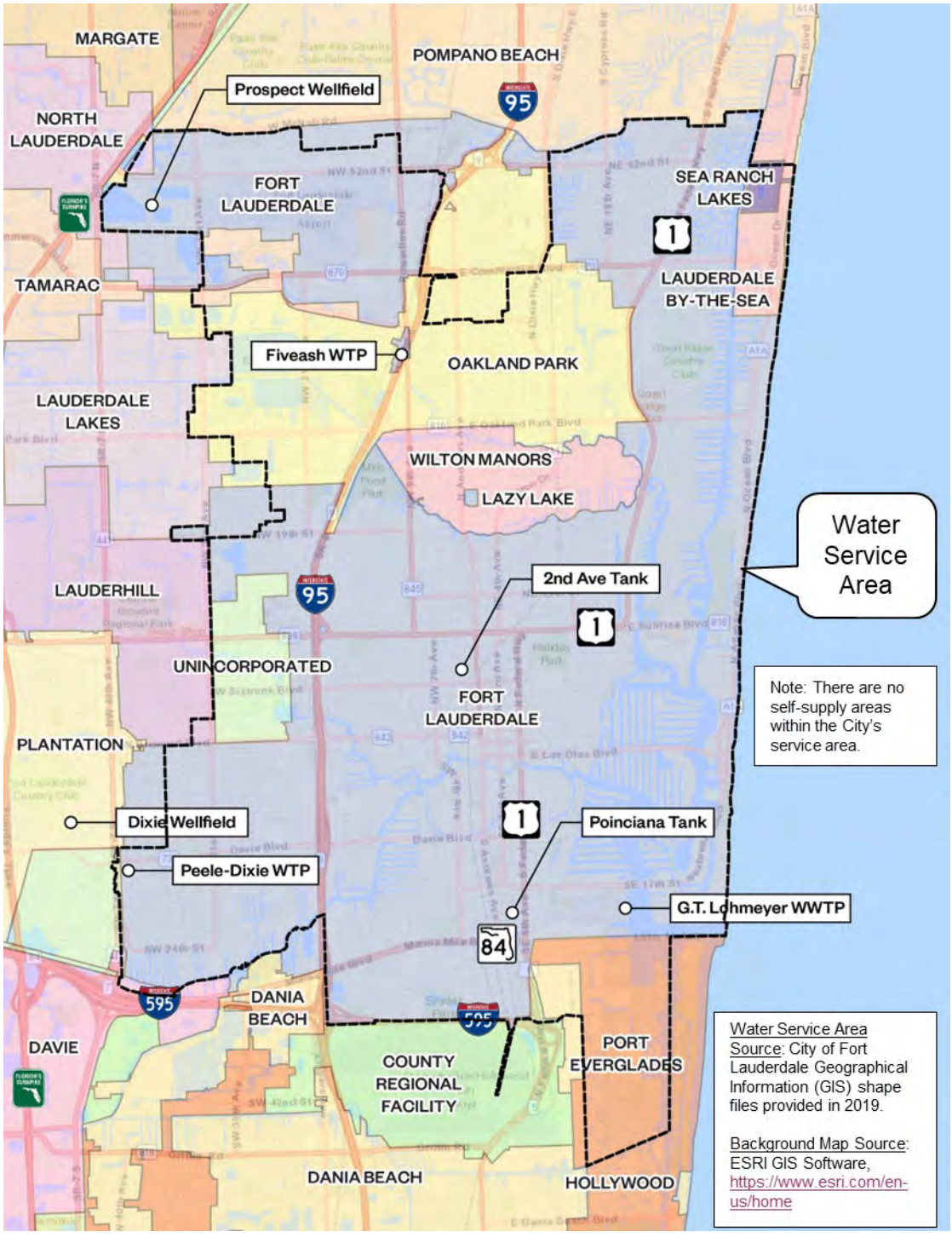

Figure ES-1: Water Service Area

Population Forecast

The source of the population forecast for the City of Fort Lauderdale water service area is from the SFWMD's Lower East Coast Water Supply Plan, 2023-2024 (SFWMD, 2024a). Figure ES-2 illustrates the population forecast.

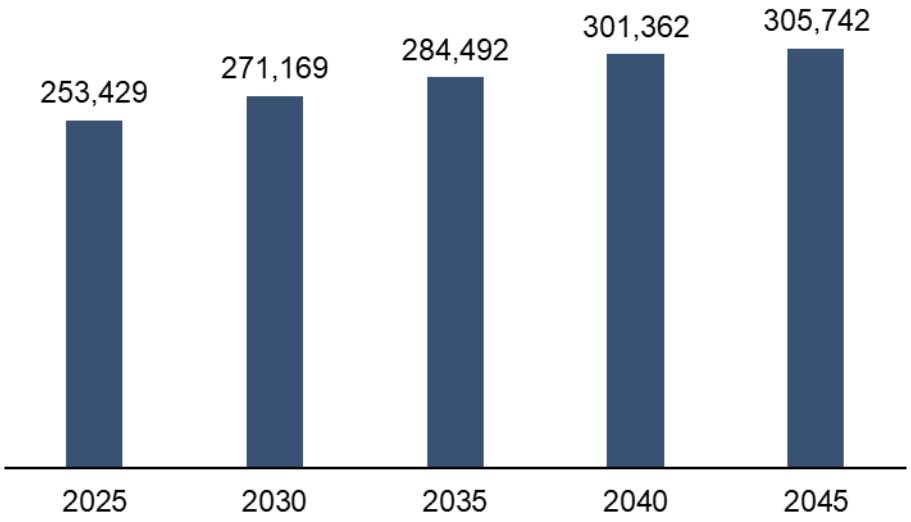

Figure ES-2: Water Service Area Population Forecast FY 2025 to FY 2045 in Five Year Increments

Water Supply

The City's traditional source of water has been the Biscayne Aquifer. The Biscayne Aquifer is a shallow, surficial aquifer that is highly porous, and transmissive. It is the traditional supply in Southeast Florida. The City's existing Fiveash and Peele-Dixie water treatment plants are designed to treat raw water from the Biscayne Aquifer. Peele-Dixie plant has space and power supply for the installation of additional infrastructure to treat water from the Floridan Aquifer System (FAS).

The City has also drilled two full-size FAS wells to collect data needed for planning purposes. Chloride and total dissolved solids (TDS) data from these wells are presented in Figure ES-3 (Hazen and Sawyer, 2008a). Based on modeling presented in the 2018 Lower East Coast Water Supply Plan Update, the TDS is estimated to increase to 8,000 mg/L by the year 2040 (SFWMD, 2018a). The Peele-Dixie Water Treatment Plant was designed with the capacity to incorporate reverse osmosis (RO) technology for treating water

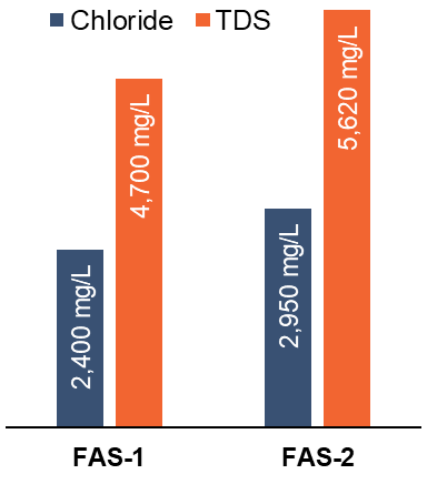

Figure ES-3: Floridan Aquifer Well Data

from the FAS. Space is available for 6-mgd of finished water capacity RO and electrical capacity to treat water with a TDS up to approximately 8,000-mg/L and chloride concentration of 4,300 mg/L (Hazen and Sawyer, 2008b).

The SFWMD issued the City's Water Use Permit (No. 06-00123-W) on January 12, 2021; the permit expires on December 27, 2065 (SFWMD, 2021). The permit limits withdrawal from the Biscayne Aquifer and the FAS as follows on Annual Average Day (AAD) basis:

- Annual Biscayne Aquifer Withdrawal Limit: 20,276 million gallons (MG); equivalent to 55.55 mgd[1]
- Annual FAS Withdrawal Limit: 4,111.8 million gallons (MG); equivalent to 11.27 mgd

Raw Water Demand Forecast

Figure ES-4 graphically illustrates the raw water demand forecast on an annual average day (AAD) basis for the City's water service area. The figure indicates that the City's water supply is sufficient to meet demand through fiscal year 2045.

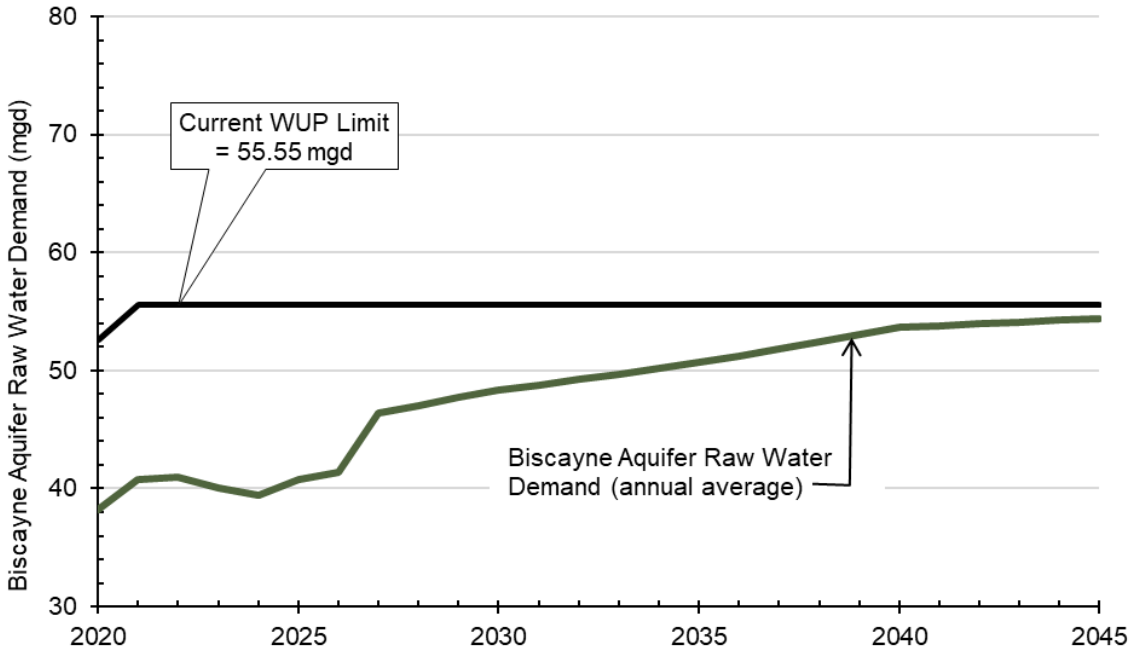

Figure ES-4: Raw Water Demand Forecast FY 2020 to FY 2045

[1] It is noted that the 55.55 mgd is composed to two parts. The first part is the base condition of 52.55 mgd. The second part is 3.0 mgd which is the allowable offset from the C-51 reservoir.

Finished Water Demand Forecast

Figure ES-5 illustrates the finished water demand forecast on an annual average day and maximum day basis for the City's water service area.

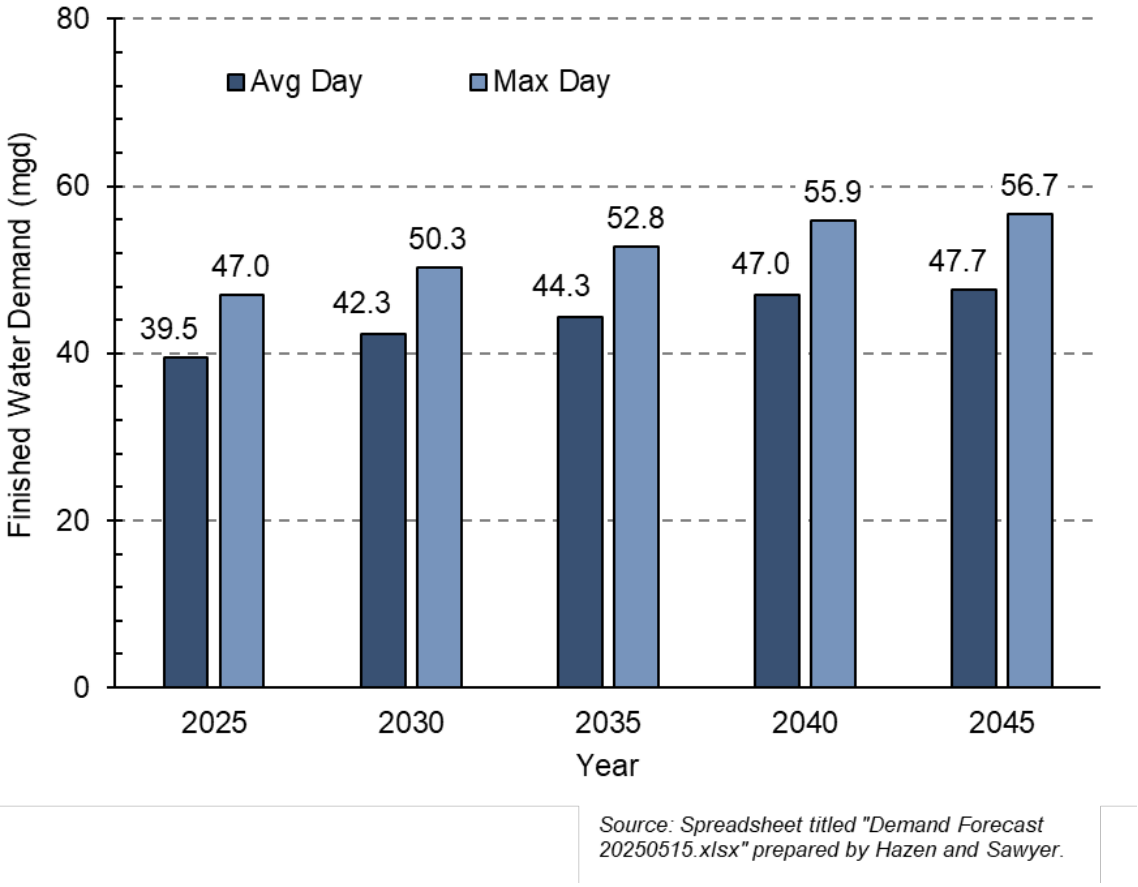

Figure ES-5: Finished Water Demand Forecast FY 2025 to FY 2045 in Five-Year Increments

Comprehensive Utility Strategic Master Plan (CUSMP) Update

The City's Comprehensive Utility Strategic Master Plan (CUSMP), completed by Reiss Engineering, Inc. in 2017, evaluates the water and wastewater systems and recommends 20-year improvements through 2035 (Reiss Engineering, 2017). An update of the CUSMP is planned for late 2027. The procurement of an engineering consultant is ongoing.

Fiveash WTP Replacement with PLCWC

On February 14, 2023, the City of Fort Lauderdale (City) executed an agreement with Prospect Lake Water, L.P. and Prospect Lake Holdings, L.P. and IDE PLCWC, Inc. to design, build, operate, and maintain a new 50 mgd finished water capacity water treatment plant (WTP) known as the "Prospect

Lake Clean Water Center" (PLCWC) located at the Prospect Wellfield. Prospect Lake Water, L.P. and Prospect Lake Holdings, L.P. and IDE PLCWC, Inc. is collectively known as "Project Company" (PC).

The PC designed the PLCWC to produce 50 mgd of finished water through a combination of nanofiltration (NF) and ion exchange (IX) treatment processes. The PLCWC has been designed with the capacity to produce 35 mgd (i.e., 70%) via NF and 15 mgd (i.e., 30%) via IX. The design provides the flexibility to operate various NF to IX ratios to achieve water quality goals and for maintenance flexibility. The forecast for raw water demand in this plan assumed a 70% NF to 30% IX ratio for PLCWC operation.

For reference purposes the raw water needed if the PLCWC is operating at full production capacity would be as follows[2]:

- 35 mgd of finished water production from NF would require 41.2 mgd of raw water
- 15 mgd of finished water production from IX would require 15.3 mgd of raw water
- Total raw water needed at full production is 56.5 mgd

The treatment process at the Fiveash WTP is at the end of their useful life. Once the PLCWC is constructed, the PC and the City will transition to the operation of the PLCWC and shutdown of the Fiveash WTP's treatment processes. It is anticipated that the transition of treatment from the Fiveash WTP to the PLCWC will begin in late 2026. The Fiveash WTP will be repurposed as a storage and high service pumping facility.

[2] These numbers will vary based on the actual NF to IX ratio the PLCWC is operated at. The above assumed 70% NF to 30% IX ratio.

Alternative Water Supply Plan

A Biscayne aquifer water supply shortfall is not predicted over the next 20 years. If water demand increases more than is forecasted, the City has created planning documents to implement an alternative water supply via reverse osmosis (RO) treatment of the Floridan aquifer. The planning documents are illustrated in Figure ES-6 are titled "Floridan Aquifer Conceptual Plan for the Dixie Wellfield" (Hazen and Sawyer, 2008a) and "Peele-Dixie Reverse Osmosis Basis of Design Report" (Hazen and Sawyer, 2008b). The City reserves the right to alter this plan based on the findings of ongoing City studies and future CUSMP updates. Additionally, this plan may be altered as additional data becomes available regarding the risks presented by unexpected changes to water quality in the Floridan aquifer.

Figure ES-6: Alternative Water Supply Planning Documents

1. Introduction

1.1 Overview

This section provides the following:

- Description of the scope of this report.
- A summary of the statutory requirements.
- An overview of the City of Fort Lauderdale's water service area.
- A summary of existing water supply agreements.
- Location of the City's major water system assets.
- A general description of how water service is provided to the community.

1.2 Scope of This Report

The City of Fort Lauderdale's 10-year Water Supply Facilities Work Plan 2025 Update identifies water supply sources, availability and facilities needed to serve existing and new development within the local government's jurisdiction. Chapter 163, Part II, Florida Statutes (F.S.), requires local governments to prepare and adopt 10-Year Water Supply Facilities Work Plans into their comprehensive plans within 18 months after the South Florida Water Management District (District) approves a regional water supply plan or its update.

The 2023–2024 Lower East Coast Water Supply Plan Update (2024 LEC Plan Update) was adopted by the District's Governing Board on September 23, 2024. Therefore, local governments within the Lower East Coast Region are required to amend their comprehensive plans and include an updated 10-year Water Supply Facilities Work Plan and related planning elements by February 22, 2026.

The State of Florida requires that the City's 10-year Water Supply Facilities Work Plan 2025 Update address the development of traditional and alternative water supplies and management strategies, including conservation and reuse. The data and analyses, including population projections, water demands, and service areas must cover at least a 10-year planning period and be consistent with the 2023-2024 LEC Plan Update and the updated comprehensive plan amendment.

The City of Fort Lauderdale's 10-year Water Supply Facilities Work Plan 2025 Update is divided into eight sections:

1. Introduction
2. Summary of Existing Water Infrastructure
3. Water Demand Projections

4. Alternative Water Supply Plan
5. Capital Improvements Program
6. Regional Issues
7. Goals, Objections and Policies
8. References

1.3 Location Map

The City of Fort Lauderdale is located on the southeastern coast of Florida within Broward County. Figure 1-1 illustrates a location map of the City.

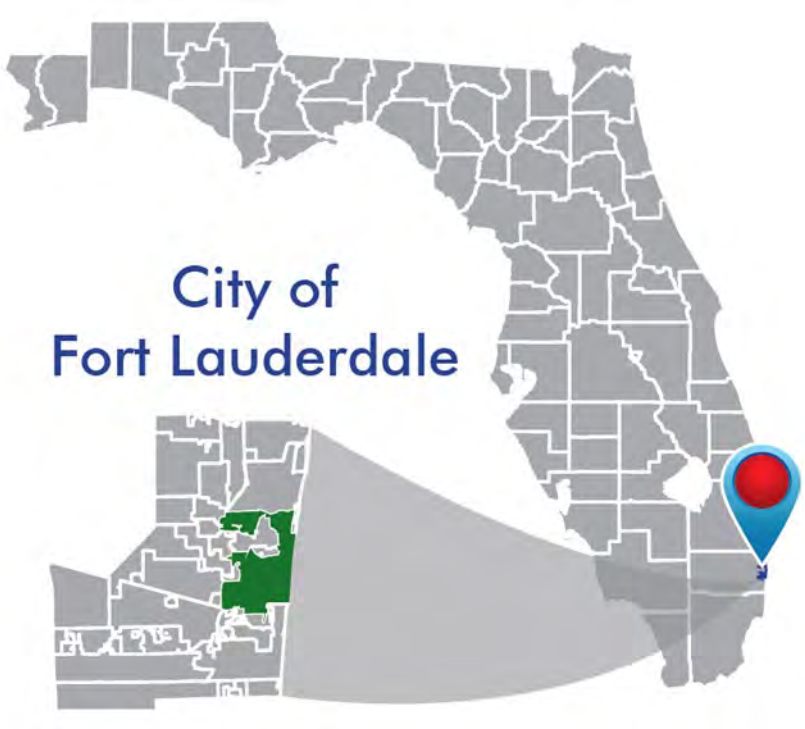

Figure 1-1: Fort Lauderdale Location Map

Source: City of Fort Lauderdale

1.4 Statutory History

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 enacted during the 2005 legislative session, strengthened the statutory links between the regional water supply plans (RWSPs) prepared by water management districts and the Comprehensive Plans prepared by local governments through changes to Chapters 163 and 373, F.S. These changes improved coordination between local land use planning and regional water supply planning.

1.5 Statutory Requirements

The City of Fort Lauderdale has considered the following statutory provisions in updates to this Water Supply Facilities Work Plan.

1. Coordinate appropriate aspects of its comprehensive plan with the 2023-2024 LEC Plan Update [163.3177(4) (a), F.S.].

2. Ensure the future land use plan is based upon availability of adequate water supplies and public facilities and services [s.163.3177 (6) (a), F.S.]. Data and analysis demonstrating that adequate water supplies and associated public facilities will be available to meet projected growth demands must accompany all proposed Future Land Use Map amendments submitted for review.

3. Ensure that adequate water supplies and potable water facilities are available to serve new development no later than the issuance by the local government of a certificate of occupancy or its functional equivalent and consult with the applicable water supplier to determine whether adequate water supplies will be available to serve the development by the anticipated issuance date of the certificate of occupancy [s.163.3180 (2), F.S.].

4. Revision of the related comprehensive planning elements within 18 months after the water management district approves an updated regional water supply plan, to:

5. Identify and incorporate the alternative water supply project(s) selected by the local government from projects identified in the 2023-2024 LEC Plan Update, or alternative project(s) proposed by the local government under s. 373.709(8)(b), F.S. [s. 163.3177(6)(c), F.S.];

6. Identify the traditional and alternative water supply projects and the conservation and reuse programs necessary to meet water needs identified in the 2023-2024 LEC Plan Update [s. 163.3177(6)(c)4, F.S.]; and

    a. Update the 10-year Water Supply Facilities Work Plan for at least a 10-year planning period for constructing the public, private, and regional water supply facilities identified in the element as necessary to serve existing and new development [s. 163.3177(6)(c)3, F.S.].

7. Revise the Five-Year Schedule of Capital Improvements to include water supply, reuse, and conservation projects and programs to be implemented during the five-year period [s. 163.3177(3)(a)4, F.S.].

8. To the extent necessary to maintain internal consistency after making changes described in Paragraph 1 through 5 above, revise the Conservation Element to assess projected water needs and sources for at least a 10-year planning period, considering the 2023–2024 LEC Plan Update, as well as applicable consumptive use permit(s) [s.163.3177 (6) (d), F.S.]. The plan must address the water supply sources necessary to meet and achieve the existing and projected water use demand for the established planning period, considering the applicable regional water supply plan [s.163.3167(9), F.S.].

9. To the extent necessary to maintain internal consistency after making changes described in Paragraphs 1 through 5 above, revise the Intergovernmental Coordination Element to ensure coordination of the comprehensive plan with the 2023–2024 LEC Plan Update [s.163.3177 (6) (h) 1., F.S.].

10. Evaluation and Appraisal Report are required once every seven years. Local governments are encouraged to comprehensively evaluate, and as necessary, update comprehensive plans to reflect changes in local conditions. The evaluation could address the extent to which the local government has implemented the need to update their 10-year Water Supply Facilities Work Plan, including the development of alternative water supplies, and determine whether the identified alternative water supply projects, traditional water supply projects, and conservation and reuse programs are meeting local water use demands [s.163.3191 (3), F.S.].

1.6 Fort Lauderdale's Water Service Area

1.6.1 Introduction

The City of Fort Lauderdale is the single largest purveyor of potable water in Broward County. The utility's service area encompasses a total area of 43 square miles, approximately one-tenth the total area of urban Broward County. Retail customers include residential, commercial, and industrial properties within the City of Fort Lauderdale, Unincorporated Broward County, Lazy Lake, and a portion of Lauderdale-by-the-Sea. The utility also maintains wholesale agreements for potable water supply with Cities of Oakland Park, Wilton Manors, and Tamarac; Town of Davie and Port Everglades.

1.6.2 Water Service Area Map

Figure 1-2 depicts the water service area (inclusive of all retail and wholesale customers). Figure 1-2 also depicts the location of key City assets including the following: 1) Dixie Wellfield; 2) Prospect Wellfield; 3) Peele-Dixie Water Treatment Plant; 4) Fiveash Water Treatment Plant; 5) 2nd Avenue Water Tank and

Pump Station; 6) Poinciana Park Water Tank and Pump Station; and 7) George T. Lohmeyer Wastewater Treatment Plant.

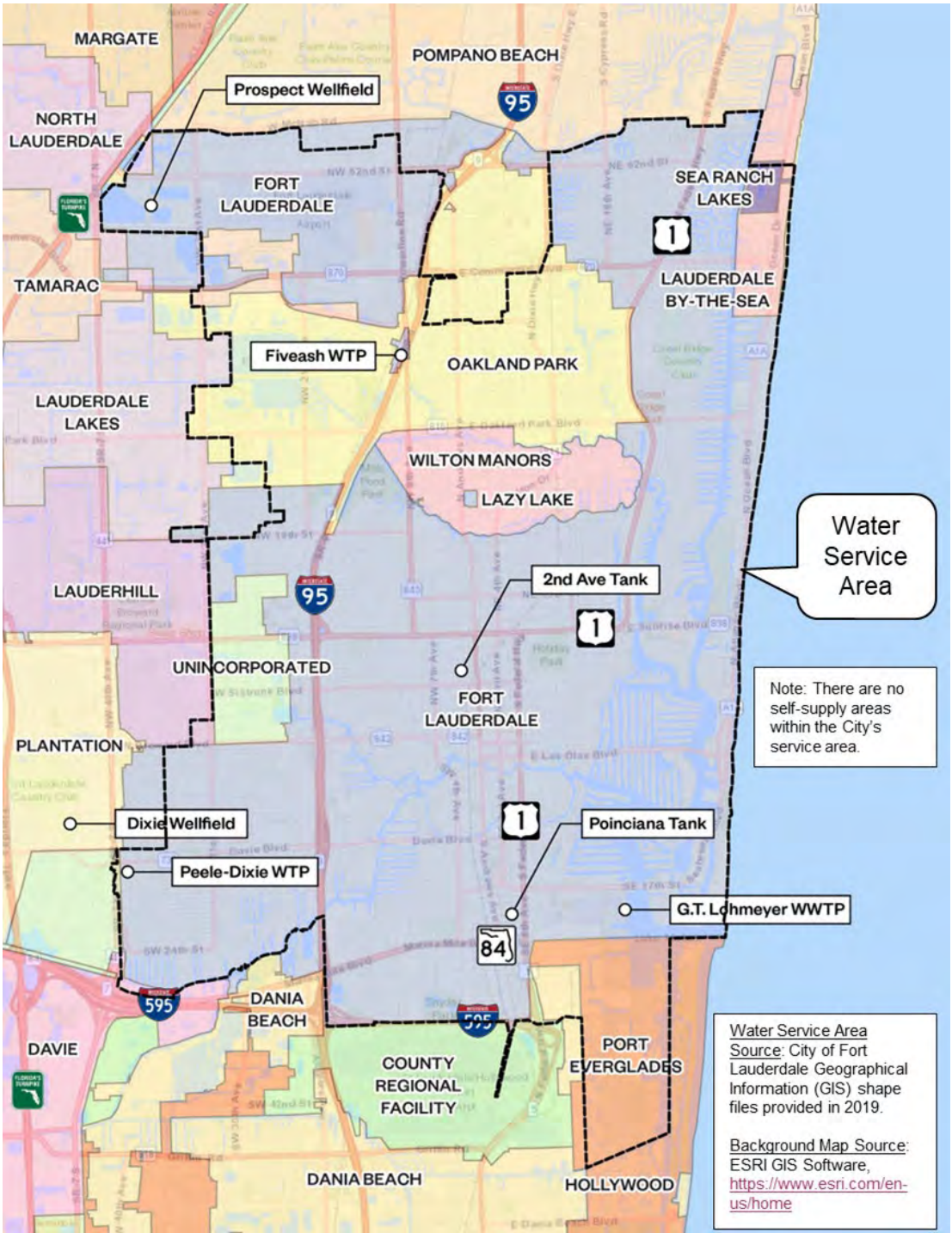

Figure 1-2: Water Service Area

1.6.3 Areas of Self-Supply

There are no existing areas within the City of Fort Lauderdale's water service area that self-supply potable water. There are no plans for future domestic self-supplied systems.

1.7 Summary of Existing Water Supply Agreements

Table 1-1 summarizes the City of Fort Lauderdale's existing agreements to supply drinking water to adjacent municipalities.

Table 1-1: Water Supply Agreements

Utility	Term (Years)	Start Date	Expiration Date
City of Oakland Park	25 Years	10/1/2022	9/25/2047
City of Tamarac	5 Years	10/18/2024	10/17/2029
City of Wilton Manors	25 Years	9/7/2005	9/1/2030
Port Everglades	30 Years	10/1/2002	9/23/2032
Town of Davie	25 Years	11/1/2022	10/26/2047
North Lauderdale	Not Applicable	2/6/1990	Until North Lauderdale does not require the water
Sea Ranch Lakes	The City of Fort Lauderdale purchased the Sea Ranch Lakes water distribution system in 1965.		
Lauderdale by the Sea	The City of Fort Lauderdale purchased the Lauderdale by the Sea water distribution system in 2008.		

1.8 General Description of How Water Service is Provided to the Community

The City of Fort Lauderdale owns two wellfields: the Dixie Wellfield and Prospect Wellfield. These wellfields supply Biscayne aquifer water to the Peele-Dixie Water Treatment Plant (WTP) and the Fiveash WTP respectively. The WTPs pump the finished water into the distribution system. Section 2 of this report provides a detailed summary of the City's existing water infrastructure.

1.9 Sector Plans

This section only applies to local governments that have adopted a Sector Plan consistent with the requirements of Section 163.3245, F.S. This section is not applicable to the City of Fort Lauderdale.

2. Summary of Existing Water Infrastructure

2.1 Introduction

This section provides the following:

- Summary of Existing Water Treatment Facilities
- Summary of Existing Wastewater Treatment Facilities

2.2 Summary of Existing Water Treatment Facilities

2.2.1 Water Use Permit

The City of Fort Lauderdale obtains all its raw water supply from the surficial Biscayne Aquifer system via two active wellfields. These wellfields, which are commonly known as the Dixie Wellfield and the Prospect Wellfield, operate independently of each other, the former serving the Peele-Dixie WTP and the latter serving the Fiveash WTP. Both wellfields are permitted by the South Florida Water Management District under Water Use Permit (WUP) No. 06-00123-W. The permit was issued January 12, 2021 with an expiration date of December 27, 2065.

2.2.2 Raw Water Allocation

The WUP allows withdrawal from the Biscayne aquifer and Floridan aquifer. Additionally, the City purchased a 3.0 mgd offset from Palm Beach Aggregates LLC for C-51 Reservoir Phase 1. The City currently only uses its Biscayne aquifer allocation and does not consume water from the Floridan aquifer or the C-51 Reservoir Phase 1.

Allocation limits in the WUP 06-00123-W are as follows:

2.2.2.1 Biscayne Aquifer Withdrawal Limits - Before C51 Startup

Biscayne Aquifer Annual Withdrawal: 19,181 million gallons per year

Biscayne Aquifer Maximum Monthly Withdrawal: 1,726.29 million gallons per month

Dixie Wellfield Biscayne Annual Withdrawal: 5,475 million gallons per year

Dixie Wellfield Biscayne Maximum Monthly Withdrawal: 492.75 million gallons per month

Prospect Wellfield Biscayne Annual Withdrawal: 15,853 million gallons per year

Prospect Wellfield Biscayne Maximum Monthly Withdrawal: 1,426.77 million gallons per month

2.2.2.2 Biscayne Aquifer Withdrawal Limits - After C51 Startup

Biscayne Aquifer Annual Withdrawal: 20,276 million gallons per year

Biscayne Aquifer Maximum Monthly Withdrawal: 1,824.84 million gallons per month

Dixie Wellfield Biscayne Annual Withdrawal: 5,475 million gallons per year

Dixie Wellfield Biscayne Maximum Monthly Withdrawal: 492.75 million gallons per month

Prospect Wellfield Biscayne Annual Withdrawal: 16,948 million gallons per year

Prospect Wellfield Biscayne Maximum Monthly Withdrawal: 1,525.32 million gallons

2.2.2.3 Floridan Aquifer Withdrawal Limits

Floridan Aquifer Annual Withdrawal: 4,111.8 million gallons per year

Floridan Aquifer Maximum Monthly Withdrawal: 370.1 million gallons per month

2.2.2.4 Withdrawal from the Biscayne Aquifer Offset from the C-51 Reservoir Phase 1

C-51 Reservoir Phase 1 Annual Withdrawal: 1,095 million gallons per year

C-51 Reservoir Phase 1 Maximum Monthly Withdrawal: 98.65 million gallons per month

SFWMD began accepting requests for C-51 Reservoir Phase 1 offsets in April 2024 for deliveries in May 2024. To date the City has not requested C-51 Reservoir Phase 1 offsets.

2.2.3 When Will the City Need Withdrawal from the Biscayne Aquifer Offset from the C-51 Reservoir Phase 1?

The City has been coordinating with the South Florida Water Management District for C-51 Reservoir Phase 1 supply since April 2024. To date the City has not requested supply via offsets from the C-51 Reservoir Phase 1.

The City is currently constructing the “Prospect Lake Clean Water Center” (PLCWC). The PLCWC will replace treatment at the Fiveash WTP starting in late 2026. When this transition is fully accomplished, the City’s Biscayne demand will increase due to the transition of treatment technology. The City will likely need to begin utilizing a portion of its C-51 Reservoir Phase 1 offset in 2027 to meet its maximum month demands.

2.2.4 Floridan Aquifer Test Wells

In 2007, the City completed the construction of two Floridan Aquifer test wells at the Dixie Wellfield site under SFWMD Water Well Construction Permit #SF030907A issued March 30, 2007. These wells are currently idle and not equipped with pumping facilities.

2.2.5 Existing Water Treatment Plants Finished Water Production Capacity

The City's water infrastructure is permitted by the Florida Department of Environmental Protection (FDEP). FDEP has assigned PWS Number 4060486 to this infrastructure. The City currently owns two WTPs. Table 2-1 presents the finished water design capacity and treatment technology for each existing City WTP.

Table 2-1: Existing Water Treatment Plants

WTP Name	Finished Water Design Capacity (mgd)	Technology	Location
Peele-Dixie WTP	12	Nanofiltration	1500 South State Road 7 Fort Lauderdale, Florida, 33312
Fiveash WTP	70	Lime Softening and Filtration	4321 N.W. 9th Avenue Fort Lauderdale, Florida 33309

2.2.6 Fiveash WTP Replacement with PLCWC

On February 14, 2023, the City of Fort Lauderdale (City) executed an agreement with Prospect Lake Water, L.P. and Prospect Lake Holdings, L.P. and IDE PLCWC, Inc. to design, build, operate, and maintain a new 50 mgd finished water capacity water treatment plant (WTP) known as the "Prospect Lake Clean Water Center" (PLCWC) located at the Prospect Wellfield. Prospect Lake Water, L.P. and Prospect Lake Holdings, L.P. and IDE PLCWC, Inc. is collectively known as "Project Company" (PC).

The PLCWC is being constructed at the City's Prospect Wellfield. The PC designed the PLCWC to produce 50 mgd of finished water through a combination of nanofiltration and ion exchange treatment processes. Table 2-2 presents the finished water production capacity and treatment technology for the PLCWC.

Table 2-2: PLCWC Treatment Technology and Capacity

Technology	Finished Water Production Capacity (mgd)	Location
Nanofiltration	35	5900 Hawkins Road Fort Lauderdale, FL 33309
Ion Exchange	15	
Total	**50**	

PC estimates that the PLCWC will be in service in late 2026. Figure 2-1 illustrates the location of the PLCWC along with the existing WTPs.

The treatment process at the Fiveash WTP is at the end of their useful life. Once the PLCWC is constructed, the PC and the City will transition to the operation of the PLCWC and shutdown of the Fiveash WTP's treatment processes. It is anticipated that the transition of treatment from the Fiveash WTP to the PLCWC will begin in late 2026. The Fiveash WTP will be re-purposed as a storage and high service pumping facility.

Figure 2-1: Location Map of Existing and Proposed Fort Lauderdale Water Treatment Plants

2.2.7 Finished Water Production Capacity Following Transition to the PLCWC

It is anticipated that the transition from treatment at the Fiveash WTP to treatment at the PLCWC would be complete by 2027. Table 2-3 summarizes the City's finished water production capacity at the end of that transition period.

Table 2-3: Finished Water Production Capacity in 2027

WTP Name	Finished Water Permitted Capacity (mgd)	Technology	Location
Peele-Dixie WTP	12	Nanofiltration	1500 South State Road 7 Fort Lauderdale, Florida, 33312
PLCWC	35	Nanofiltration	5900 Hawkins Road Fort Lauderdale, FL 33309
	15	Ion Exchange	

Total system finished water production capacity after completion of the transition from the Fiveash WTP to the PLCWC will be 62 mgd.

2.2.8 Prospect Wellfield

The Prospect Wellfield is illustrated in Figure 2-2. The PLCWC is currently being constructed at this site. The Prospect Wellfield has 28 active production wells (Well Numbers 25 through 28, 30 through 41, 43 through 49 and 50 through 54) that were constructed from 1969 through 2006. These wells withdraw water from the Biscayne Aquifer. The wells have pumping capacities of approximately 2,100 gallons per minute (gpm) each, which equates to a total wellfield capacity of approximately 84 million gallons per day.

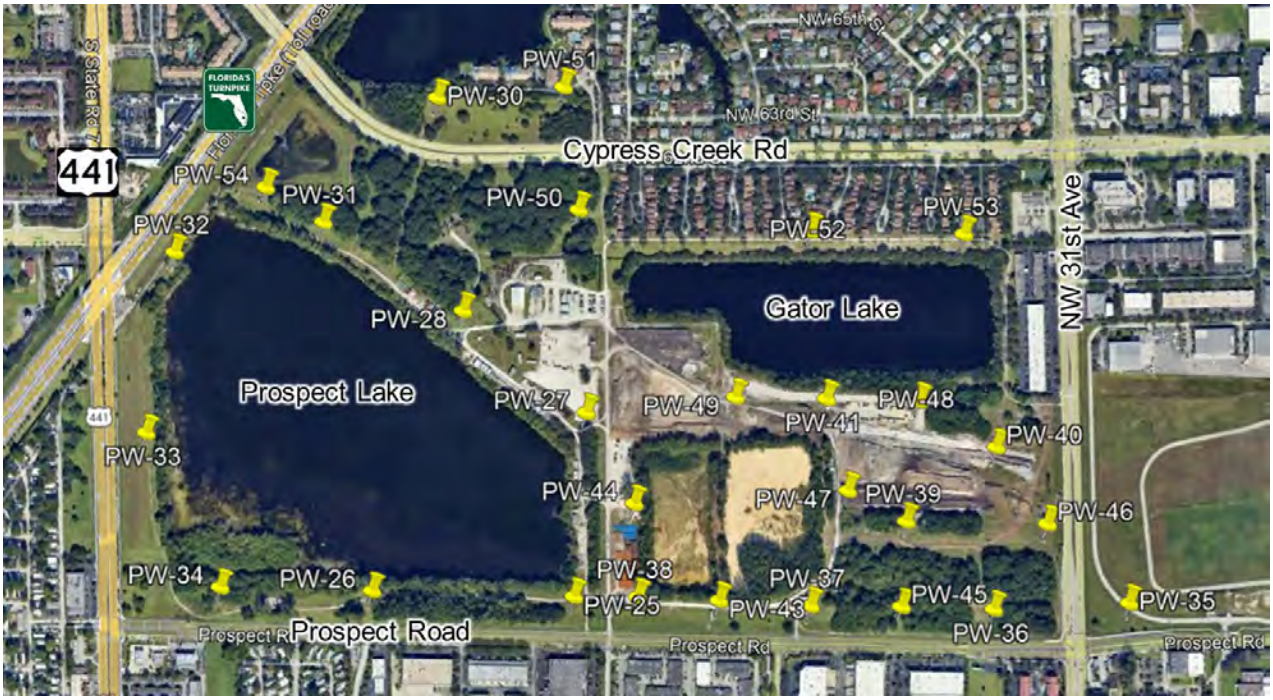

Figure 2-2: Prospect Wellfield

2.2.9 Dixie Wellfield

The Dixie Wellfield is illustrated in Figure 2-3. The Dixie Wellfield includes eight Biscayne aquifer wells located within the Fort Lauderdale County Club golf course. The yellow icons indicate the location of the Biscayne wells. The Biscayne wells and pumping equipment were constructed in 2008. Each well has an approximate capacity of 2.5 mgd. The total capacity of all wells is approximately 20 million gallons per day.

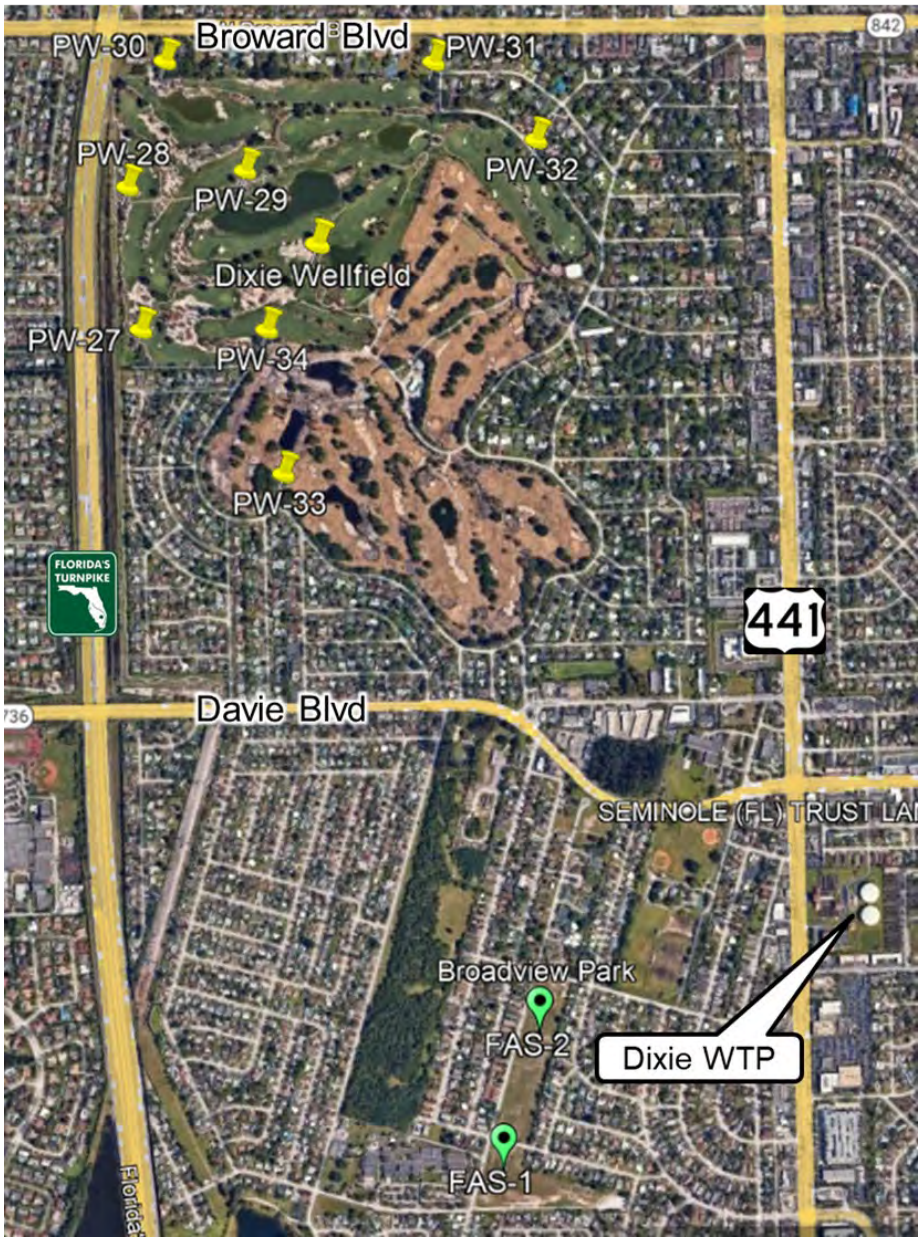

Figure 2-3: Dixie Wellfield

In 2007, the City completed the construction of two Floridan aquifer test wells at the Dixie Wellfield site. The objective of these wells was to gather water quality and drawdown data for planning the implementation of reverse osmosis treatment at the Peele-Dixie Water Treatment Plant (WTP). The Floridan wells are designated FAS-1 and FAS-2, represented by green icons in the figure above.

2.2.10 Distribution System Water Storage Facilities

The City has two distribution system storage sites. These sites are known as the Poinciana Park Water Tank and Pump Station and the Northwest Second Avenue Water Tank and Pump Station. Figure 2-4 illustrates the location of these tanks.

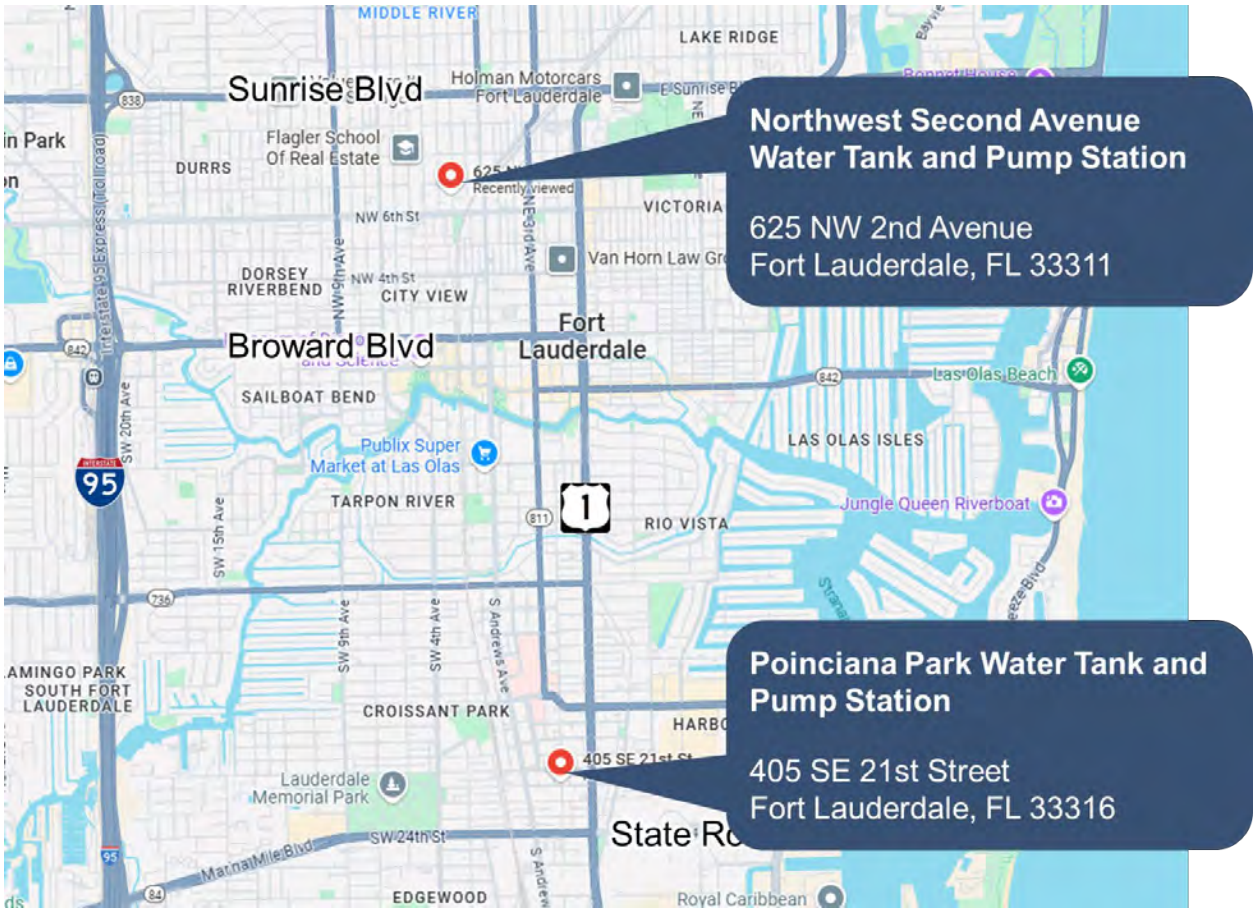

Figure 2-4: Storage Tanks Location Map

Key information for the tanks and pump stations is presented in Table 2-4.

Table 2-4: Key Storage Tank and Pump Station Information

Parameter	Value
Poinciana Park Water Tank and Pump Station	
• Address	405 SE 21st Street Fort Lauderdale, FL 33316
• Nominal Storage Capacity	2.0 million gallons
• Available Storage Capacity	1.6 million gallons[3]
• Pump No. 1 Design Capacity	2,350 gpm at 190 feet of head
• Pump No. 2 Design Capacity	3,500 gpm at 130 feet of head
Northwest Second Avenue Water Tank and Pump Station	
• Address	625 NW 2nd Avenue Fort Lauderdale, FL 33311
• Nominal Storage Capacity	1.0 million gallons
• Available Storage Capacity	1.0 million gallons
• Pump No. 1 Design Capacity	4,300 gpm at 115 feet of head

2.2.11 Raw Water Aquifer Storage and Recovery

The City's existing Aquifer Storage and Recovery (ASR) well is located at the Fiveash WTP. The ASR well was constructed in 1998. Performance testing to date has shown less than anticipated water recovery rates. The ASR well currently has a "no flow" permit. The City plans to plug and abandon the ASR well in approximately 2027.

2.2.12 Finished Water Distribution System

The City of Fort Lauderdale's water distribution system consists of over 770 miles of 2 to 54-inch diameter water mains that convey the finished water from the treatment facilities to the individual customers. In general, the larger diameter transmission mains radiate from the treatment facilities and decrease in size as they extend throughout the service area. The major transmission mains travel east from the WTPs to the populated portions of the service area and the two systems are interconnected along major north-south avenues.

2.2.13 Raw Water Import

The City neither buys nor sells raw water. The City does not import finished water. The City does sell potable water to the customers indicated in the water service area map.

[3] The usable storage volume is limited to 1.6 million gallons to ensure that the net positive suction head (NPSH) available exceeds the required NPSH to prevent pump cavitation at low tank water level.

2.2.14 Areas of Self-Supply

There are no existing areas within the City of Fort Lauderdale's water service area that self-supply potable water. There are no plans for future domestic self-supplied systems.

2.2.15 Distribution System Interconnects

The City of Fort Lauderdale maintains distribution system interconnects with other utilities. Table 2-5 identifies the location and size of each interconnect. The isolation valves on all interconnects are closed.

Table 2-5: City of Fort Lauderdale Water System Interconnects

Item	Area Serviced	Location	Size	Meter	Status
1	Broward County	NW 9 AVE / 62 ST	10"	No	Operable
2	Broward County	SW 35 AVE / W Broward BLVD	10"	No	Operable
3	Broward County	SW 34 ST / 9 AVE	8"	No	Operable
4	Broward County	SW 34 ST/ 2 AVE	6"	005014099	Operable
5	Broward County	SW 20 ST / SR 7 (Broadview)	6"	004237769	Operable
6	Broward County	NW 24 AVE / 19 ST	6"	No	Interconnect is capped and will be removed
7	Plantation	Peters RD / SR 7	8"	No	Operable
8	Pompano	5450 N Ocean DR	10"	No	Operable
9	Pompano	NE 68 ST/ 20 TERR	6"	No	Operable
10	Pompano	McNab & Lyons (NW 31 AVE)	12"	No	Operable

Source: City of Fort Lauderdale spreadsheet titled "Emergency Interconnects.xlsx" provided to Hazen on February 14, 2019.

2.2.16 Treatment Losses

Figure 2-5 depicts the system treatment losses from the years 2020 to 2024. Treatment losses, for the purpose of this report, is defined as the difference between raw water pumped and finished water pumped. The terminology "treatment loss" may be misleading since the water is not actually "lost" but is repurposed for ground water recharge or other beneficial use.

Treatment losses vary with the efficiency of the treatment technology utilized. The treatment loss for the Fiveash WTP, which uses lime softening technology, is roughly one to three percent of the raw water pumped. The treatment loss for the Peele-Dixie WTP, which uses nanofiltration softening technology, is roughly 15 percent of the raw water pumped.

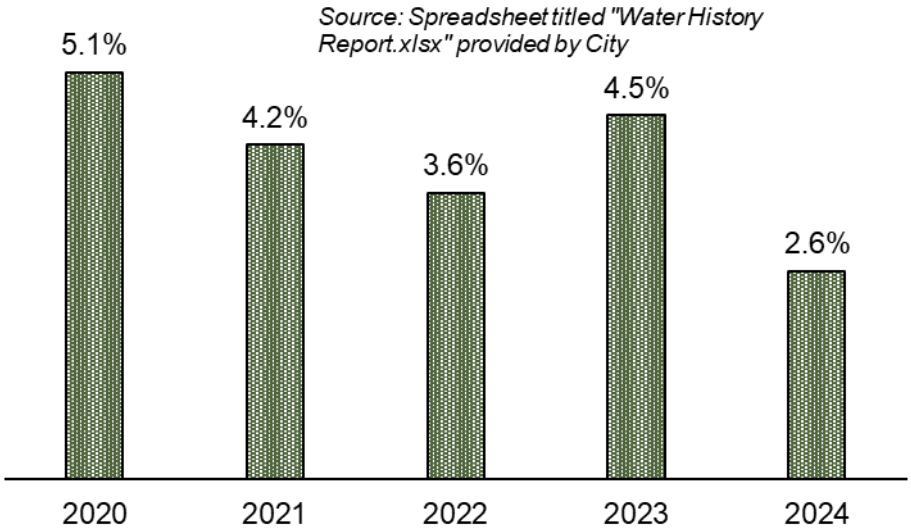

Figure 2-5: Annual Treatment Loss Summary FY 2020 to FY 2024

2.2.17 Distribution System Losses

Figure 2-6 depicts the distribution system losses from the years 2020 to 2024. Authorized unmetered water consumption at the WTPs and the distribution system are included in the distribution system loss shown in the figure. City staff believe this consumption is significant. However, no data on unmetered water consumption within the WTPs or in the distribution system are available. Hence, the actual distribution system loss is believed to be lower than that indicated.

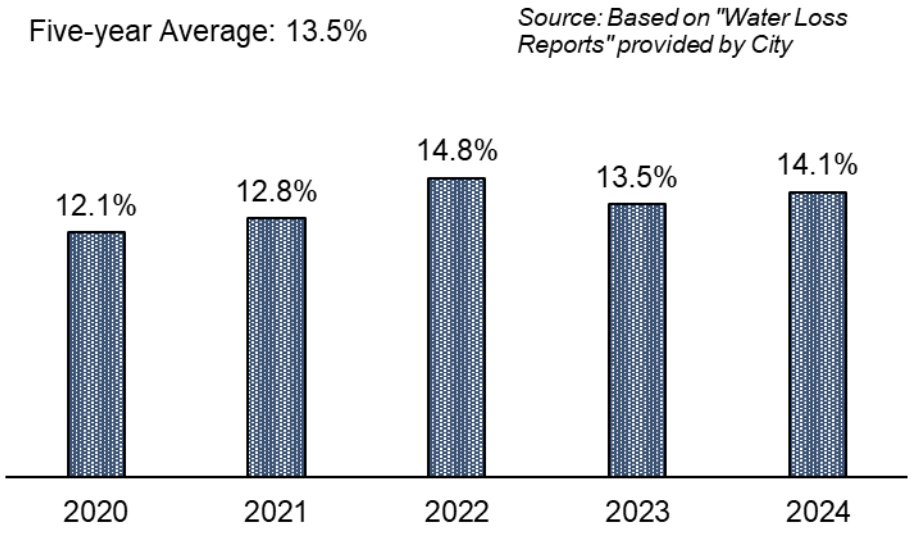

Figure 2-6: Distribution System Loss Summary FY 2020 to FY 2024

2.2.18 Outstanding Compliance Issues

There are no outstanding regulatory compliance issues related to the City of Fort Lauderdale's water facilities.

2.3 Key Ongoing Water System Improvements

2.3.1 Introduction

This section briefly summarizes the ongoing water system improvements.

2.3.2 Prospect Lake Clean Water Center

The condition of the Fiveash WTP and Prospect Wellfield (Wellfield) was assessed as part of the Comprehensive Utility Strategic Master Plan, CUSMP (Reiss Engineering, 2017). The condition of the Fiveash WTP was again assessed in the report titled "Granular Activated Carbon Pilot and Plant Evaluation at the Fiveash Water Plant" (Carollo, 2019); herein after referred to as the "Carollo Report". These assessments identified the need for significant renewal, replacement, and rehabilitation of all aspects of the WTP. The CUSMP noted that consideration should be given to replacing the facility with a new facility equipped with the latest treatment and equipment technologies. The Carollo Report recommended replacing the Fiveash WTP with a new 50 MGD (finished water capacity) treatment plant at the Prospect Wellfield.

On February 14, 2023, the City of Fort Lauderdale (City) entered into an agreement with Prospect Lake Water, L.P. (in its capacity as the Project Company), Prospect Lake Holdings, L.P. and IDE PLCWC, Inc. (in their capacity as Equity Providers) to Design, Build, Operate and Maintain a new 50 MGD (finished water capacity) water treatment facility for the City (Prospect Lake Clean Water Center (PLCWC)). The Project Company contracted Kiewit Water Facilities Florida Co. (Kiewit) to serve as the Design-Build Contractor for the PLCWC. Kiewit has contracted IDE Technologies as the Water Treatment Process Design Engineer-of-Record (EOR) and Process Equipment Supplier. IDE Technologies contracted to partner with C.A.P. Engineering, Inc. to serve as their Process EOR in Florida. Kiewit Engineering Group Inc., as subcontractor to Kiewit Water Facilities Florida Co., is the Balance of Plant EOR for designing the infrastructure work supporting the Water Treatment Process including site civil, yard piping, structural, electrical, architectural, SCADA, deep injection wells, and backup generators.

The PLCWC is currently under construction. The Project Company estimates that the PLCWC will be in service in late 2026. Figure 2-7 illustrates the location of the PLCWC relative to the Fiveash WTP.

Figure 2-7: Location Map of PLCWC

Once the PLCWC is constructed, the City will transition to operation of the PLCWC and shutdown of the Fiveash WTP's treatment processes. The Fiveash WTP will be re-purposed as a storage and high service pumping facility.

2.3.3 Conveyance of Finished Water from PLCWC to the Fiveash WTP

The City is currently constructing a 48-inch diameter pipeline from the PLCWC to the Fiveash WTP. This pipeline will convey finished water. The finished water will be stored at Fiveash and pumped into the distribution system via the existing high service pumps. Figure 2-8 illustrates the pipeline route. This pipeline will be placed into service at the same time as the PLCWC.

It is noted that the City is planning future capital projects to potentially repurpose the existing raw water conveyance piping from Prospect Wellfield to Fiveash to provide a redundant pipeline for conveyance of PLCWC finished water.

Figure 2-8: Finished Water Pipeline from PLCWC to Fiveash

2.3.4 Proposed High Service Pump Station and Storage Tank at Fiveash

Once the PLCWC is constructed, the City will transition to operation of the PLCWC and shutdown of the Fiveash WTP's treatment processes. The Fiveash WTP will be repurposed as a storage and high service pumping facility. The City is currently designing a new water tank and a high service pump station at the Fiveash WTP. The City reports that the proposed high service pump station will include offices, SCADA servers, and maintenance storage. Figure 2-9 conceptually illustrates the location of these improvements. These improvements were defined in a report titled "Basis

Figure 2-9: Planned Storage and Pumping Improvements

of Design Report High Service Pumping Station" (Arcadis, 2024). Construction of the improvements is anticipated to be completed by 2028.

2.3.5 CUSMP Projects

The City completed its Comprehensive Utility Strategic Master Plan (CUSMP) in 2017 (Reiss Engineering, 2017). Each fiscal year, the City incorporates recommendations from the CUSMP for future year utility projects into the City's Community Investment Plan through the budgeting process. An update of the CUSMP is planned for late 2027. The procurement of an engineering consultant is ongoing.

2.4 Summary of Existing Wastewater Treatment Facilities

2.4.1 Introduction

The City owns and operates the George T. Lohmeyer (GTL) Wastewater Treatment Plant (WWTP). The plant is permitted by FDEP Permit Number FLA041378. The FDEP permit was updated on January 16, 2024 to increase the permitted capacity of the facility from 56.6 million gallons per day (MGD) to 61.58 MGD. The permit expires on December 1, 2026.

The GTL WWTP is located on a 9.6-acre site near Southeast 17th Street and Eisenhower Boulevard. The plant provides secondary treatment followed by deep-well injection via five injection wells located approximately one-quarter mile south of the site. The WWTP treats wastewater generated in a region encompassing the following areas:

- City of Fort Lauderdale
- City of Wilton Manors
- City of Oakland Park
- Port Everglades
- A portion of the City of Tamarac
- A portion of unincorporated Broward County
- A portion of the Town of Davie

2.4.2 Deep Well Injection Wells

The GTL WWTP effluent pump station discharges to five deep injection wells via 3,500 feet of 54-inch-diameter force main. The wells are permitted to operate at up to 10 feet per second (fps) flow velocity on a sustained basis and 12 fps during emergencies. These velocities yield total injection well capacities of 93.25 and 112 MGD, respectively. The existing deep injection wells do not require high level disinfection (HLD) under the United States Environmental Protection Agency Underground Injection Control (UIC)

Program. If a new injection well[4] is required it would require HLD under the UIC program. HLD is not required for the existing injection wells under current regulations.

2.4.3 Reclaimed Water

The existing facility does not currently include reclaimed water treatment facilities. However, on average the plant uses about 4 MGD of its own secondary effluent as in-plant re-use instead of potable water.

2.5 Conservation

The City of Fort Lauderdale has been promoting water conservation for more than 30 years. Conservation is a proven strategy for delaying implementation of expensive alternative water supply technologies. In 2008, the City established a goal of reducing finished water demand to 170 gallons per capita per day (gpcd) by the year 2028. This goal has been met. The annual average day finished water produced averaged 155.9 gpcd from 2020 to 2024. Figure 2-10 illustrates this decrease. The following subsections summarize the City of Fort Lauderdale's ongoing conservation initiatives.

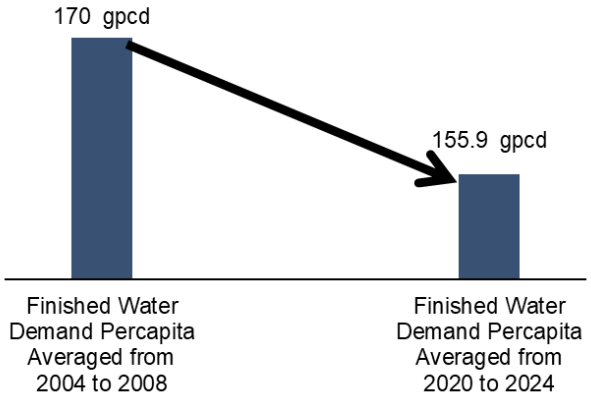

Figure 2-10: Demand Decrease Through 2024

2.5.1 Broward Water Partnerships

The City of Fort Lauderdale is a member of the Broward Water Partnership (BWP). BWP is a partnership of local governments, including 16 municipalities and water utilities who have come together to collaborate on water conservation implementation. The BWP offers rebates up to $125 each for eligible toilet replacements. BWP also offers eligible residents free water-efficient shower heads and low-flow faucet aerators, while commercial kitchens can get pre-rinse spray valves via the ConservationPays program.

2.5.2 ConservationPay$ Program

The City of Fort Lauderdale participates in a water conservation incentive program through an interlocal agreement (ILA) with Broward County marketed under the program name "Conservation Pays". The City of Fort Lauderdale became partners with Broward County in the program on June 21, 2011.

The program provides rebates and free water-conserving devices to qualifying water customers, and it has a focused outreach and education component. Rebate dollars are used for the replacement of older, wasteful toilets in addition to the distribution of other water efficient fixtures and devices such as aerators

[4] The City reports that a new deep injection well will require advanced treatment, unless an industrial discharge is added to that well.

and commercial pre-rinse spray valves. A consistent marketing and media campaign advances water conservation efforts. The program goal is to reach a sustained minimum 10 percent reduction in water use county-wide over 20 years.

2.5.3 NatureScape Irrigation Services

Broward County's NatureScape Irrigation Service (NIS) program promotes the use of Florida-Friendly landscapes that require less watering, provide habitat for native and migratory wildlife, and minimize the use of common pollutants such as fertilizers and pesticides. The City of Fort Lauderdale participates in the NIS program. Figure 2-11 presents the historical annual water savings from the NatureScape program in millions of gallons over the last 10 years.

The County established the Residential Irrigation Rebate Program ("RIR Program") through its NIS

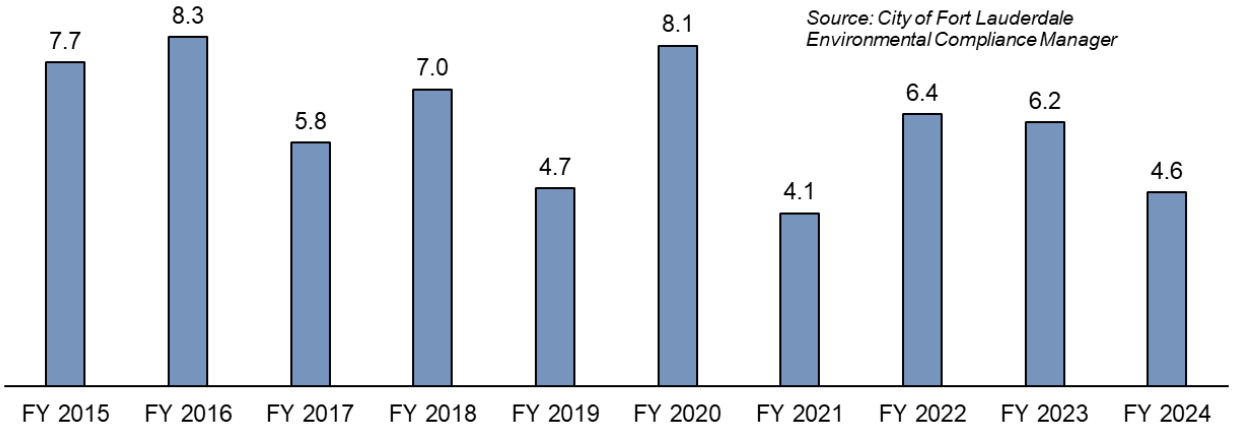

Figure 2-11: Historical NatureScape Program Water Savings (Millions of Gallons)

Program. The County performs irrigation system efficiency inspections and facilitates rebates to residents to offset costs to upgrade water-efficient irrigation system components within each Participant's water service area. Additional information on the RIR Program is available at the following link: RIR Program.

2.5.4 Water Matters Day

The City of Fort Lauderdale is a sponsor of Broward County's Water Matters Day program. Water Matters Day is a one-day water conservation event where participants learn about our local and regional water resources, how water is managed and how utilities are planning for future water needs. Participants receive tips and information on water conservation, receive rebates and incentives for upgrading to water-conserving devices, and learn how to create "Florida friendly" and drought tolerant landscapes. The goal of the program is to promote long-term water demand reductions.

2.5.5 Conservation Rate Structure

A conservation rate ordinance was originally enacted by the City in 1996 and has been in continuous use. A conservation rate structure provides progressively higher rates as water usage increases. The Fiscal

Year 2025 water and sewer rate structure is provided in Table 2-6. These rates became effective on October 1, 2024.

Table 2-6: Fiscal Year 2025 Water and Sewer Rate Structure

Customer Type	Tier	Consumption Per Month in Gallons	Water Rate	Sewer Rate
Single-Family Rates in 1,000 gallons per month	Tier 1	0 – 3,000	$4.51	$6.05
	Tier 2	4,000 – 8,000	$9.91	$13.37
	Tier 3	9,000 – 12,000	$12.40	
	Tier 4	13,000 – 20,000	$16.73	
	Tier 5	> 20,000	$24.29	
Multifamily Residential (1,000 gallons per month X number of dwelling units X 0.55)	Tier 1	0 – 3,000	$4.51	$6.05
	Tier 2	4,000 – 8,000	$9.91	$13.37
	Tier 3	9,000 – 12,000	$12.40	
	Tier 4	13,000 – 20,000	$16.73	
	Tier 5	> 20,000	$24.29	

Source: City of Fort Lauderdale document located at this link.

2.5.6 Water Shortage Restrictions

Section 28-1B of the Code of Ordinances (in effect since 2009) requires that in the event the South Florida Water Management District declares a drought and mandates water restrictions in one of the four established drought phases (Phase I, II, II or IV), the City of Fort Lauderdale implements a surcharge on water usage. The amount of the surcharge is based on the level of water restrictions (Phase I, II, II or IV) and the number of gallons used. The surcharge is applied to water, wastewater and sprinkler meter accounts.

2.5.7 Florida-Friendly Landscaping

Per Section 28-1B of the Code of Ordinances (in effect since 2009), it is the City's policy to encourage use of Florida-friendly drought resistant plants and trees within the City. Following Florida-Friendly Landscaping™ principles, conservation of 40 to 60 percent of the water that traditional landscapes require may be feasible. The City's Code of Ordinances requires Florida-Friendly Landscaping for new development and re-development.

2.5.8 Green Infrastructure Development Guidelines

The City has embraced the concept of green and blue infrastructure. It has established Policy CC 1.2.2 in its 2020 adopted Comprehensive Plan to investigate and implement innovative stormwater capture techniques within the public right-of-way, including permeable surfaces (City of Fort Lauderdale, 2020a).

In addition, the City adopted a "Downtown Master Plan" that includes transit-oriented development (TOD) guidelines (City of Fort Lauderdale, 2020b). The adopted TOD guidelines aim to create pedestrian-friendly, vibrant station areas to support the continued growth of the Downtown as a live, work, and play environment.

The TOD guidelines also included green building, green site design and green infrastructure guidelines that apply to new residential development in the Downtown Regional Activity Center (RAC). The TOD guidelines recommend that new residential projects should comply with the County's Comprehensive Plan – Climate Change Element and recommend that projects incorporate green infrastructure and green landscaping into site design, such as the use of porous pavement, bioswales, raingardens, green roofs, drip irrigation, drought tolerant and native landscaping, and Florida-Friendly Landscaping.

2.5.9 Green Infrastructure Design Details and Specification

The City has developed engineering specifications and engineering details for certain green infrastructure, including: bioswales, sidewalk subsurface storage, precast porous pavement, porous pavers, porous asphalt, and rain gardens. The drawings and specifications facilitate implementation of the City's commitment to stormwater capture and aquifer recharge.

2.5.10 Irrigation System Design Code

Section 28-1A of the City of Fort Lauderdale's Code of Ordinances (in effect since 2009), requires that all new irrigation systems permitted after 2009 install rain sensors to automatically shut down irrigation systems if rain is detected.

2.5.11 Landscape Irrigation Restrictions

On November 16, 2021, the City modified its Code of Ordinances Section 28-1B through adoption of Ordinance C-21-34 (City of Fort Lauderdale, 2021). The changes ensure compliance with the SFWMD and Broward County requirements to restrict landscape irrigation to two days per week.

The SFWMD promulgated Rule 40E-24 of the Florida Administrative Code title "Mandatory Year-Round Landscape Irrigation Conservation Measures" (SFWMD, 2014), which limits landscape irrigation water use to two days per week. The City of Fort Lauderdale's Section 28-1B follows the same two-days per week irrigation restriction.

In 2010 Broward County Code of Ordinances Section 36-55, titled "Year-round landscape irrigation measures" was adopted that limits landscape irrigation water use to two days per week. The City of Fort Lauderdale's Section 28-1B follows the same two-days per week irrigation restriction.

The City promotes Florida-Friendly Landscaping™ as evidenced by the document links available at its Sustainability & Climate Resilience web page. The City supports progressive irrigation and conservation policies. The City complies with the SFWMD's "Mandatory Year-Round Landscape Irrigation Conservation Measures" Rule.

2.5.12 Water for Heating or Process Water

Section 28-1A of the City's Code of Ordinances (in effect since 2009), requires a water conservation device conforming to such specifications as may be required by the City, shall be installed on heating, processing or other industrial or commercial uses of water whenever the City determines in its discretion that recycling of the water without treatment is practical. A water conservation device is any equipment, process or procedure whereby all water used for heating or processing is either consumed in the intended use or is recycled for the same purpose until it is unusable.

2.5.13 Water Used for Cooling Including Condensate

Section 28-1B of the City's Code of Ordinances (in effect since 2009), requires all new construction and replacements of cooling equipment whose function is evaporative or refrigerated cooling uses and air conditioning facilities that deliver water or condensate to a drain or other discharge facility are prohibited. This includes any equipment, process or procedure which relies upon the temperature of the water supply for cooling purposes.

2.5.14 Commercial Power Washing

Section 28-1B of the City's Code of Ordinances (in effect since 2009), requires that commercial enterprises for which cleaning with water is an essential element of their business use only high efficiency equipment that uses 1.6 gallons per minute or less and is certified by the manufacturer.

2.5.15 Water for Decorative Features

Section 28-1B of the City's Code of Ordinances (in effect since 2009), requires that decorative water features or similar water operating devices using potable or recycled water shall recirculate water within the device. Each device connected to the water system must have an approved back-flow prevention assembly.

2.5.16 Lakes and Ponds

Section 28-1B of the City's Code of Ordinances (in effect since 2009), requires that potable water shall not be used to fill or maintain water levels in lakes and ponds.

2.5.17 Leak Detection

The City initiated a leak detection program in 1990 which was completed in 1992. The entire main distribution system was surveyed and the City continues to perform visual checks by field personnel.

2.5.18 Meter Replacement Program

The City implemented an improved compound meter testing program and changes out all water meters 10 years old or older.

2.5.19 Broward County Adopts Low-Flow Plumbing Fixtures

During each update of the Florida Building Code (FBC), the Broward County Board of Rules and Appeals adopts a revised version of FBC-Plumbing Table 604.4 that requires new construction within Broward County (which includes the City of Fort Lauderdale) to use "low-flow" plumbing fixtures. Table 2-7 documents the most recently adopted 2023 FBC (Florida Department of Business and Professional Regulation, 2023) flow requirements and the "low-flow" Broward County requirements (Broward County, 2023) of key fixtures. The "low-flow" plumbing fixtures promote water conservation within all of Broward County.

Table 2-7: Maximum Flow Rates and Consumption for Key Fixtures in New Construction

Fixture	2023 FBC	Broward County
Lavatory, Private	2.2-gpm	1.5-gpm
Shower Head	2.5-gpm	2.0-gpm
Urinal	1.0 gallon per flush	0.5 gallon per flush
Toilet	1.6 gallon per flush	1.28 gallon per flush

Source 1: The data in the column labeled "2023 FBC" is based on the Florida Building Code – Plumbing (2023 Edition), Table 604.4.

Source 2: The data in the column labeled "Broward County" is based on the Florida Building Code – Plumbing, Table 604.4 as amended by the Broward County Board of Rules and Appeals and accessible at the following link: https://www.broward.org/CodeAppeals/Documents/FBC%20%282023%29%20Plumbing%20Technical%20Amendments%2c%208th%20Edition.pdf

2.5.20 Water Conservation Education Program

The City publishes a variety of brochures and literature, promoting water conservation that are available to members of the public upon request. The City also maintains an active public information campaign on water conservation and restrictions on irrigation using Environmental Inspectors, Code Enforcement Officers, and Police Officers. In addition, the City maintains a website (http://www.fortlauderdale.gov) that includes water conservation information.

2.5.21 Sustainability Action Plan 2011 Update

The City's Sustainability Action Plan 2011 Update (City of Fort Lauderdale, 2011) identified the following actions to reach the 170 gallons per capita per day (gpcd) goal (the action numbers identified in the Sustainability Action Plan 2011 Update are shown for consistency):

- Action 1.1.1 - Expedited, Continuing Escalation of High-User Potable Water Fees in Single-Family Zoning.

- Action 1.1.2 - Implement and enforce landscape ordinance requiring low volume / avoidance watering.
- Action 1.1.3 - Directly engage all large water users in long-range water resource planning and conservation.
- Action 1.1.4 - Consider innovative projects including water reuse and harvesting rainwater.

Table 2-8 provides a summary of the current status of implementing the actions described in the Sustainability Action Plan 2011 Update.

Table 2-8: Water Conservation Action Status

Action	Status
Action 1.1.1 - Expedited, Continuing Escalation of High-User Potable Water Fees in Single-Family Zoning.	The City of Fort Lauderdale continues to establish a conservation rate structure (progressively higher rates as water usage increases) to encourage a water conservation ethic.
Action 1.1.2 - Implement and enforce landscape ordinance requiring low volume / avoidance watering.	Per Section 28-1A of the Code of Ordinances (in effect since 2009), it is the City's policy to encourage use of Florida-friendly drought resistant plants and trees within the City.
Action 1.1.3 - Directly engage all large water users in long-range water resource planning and conservation.	The City of Fort Lauderdale continues to conduct ongoing discussions with its wholesale customers relative to opportunities to reduce water consumption.
Action 1.1.4 - Consider innovative projects including water reuse and harvesting rainwater.	The City of Fort Lauderdale was part of a partnership with Broward County that explored the feasibility of regional wastewater reuse opportunities. Additionally, the City purchase a 3.0 mgd offset in the C-51 Reservoir, Phase 1 project. Additionally, the City evaluates water reuse and rainwater harvesting projects as the opportunities are identified.

Source: City of Fort Lauderdale document titled "Sustainability Action Plan 2011 Update" accessible at the following link: SAP Link.

2.5.22 2035 Fast Forward Vision Plan

The City has developed a planning document titled Fast Forward Fort Lauderdale that envisions the City through the year 2035. The document is also known as the Fast Forward Fort Lauderdale Vision for 2035. The Fast Forward Plan is a compilation of ideas/goals that are used to guide the City's decision making. A key aspect of the 2035 Vision Plan is ensuring that the City enhance water conservation efforts to ensure a sustainable water supply (City of Fort Lauderdale, 2019).

2.5.23 Press Play Fort Lauderdale Strategic Plan: Our City, Our Strategic Plan 2029

This document complements the Fast Forward Fort Lauderdale Vision for 2035. Fast Forward establishes the overarching goals of the City, while Press Play establishes specific initiatives to be completed over the next 5 years to make progress at reaching the goals (City of Fort Lauderdale, 2025c). The City is focused

on increasing the reliability of its water systems. The City is constructing the Prospect Lake Clean Water Center (50 mgd capacity). The City is also focused on ensuring maintenance efforts and processes are in place to sustain its water infrastructure for the future.

2.6 Reuse

2.6.1 Introduction

Florida law supports reuse efforts. Florida's utilities, local governments, and water management districts have led the nation in the quantity of reclaimed water reused and public acceptance of reuse programs. Section 373.250(1) F.S. provides "the encouragement and promotion of water conservation and reuse of reclaimed water, as defined by the department, are state objectives and considered to be in the public interest." In addition, Section 403.064(1), F.S., states "reuse is a critical component of meeting the state's existing and future water supply needs while sustaining natural systems."

2.6.2 Local Government Specific Actions, Programs, Regulations, or Opportunities

This section describes the City of Fort Lauderdale's ongoing assessment of reuse opportunities within the City's service area. The City of Fort Lauderdale's GTL WWTP is a regional facility used to treat wastewater in a region encompassing the following:

- City of Fort Lauderdale
- City of Wilton Manors
- City of Oakland Park
- Port Everglades
- A portion of the City of Tamarac
- A portion of unincorporated Broward County
- A portion of the Town of Davie

The facility does not currently treat effluent to reclaimed water standards for public irrigation or other off-site uses. However, on average the plant uses about 4-mgd of its own secondary effluent as in-plant re-use instead of potable water. Additionally, the City is participating in the County-wide Integrated Water Resources Plan Grants for feasibility studies related to potential beneficial reuse. These have included a 2008 feasibility study for selected reclaimed water projects within the City for a 50% cost share for $125,000. In 2009, a second feasibility study for reclaimed water at the Convention Center received a 50% cost share of $5,000 from Broward County.

The City of Fort Lauderdale prepared a report assessing reclaimed water opportunities in November 2008 titled "Feasibility Study for the Implementation of Selected Reclaimed Water Projects with the City of Fort Lauderdale". The City indicated that this report was updated in 2012. The key conclusion of the 2008 and 2012 studies was that reuse was not economically viable. The findings of the 2008 and 2012 reuse

feasibility studies were reviewed by the City's master planning engineer in the City's 2017 CUSMP (Reiss Engineering, 2017). The 2017 CUSMP selected four alternatives from those studied in 2008 and 2012 and re-evaluated them based on information current in 2017. These four alternatives were as follows:

- Alternative 1 – GTL Upgrade and Local Area Reuse
- Alternative 2 – Satellite Treatment and Reuse/Saltwater Intrusion Barrier
- Alternative 3 – Satellite Treatment and Indirect Potable Reuse
- Alternative 4 – C-12 and C-13 Canal Interconnect Project

The 2017 CUSMP indicated that "Historical studies of reclaimed water implementation for the City have deemed the efforts as not economically feasible due to the following reasons:

- The GTL is a large, high rate treatment facility on a very area-restricted site that does not include treatment and high level disinfection components to facilitate producing public access level reclaimed water.
- The City's collection system is old and experiences high levels of infiltration resulting in high total dissolved solids concentrations (1,100 parts per million) including chlorides which would be harmful to most landscape plants. Therefore, demineralization in the form of reverse osmosis would be required which significantly increases both the capital and operations cost including high energy consumption.
- The cost of reclaimed water distribution in existing, heavily urbanized areas is very expensive and difficult."

The 2017 CUSMP recommended the City "…to continue to pursue Alternative 4 (C12 and C13 Canal Interconnect Project) in conjunction with Broward County. While the project will provide relatively low WUP withdrawal credit, the project should result in improved water quality in the canals and is very low cost operationally, hence sustainable. The City should continue to track Florida indirect potable reuse efforts into the Floridan Aquifer, e.g., the City of Hollywood, for future water supply considerations beyond this study period."

The City of Fort Lauderdale continues to assess water reuse opportunities to identify and assess cost-effective alternative water supply opportunities. Indirect potable reuse systems have been evaluated by the City; none have emerged as economically feasible. However, due to the dual benefits of providing more disposal capacity and augmenting local water supplies, the City continues to contemplate indirect potable reuse opportunities when assessing alternative water supply investment decisions.

2.6.3 Identify any Local Financial Responsibilities

The City of Fort Lauderdale does not have financial responsibilities related to reuse. Therefore, this section is not applicable to the City of Fort Lauderdale.

3. Water Demand Projections

3.1 Introduction

This section summarizes historical and forecasted population along with historical and forecasted water demand.

3.2 Population Forecast

Figure 3-1 summarizes the historical and forecasted population for the City's water service area for fiscal years 2020 to 2045. The source of the population forecast is the SFWMD 2023-2024 Lower East Coast Water Supply Plan Update Table A-1 (SFWMD, 2024a).

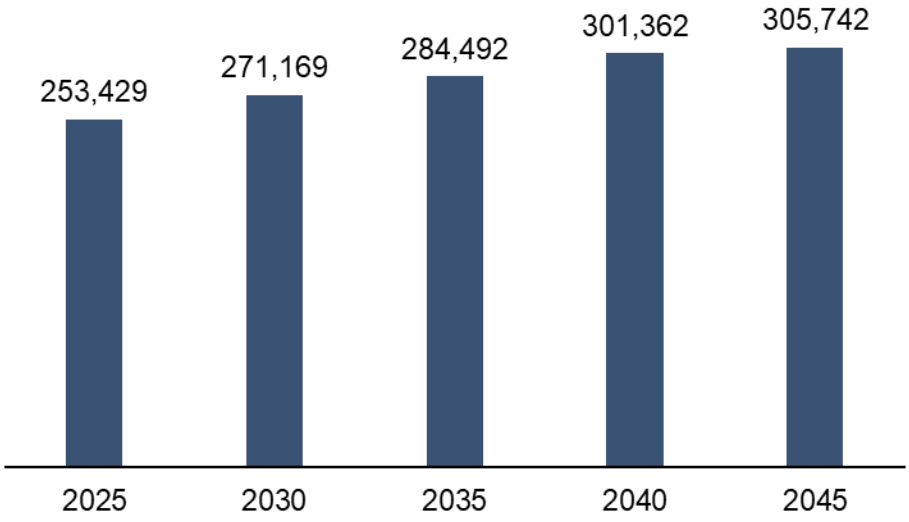

Figure 3-1: Water Service Area Population Forecast FY 2025 to FY 2045 in Five Year Increments

Population forecasts by jurisdiction within the City of Fort Lauderdale water utility service area were prepared using the population forecasts by TAZ obtained from the Broward County and Municipal Population Forecast and Allocation Model (PFAM). This model is used by the County to distribute county-wide population forecasts prepared by the University of Florida Bureau of Economic and Business Research (BEBR) to local municipalities and Traffic Analysis Zones (TAZ).

The populations within the TAZs and portions of TAZs that comprise each jurisdiction were identified from the County's model. These forecasts were adjusted to reflect the total population forecast reported for the Fort Lauderdale water service area by the SFWMD in its 2023-2024 Lower East Coast Water

Supply Plan Update. Table 3-1 presents the population for the City of Fort Lauderdale's water service area by jurisdiction in five-year increments from FY 2020 to FY 2045.

Table 3-1: Population by Jurisdiction, Actual 2020 and Forecasted 2025 to 2045

Jurisdiction	FY2020	FY2025	FY2030	FY2035	FY2040	FY2045
Fort Lauderdale	178,932	190,323	204,337	215,031	229,292	233,658
Broward County	6,415	6,843	6,917	7,157	7,402	7,394
Davie	504	488	495	489	497	488
Lauderdale by the Sea	4,241	4,271	4,318	4,237	4,227	4,137
Lauderhill	308	311	314	311	311	305
Lazy Lake Village	21	21	22	22	22	22
North Lauderdale	1,228	1,204	1,213	1,199	1,207	1,183
Oakland Park	33,890	36,151	37,080	38,560	40,004	40,051
Sea Ranch Lakes	308	304	307	302	301	296
Tamarac	1,692	1,967	2,083	2,333	2,571	2,670
Wilton Manors	11,545	11,546	14,082	14,852	15,526	15,538
Port Everglades	Population is included in Broward County					
Total	**239,084**	**253,429**	**271,169**	**284,492**	**301,362**	**305,742**

3.3 Areas of Self-Supply

There are no existing areas within the City of Fort Lauderdale's water service area that self-supply potable water. There are no plans for future domestic self-supplied systems.

3.4 Maps of Current and Future Served Areas

Figure 3-2 depicts the City of Fort Lauderdale water service area. The City of Fort Lauderdale provides water within the Fort Lauderdale as well as the following jurisdictions:

- City of Fort Lauderdale
- Broward County
- Town of Davie
- Town of Lauderdale by the Sea
- City of Lauderhill
- Village of Lazy Lake
- City of North Lauderdale
- City of Oakland Park
- Village of Sea Ranch Lakes
- City of Tamarac
- City of Wilton Manors
- Port Everglades

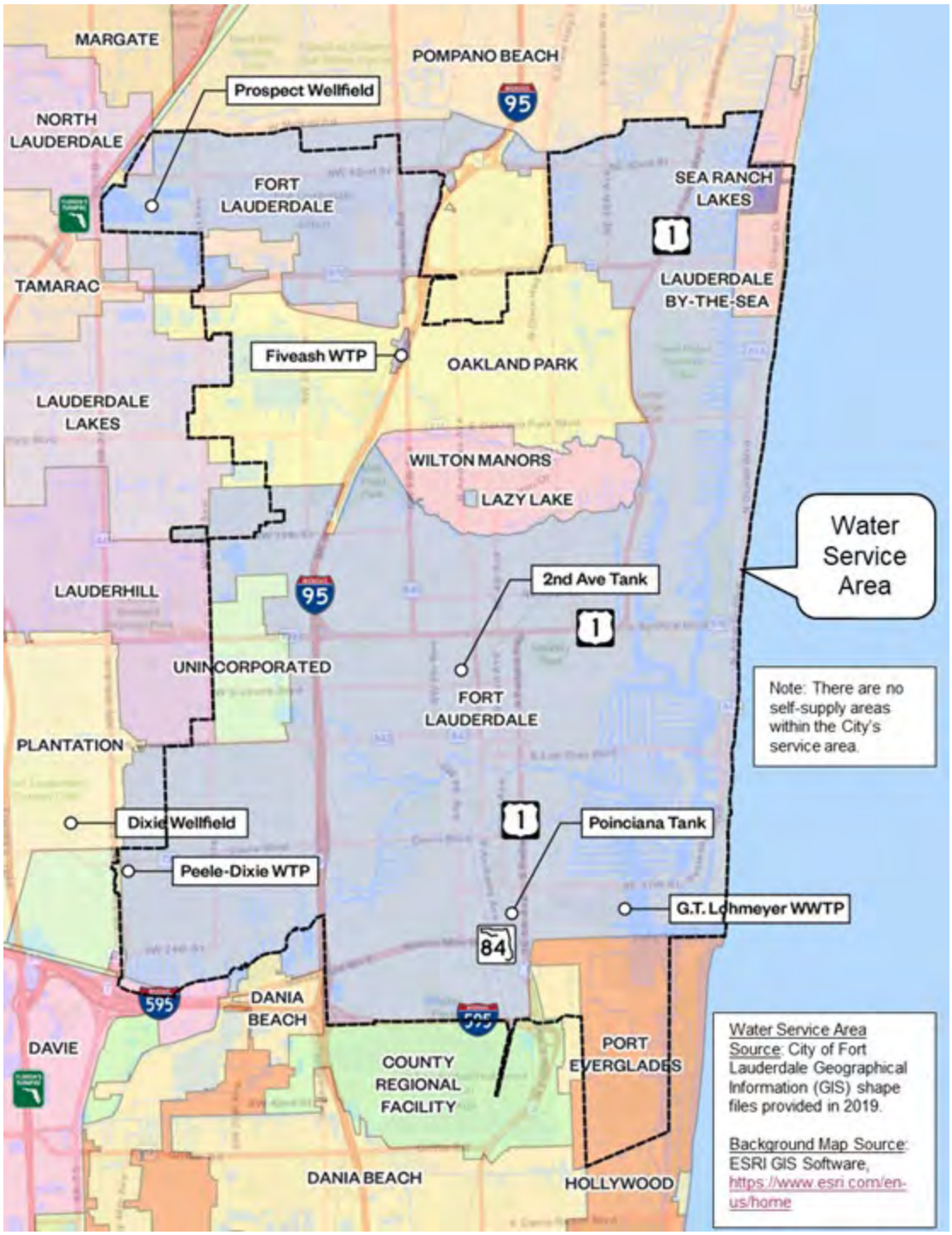

Figure 3-2: Water Service Area

Certain jurisdictions are fed through master meter accounts of an upstream consecutive user, as follows:

- Lazy Lake is a village contained entirely within the borders of the City of Wilton Manors and is fed through a Wilton Manors master meter.

The balance of the City's customers are supplied with water through individual retail customer water meters (multifamily, single family, commercial and irrigation accounts), including the following:

- City of Fort Lauderdale
- City of Lauderdale-by-the Sea
- Village of Sea Ranch Lakes
- Broward County
- City of Lauderhill

The City has no plans to alter the water service area in the future.

3.5 Fort Lauderdale Areas Served by Broward County

Certain areas of the City of Fort Lauderdale are served by either the Broward County District 1 WTP or the Broward County District 2A WTP as defined in Figure 3-3. For presentation purposes the City's service area is presented as the "North Service Area" and the "South Service Area". These are not terms used by the City, rather these terms are solely for the convenience of presenting the map below in this report.

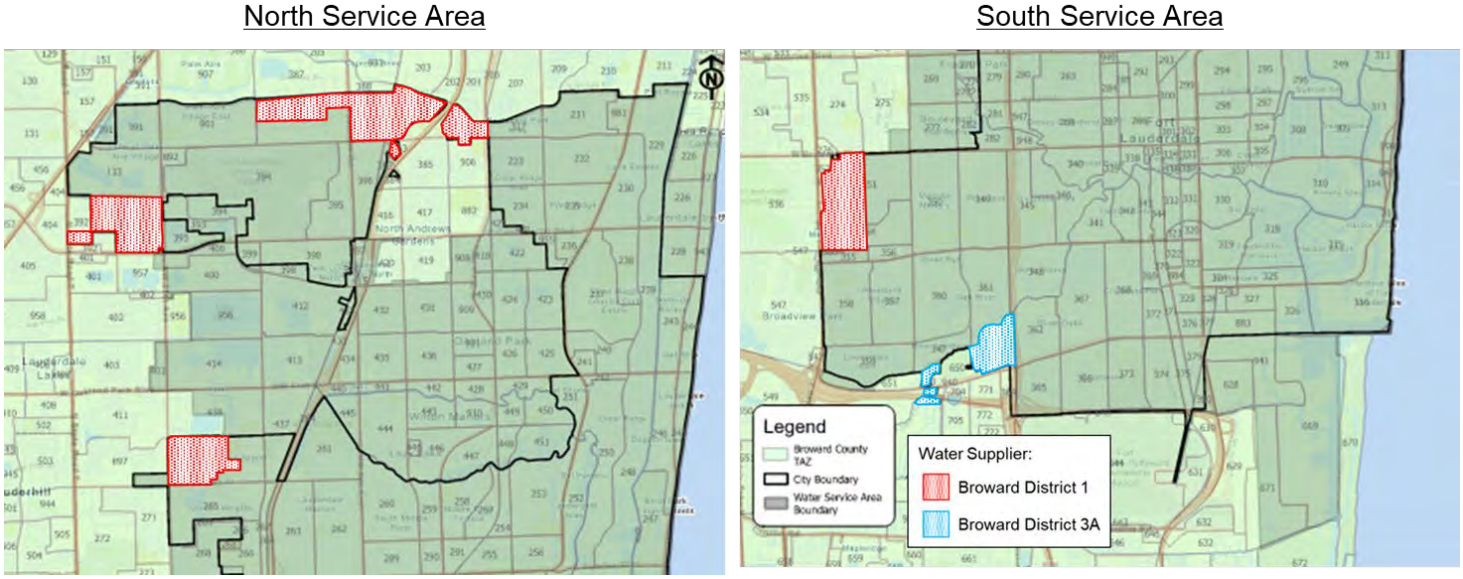

Figure 3-3: Map of Fort Lauderdale Areas Served by Broward County

3.6 Potable Water Level-of-Service Standard

The City of Fort Lauderdale has set level-of-service standards for its water system as summarized in Table 3-2. This table is based upon the CUSMP (Reiss Engineering, 2017) unless noted otherwise in the table.

Table 3-2: Water System Level-of-Service Standards

Component	Level-of-Service Standard / Goal	Does the City meet this LOS Goal?
Raw Water Supply	Maximum Day Demand with 20 percent of wells out of service for maintenance *Source: City of Fort Lauderdale standard design criteria.*	Yes
Treatment Capacity	Maximum day demand with all units in service *Source: (Committee of the Great Lakes-Upper Mississippi River Board of State Sanitary Engineers, 2022); Article 2.1.*	Yes
Minimum system pressure during peak hour demand with largest pump out of service during non-fire flow conditions	Maintain a minimum of 40 psi in the distribution system *Source: (Reiss Engineering, 2017); Table WA4-1.*	Yes
Minimum system pressure during maximum day demand plus fire flow	Maintain a minimum of 30 psi in the distribution system *Source: (Reiss Engineering, 2017); Table WA4-1.*	Yes
Finished Water Pumped Per Capita – City Goal	It is the City's goal to reduce the finished water pumped level of service to 170 gallons per capita per day through conservation by the year 2028 according the City's Comprehensive Plan Evaluation Measures SWS 3.1.2 and SWS 3.2.1. *Source: (City of Fort Lauderdale, 2020a).*	Yes
Finished Water Storage	Comply with FAC 62-555.320(19): minimum requirement of 25 percent of maximum day demand plus maximum fire flow volume with all tanks in service. Maximum fire flow storage based upon a 5,000 gallons per minute (gpm) fire over a four-hour period. *Source: Florida Administrative Code, Rule 62-555.320(19).*	Yes
Maximum Distribution System Water Loss	10 Percent of Finished Water Pumped *Source: (SFWMD, 2022); Article 4.1.2.*	No

3.7 Historical Finished Water

Table 3-3 presents the historical finished water demand for the City's water service area from 2020 to 2024. Finished water average day per capita (averaged from 2020 to 2024) is 155.9 gpcd. Finished water max day factor (average from 2022 to 2024) is 1.19.

Table 3-3 Historical Finished Water Demand

Fiscal Year	Water Service Area Population	Finished Water Demand					
		Annual Finished Water Pumped (MGY)	Avg Day Demand (mgd)	Avg Day Per Capita (gpcd)	Max Day Factor	Max Day Demand (mgd)	Max Day Per Capita (gpcd)
2020	239,084	13,321	36.39	152.6	1.30	47.20	197.4
2021	243,077	14,230	38.99	160.4	1.17	45.54	187.4
2022	245,665	14,308	39.20	159.6	1.17	46.01	187.3
2023	248,253	13,981	38.30	154.3	1.21	46.26	186.4
2024	250,841	13,956	38.13	152.4	1.19	45.51	181.5

3.8 Finished Water Demand Forecast

Figure 3-4 illustrates the finished water demand forecast on an annual average day and maximum day basis for the City's water service area for fiscal years 2025 to 2045 in five-year increments.

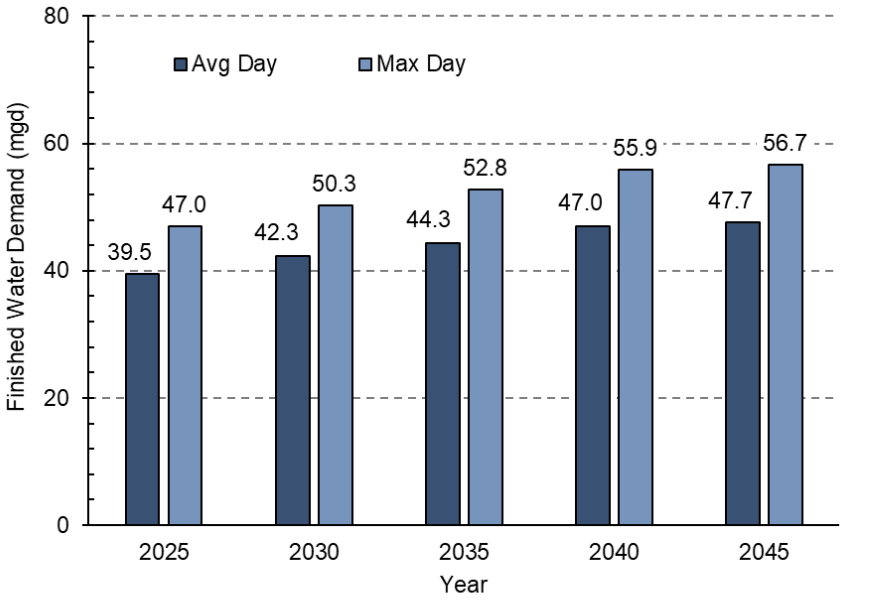

Figure 3-4: Finished Water Demand Forecast FY 2025 to FY 2045 in Five-Year Increments

3.9 Finished Water Production Capacity is Adequate to Meet Demand

Figure 3-5 illustrates that water treatment plant finished water production capacity is adequate to meet demand through the year 2045.

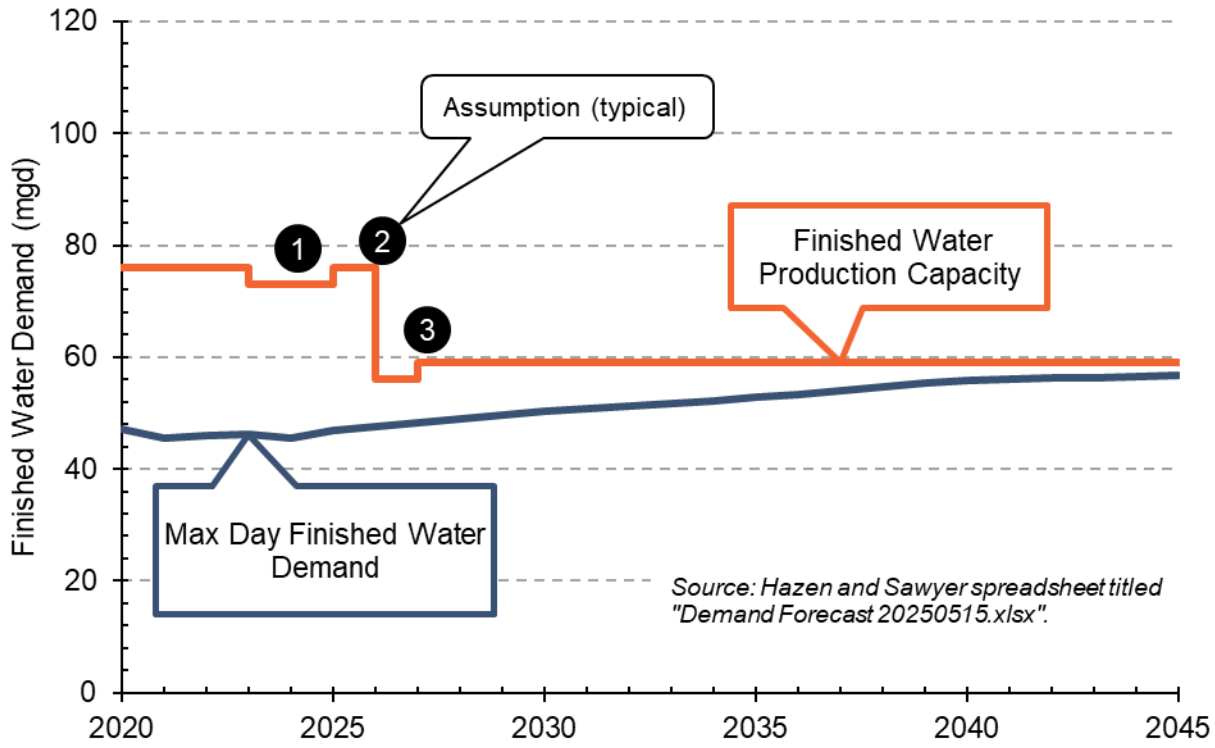

Figure 3-5: Max Day Finished Water Demand Versus Finished Water Production Capacity

The figure above is based on certain key assumptions, as follows:

- Assumption 1: The Peele-Dixie membrane plant finished water capacity was reduced from 6.0 mgd to 3.0 mgd due to maintenance challenges in 2023. The City is working to address these maintenance challenges. The City was able to increase the Peele-Dixie membrane plant finished water capacity from 3.0 mgd to 6.0 mgd (two membrane trains) on May 28, 2025.
- Assumption 2: The PLCWC will go on-line and the Fiveash WTP treatment facilities will go offline in 2026.
- Assumption 3: The Peele-Dixie membrane plant finished water capacity will be increased from 3.0 mgd to 9.0 mgd in 2027 after resolution of all maintenance challenges.

3.10 Biscayne Aquifer Raw Water Demand Forecast

Figure 3-6 illustrates that annual average Biscayne aquifer raw water demand through the year 2045. This figure illustrates that the City's current water use permit limit[5] is adequate to meet demand through the year 2045. Hence, alternative water supply is not likely to be needed assuming the per capita remains stable and population growth increases as forecast.

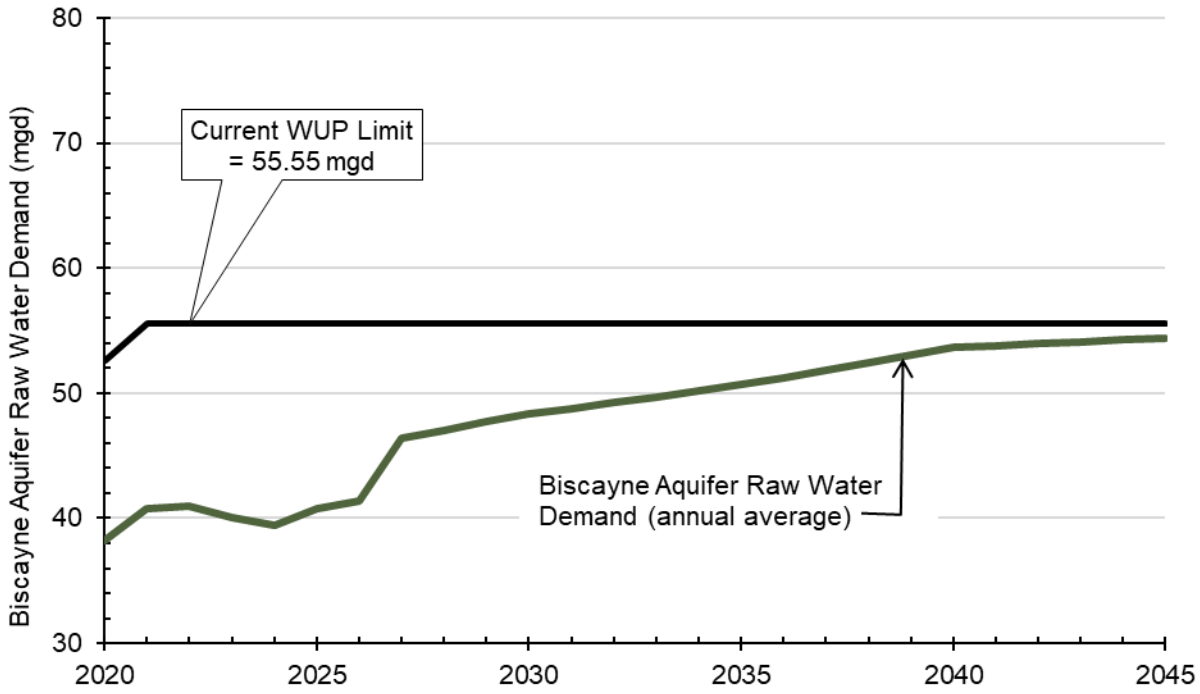

Figure 3-6: Raw Water Demand Versus Water Use Permit Limit

3.11 Raw Water Demand by Jurisdiction

Table 3-4 presents the Biscayne aquifer raw water demand on an annual average basis, broken down by municipal jurisdictions within the City of Fort Lauderdale's water service area. All values are in mgd.

Table 3-4: Annual Average Raw Water Demand by Jurisdiction (mgd)

Jurisdiction	FY2020	FY2025	FY2030	FY2035	FY2040	FY2045
Fort Lauderdale	27.58	29.69	35.26	37.14	39.65	40.41
Broward County	0.989	1.067	1.194	1.236	1.280	1.279

[5] The water use permit limit is shown as 55.55 mgd. It is noted that the 55.55 mgd is composed to two parts. The first part is the base condition of 52.55 mgd. The second part is 3.0 mgd which is the allowable offset from the C-51 reservoir.

Table 3-4: Annual Average Raw Water Demand by Jurisdiction (mgd)

Jurisdiction	FY2020	FY2025	FY2030	FY2035	FY2040	FY2045
Davie	0.078	0.076	0.085	0.084	0.086	0.084
Lauderdale by the Sea	0.654	0.666	0.745	0.732	0.731	0.716
Lauderhill	0.047	0.049	0.054	0.054	0.054	0.053
Lazy Lake Village	0.003	0.003	0.004	0.004	0.004	0.004
North Lauderdale	0.189	0.188	0.209	0.207	0.209	0.205
Oakland Park	5.22	5.64	6.40	6.66	6.92	6.93
Sea Ranch Lakes	0.047	0.047	0.053	0.052	0.052	0.051
Tamarac	0.261	0.307	0.359	0.403	0.445	0.462
Wilton Manors	1.78	1.80	2.43	2.57	2.68	2.69
Port Everglades	1.33	1.24	1.37	1.37	1.37	1.37
Total	**38.2**	**40.8**	**48.2**	**50.5**	**53.5**	**54.3**

3.12 Finished Water Demand by Jurisdiction

Table 3-5 presents the finished water demand on an annual average basis, broken down by municipal jurisdictions within the City of Fort Lauderdale's water service area. All values are in mgd.

Table 3-5: Annual Average Finished Water Demand by Jurisdiction (mgd)

Jurisdiction	FY2020	FY2025	FY2030	FY2035	FY2040	FY2045
Fort Lauderdale	26.36	28.76	30.94	32.60	34.82	35.50
Broward County	0.945	1.034	1.047	1.085	1.124	1.123
Davie	0.074	0.074	0.075	0.074	0.075	0.074
Lauderdale by the Sea	0.625	0.645	0.654	0.642	0.642	0.628
Lauderhill	0.045	0.047	0.048	0.047	0.047	0.046
Lazy Lake Village	0.003	0.003	0.0033	0.003	0.003	0.003
North Lauderdale	0.181	0.182	0.184	0.182	0.183	0.180
Oakland Park	4.99	5.46	5.61	5.85	6.08	6.08
Sea Ranch Lakes	0.045	0.046	0.0465	0.046	0.046	0.045
Tamarac	0.249	0.297	0.315	0.354	0.390	0.406
Wilton Manors	1.70	1.74	2.13	2.25	2.36	2.36
Port Everglades	1.27	1.21	1.21	1.21	1.21	1.21
Total	**36.5**	**39.5**	**42.3**	**44.3**	**47.0**	**47.7**

4. Alternative Water Supply Plan

4.1 Introduction

This section outlines the City of Fort Lauderdale's strategy for implementing an alternative water supply should it become necessary due to a forecasted water supply deficit. According to the demand forecast presented in this report, a Floridan aquifer alternative water supply is currently unnecessary.

However, demand forecasts are based on various assumptions which may change as growth occurs, potentially necessitating an alternative water supply earlier than anticipated. Therefore, the City has proactively developed a detailed plan for the implementation of an alternative water supply, as described below.

4.2 Existing C51-Reservoir Phase 1 Alternative Water Supply

The City purchased a 3.0 mgd offset from Palm Beach Aggregates LLC for C-51 Reservoir Phase 1. To date the City has not requested supply via offsets from the C-51 Reservoir Phase 1. Once the PLCWC goes into service, the City's Biscayne demand will increase due to the transition of treatment technology. The City will likely need to begin utilizing a portion of its C-51 Reservoir Phase 1 offset in 2027 to meet its maximum month demands.

4.3 Future Expansion of the Peele-Dixie WTP with Floridan Aquifer Supply and Treatment

A Biscayne aquifer water supply shortfall is not expected over the next 20 years. If water demand increases more than forecasted, the City has planning documents to implement an alternative water supply through reverse osmosis (RO) treatment of the Floridan aquifer. These planning documents are shown in Figure 4-1 and are titled "Floridan Aquifer Conceptual Plan for the Dixie Wellfield" (Hazen and Sawyer, 2008a) and "Peele-Dixie Reverse Osmosis Basis of Design Report" (Hazen and Sawyer, 2008b). The City reserves the right to modify this plan based on the findings of ongoing studies and future CUSMP updates. Additionally, this plan may be altered as new data emerges regarding potential risks from unexpected changes to water quality in the Floridan aquifer. The cost for implementing this project is presented in Section 5.

Figure 4-1: Alternative Water Supply Planning Documents

4.4 Floridan Aquifer Wells Identified in Water Use Permit

The City's water use permit (No. 06-00123-W) identifies potential Floridan aquifer wells at the approximate locations identified in Figures 4-2 and 4-3. Note that FAS-1 and FAS-2 at the Dixie Wellfield are existing; constructed in 2007 for testing and data collection.

Figure 4-2: Potential Future Floridan Aquifer Wells at Prospect Wellfield

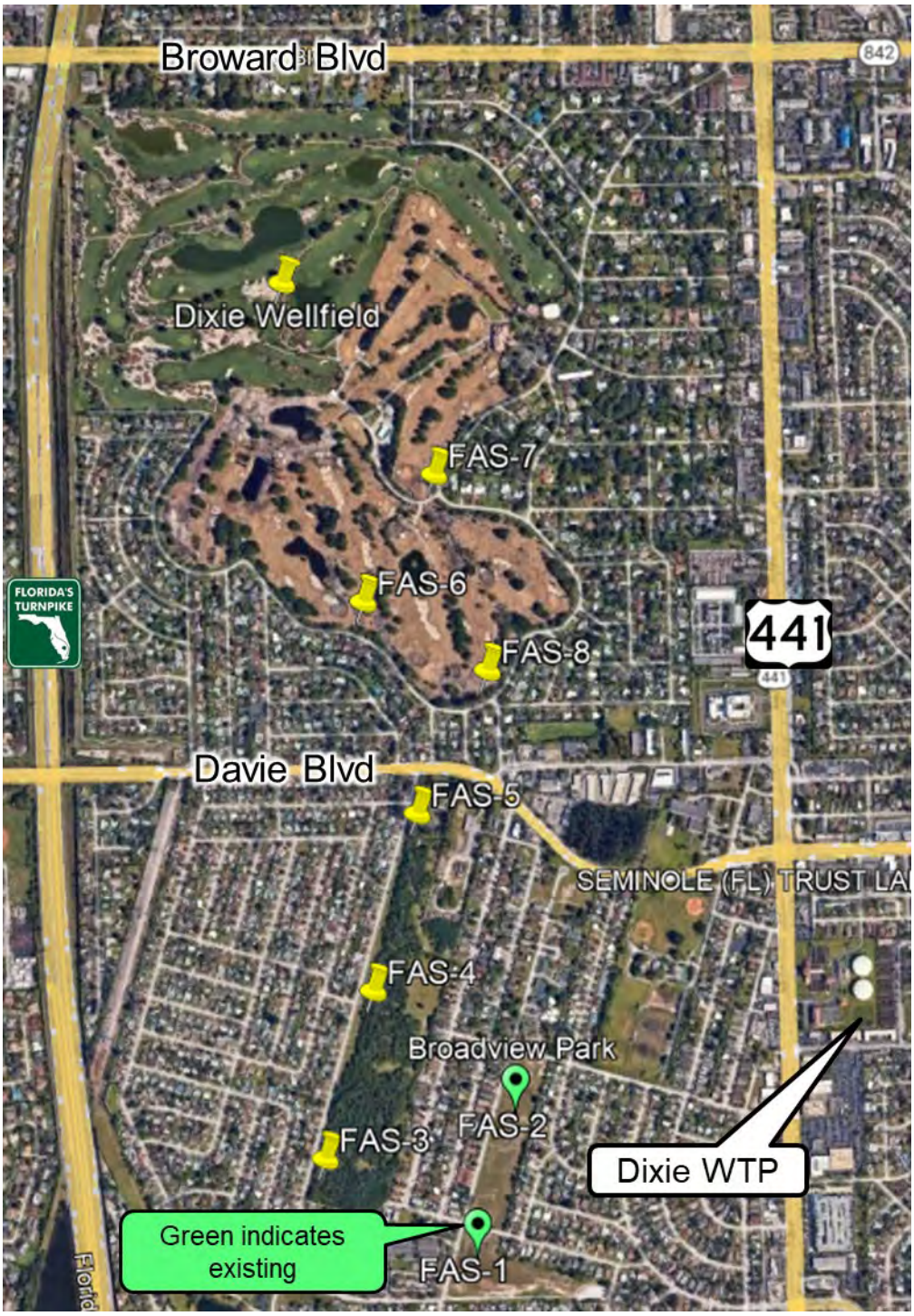

Figure 4-3: Potential Future Floridan Aquifer Wells at Dixie Wellfield

5. Capital Improvements Program

5.1 Introduction

This section provides a brief description of the City of Fort Lauderdale Capital Improvements Program (Fort Lauderdale uses the term "Community Investment Plan") for Water Supply.

5.2 Water Supply, Treatment and Distribution Capital Improvements Schedule for FY2025 through FY2029

Table 4-1 presents City of Fort Lauderdale's Community Investment Plan (CIP) for fiscal year 2024 – 2029 schedule for traditional water supply, treatment, storage, and distribution system infrastructure projects. The CIP costs include engineering services along with construction costs. The projects are intended to be implemented over the next five years to maintain the City's existing level of service standards. The CIP projects do not expand or diversify water supply capacity over the next five years.

5.3 Dixie Floridan Water Supply / Treatment Project

5.3.1 Introduction: 2008 Alternative Water Supply Planning Documents

In 2008, the City completed conceptual plans for implementing 6-mgd of finished water capacity reverse osmosis (RO) at the Peele-Dixie WTP along with five Floridan aquifer wells. The planning documents are titled "Floridan Aquifer Conceptual Plan for the Dixie Wellfield" (Hazen and Sawyer, 2008a) and "Peele-Dixie Reverse Osmosis Basis of Design Report" (Hazen and Sawyer, 2008b). This alternative water supply project is designated the "Dixie Floridan Water Supply / Treatment Project".

5.3.2 Schedule

The alternative water supply planning documents outline the design criteria for the City to implement the Dixie Floridan Water Supply / Treatment Project before the demand surpasses the withdrawal limits of the City's Biscayne aquifer. The project is estimated to take approximately five years to complete.

No Biscayne aquifer water supply shortage is anticipated for the next 20 years. If demand exceeds projections, the City will implement the alternative water supply outlined in the planning documents mentioned earlier. This plan may be revised based on the findings of future studies, future demand forecast updates, and new information regarding risks from unforeseen changes in aquifer water quality.

5.3.3 Cost

The costs for implementing 6-mgd of finished water capacity RO at the Peele-Dixie WTP along with five FAS wells are presented in the reports titled "Floridan Aquifer Conceptual Plan for the Dixie Wellfield" and "Peele-Dixie Reverse Osmosis Basis of Design Report". The total cost presented in these reports is

$36.7 in 2008 dollars. The cost presented in the 2008 planning documents is no longer valid due to cost escalation caused by many factors. Based on the publicly available cost data for the membrane plant and Floridan aquifer wellfield in construction in Riviera Beach, Florida the cost (construction plus engineering) for the Dixie Floridan Water Supply / Treatment Project is estimated at $114 million in 2025 dollars. This is a Class 5 estimate as defined by Association for the Advancement of Cost Engineering (AACE) International. The expected accuracy of this estimate is +50% to -30%.

5.3.4 Coordination With the 2023-2024 LECWSP Update

The City has coordinated with the SFWMD to include the Dixie Floridan Water Supply / Treatment Project in the 2023-2024 Lower East Coast Water Supply Plan Update, Appendix B, page B-21 (SFWMD, 2024a).

5.3.5 Funding

The cost for the Dixie Floridan Water Supply / Treatment Project is not currently included in the City's CIP. The City will incorporate this project into future CIPs in its budgeting process if it becomes warranted based on demand and other factors. Furthermore, the City will escalate the cost of the project to future years using standard cost indexing practices. The City will determine the funding source for this project during future CIP budgeting.

5.4 Projects Needed Beyond the Five-Year CIP

The City's Comprehensive Utility Strategic Master Plan (CUSMP), completed by Reiss Engineering, Inc., in 2017 is a planning document that evaluated the City's water and wastewater systems and recommends improvements to maintain or improve levels of service over a twenty-year period ending in 2036. The CUSMP recommended approximately $1.2 billion in projects. The City continues to evaluate the recommendations of the CUSMP and prioritize the recommended projects for inclusion in its CIP. An update of the CUSMP is planned for late 2027. The procurement of an engineering consultant is ongoing.

Table 5-1: Five Year (FY2025 to FY2029) Water Supply, Treatment and Distribution Community Investment Plan

Project No.	Project Title	Fund	Unspent Balance as of 8/21/2024	Available Balance as of 8/21/2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	Total
FY20221026	Palm Aire Village East Watermain Rehabilitation	452	-	-	$3,386,011	-	-	-	-	$3,386,011
P11465	17th Street Causeway- Large Watermain Replacement	452	-	-	$3,000,000	-	-	-	-	$3,000,000
P12604	Small Water Main Replacement - Hendricks Isle	452	-	-	$2,000,000	-	-	-	-	$2,000,000
P12803	Poinsettia Drive Small Watermain Improvements	452	-	-	$1,500,000	-	-	-	-	$1,500,000
FY20150181	Lauderhill Small Watermains Replacement	454	-	-	-	$537,963	$3,187,227	-	-	$3,725,190
FY20150184	Coral Ridge Country Club Small Watermain	454	-	-	-	$847,081	$5,999,121	-	-	$6,846,202
FY20150228	Analysis of Chemical Addition Systems-Peele Dixie	454	-	-	-	$162,000	-	-	-	$162,000
FY20190737	Peele Dixie Membrane Replacement	454	-	-	-	-	$1,802,130	-	-	$1,802,130
NEW-005133	Antioch Ave. From Riomar St.to Vistamar St. Watermains	454	-	-	-	-	-	$900,000	-	$900,000
NEW-094105	Prospect Wellfield West Generator Replacement	454	-	-	-	-	-	$2,482,903	-	$2,482,903
NEW-123966	SW 11 Ct from SW 9 Ave to SW 8 Ter Water Main Replacement	454	-	-	-	-	-	-	$507,912	$507,912
NEW-504278	Las Olas Boulevard Watermain Replacement	454	-	-	-	-	-	-	$10,385,229	$10,385,229
NEW-506357	SE Croissant Park Water Main Upgrades	454	-	-	-	-	-	$6,704,892	-	$6,704,892

Table 5-1: Five Year (FY2025 to FY2029) Water Supply, Treatment and Distribution Community Investment Plan

Project No.	Project Title	Fund	Unspent Balance as of 8/21/2024	Available Balance as of 8/21/2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	Total
NEW-652759	Palm Aire East Water Main Upgrades	454	-	-	-	-	-	$1,500,000	-	$1,500,000
NEW-877588	Water Main Crossing of the Intracoastal at Oakland Park Boulevard	454	-	-	-	-	-	$1,573,233	-	$1,573,233
P10814	Central New River Watermain River Crossings	454	$960,222	$146,582	-	-	-	-	-	$960,222
P11465	17th Street Causeway- Large Watermain Replacement	454	$299,500	$73,972	-	-	-	-	-	$299,500
P11589	Fiveash WTP Disinfection Improvements	454	$12,685	$2,315	-	-	-	-	-	$12,685
P11887	NW Second Ave Tank Restoration	454	$66,751	$66,751	-	-	-	-	-	$66,751
P12294	Fiveash WTP Electrical Voltage Upgrade	454	$281,388	$247,574	-	-	-	-	-	$281,388
P12296	New Utilities Central Laboratory - Peele Dixie Water	454	-	-	$2,122,382	$1,209,000	-	-	-	$3,331,382
P12393	Fiveash Electrical System Replacement	454	-	-	$3,191,519	-	-	-	-	$3,191,519
P12401	Prospect Wellfield Bonding & Grounding Test	454	$97,216	$97,216	-	-	-	-	-	$97,216
P12403	Peele-Dixie WTP Chemical Storage Improvements	454	$1,283,080	$987,765	-	$1,892,534	-	-	-	$3,175,614
P12416	Watermain Improvements Area 1	454	-	-	$1,571,938	-	-	-	-	$1,571,938
P12417	Misc Water Quality Improvements	454	$69,000	$69,000	-	-	-	-	-	$69,000

Table 5-1: Five Year (FY2025 to FY2029) Water Supply, Treatment and Distribution Community Investment Plan

Project No.	Project Title	Fund	Unspent Balance as of 8/21/2024	Available Balance as of 8/21/2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	Total
P12476	Fiveash Wellfield Pump Replacement	454	$556,060	$556,060	-	-	-	-	-	$556,060
P12485	Fiveash WTP Filters Rehabilitation	454	$151,767	$151,767	-	-	-	-	-	$151,767
P12564	C-51 Reservoir	454	$90,130	$90,130	-	-	-	-	-	$90,130
P12581	Peele Dixie WTP Facility Improvements	454	$435,000	$435,000	-	-	-	-	-	$435,000
P12604	Small Water Main Replacement - Hendricks Isle	454	$1,498,066	$1,246,918	-	-	-	-	-	$1,498,066
P12704	Replace A/C Back Unit Peele Dixie Membrane Bldg.	454	$3,463	$3,463	-	-	-	-	-	$3,463
P12727	Fiveash Water Treatment Plant Valves Replacement	454	$133,130	$133,130	-	-	-	-	-	$133,130
P12765	New Water Treatment Plant - Prospect Lake WTP	454	$20,322,691	$9,277,404	-	-	-	-	-	$20,322,691
P12787	Lead and Copper Rule Revision (LCRR) Compliance Program	454	$1,600,000	$1,600,000	-	-	-	-	-	$1,600,000
P12802	SW 29th Street Small Watermains	454	$827,200	$827,100	-	-	-	-	-	$827,200
P12803	Poinsettia Drive Small Watermain Improvements	454	$119,816	$68,428	-	-	-	-	-	$119,816
P12805	Small Watermain Abandonment - SE 25th Avenue	454	$88,518	$65,763	-	$551,199	-	-	-	$639,717
P12808	North Andrews FEC Railway Watermain Replacement	454	$218,847	$176,108	-	$252,359	-	-	-	$471,206
P12823	Laudergate Isles Small Watermain Improvements	454	-	-	-	-	$444,773	$642,436	-	$1,087,209

Table 5-1: Five Year (FY2025 to FY2029) Water Supply, Treatment and Distribution Community Investment Plan

Project No.	Project Title	Fund	Unspent Balance as of 8/21/2024	Available Balance as of 8/21/2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	Total
P12827	Small Water Main Replacement - SW 31st Avenue	454	-	-	-	$985,661	-	-	-	$985,661
P12868	Wellfield Communications	454	$300,000	$300,000	$208,415	$300,000	-	-	-	$808,415
P12869	Excavate and Dispose of Dry Lime Sludge	454	$1,936,372	$1,890,077	$3,000,000	$3,000,000	-	-	-	$7,936,372
P12871	Fiveash Replacement of the Rotary Mechanisms Recirculation	454	$854,988	$854,988	$69,032	-	-	-	-	$924,020
23WSCIP	Line of Credit Project Funding	493	$8,043,767	$8,043,767	-	-	-	-	-	$8,043,767
P11465	17th Street Causeway- Large Watermain Replacement	493	$5,205,708	$5,205,708	-	-	-	-	-	$5,205,708
P12462	Coral Ridge Small Watermain Improvements	493	$4,936,912	$4,936,912	-	-	-	-	-	$4,936,912
P12827	Small Water Main Replacement - SW 31st Avenue	493	$3,858,449	$3,858,449	-	-	-	-	-	$3,858,449
P12765	New Water Treatment Plant - Prospect Lake WTP	494	$140,606,050	$67,158,533	-	-	-	-	-	$140,606,050
P10814	Central New River Watermain River Crossings	495	$182,392	$64,037	-	-	-	-	-	$182,392
P11465	17th Street Causeway- Large Watermain Replacement	495	$5,189,782	$5,189,782	-	-	-	-	-	$5,189,782
P11589	Fiveash WTP Disinfection Improvements	495	$12,687,827	$8,120,474	-	-	-	-	-	$12,687,827
P12400	Prospect Wellfield Electric Studies & Testing	495	$183,832	$183,832	-	-	-	-	-	$183,832

Table 5-1: Five Year (FY2025 to FY2029) Water Supply, Treatment and Distribution Community Investment Plan

Project No.	Project Title	Fund	Unspent Balance as of 8/21/2024	Available Balance as of 8/21/2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	Total
P12462	Coral Ridge Small Watermain Improvements	495	$4,936,912	$4,936,912	-	-	-	-	-	$4,936,912
P12803	Poinsettia Drive Small Watermain Improvements	495	$186,313	-	-	-	-	-	-	$186,313
P12827	Small Water Main Replacement - SW 31st Avenue	495	$3,849,971	$3,427,670	-	-	-	-	-	$3,849,971
P12917	Peele Dixie WTP Variable Frequency Drive	495	$485,413	$485,413	-	-	-	-	-	$485,413
P12765	New Water Treatment Plant - Prospect Lake WTP	497	$244,588,498	$736,631	-	-	-	-	-	$244,588,498
P12716	Advanced Metering Infrastructure Implementation	498	$51,086,281	-	-	-	-	-	-	$51,086,281
		Total	**$518,233,997**	**$131,715,631**	**$20,049,297**	**$9,737,797**	**$11,433,251**	**$13,803,464**	**$10,893,141**	**$584,150,947**

6. Regional Issues

6.1 Introduction

A description of regional water supply planning issues that impact the City of Fort Lauderdale, including the below, are presented in this section.

- Climate Change
- Sea Level Rise
- ILA for Cost Sharing for Salinity Distribution Evaluation Agreement
- Saltwater Intrusion
- Regional Water Availability Rule
- C-51 Reservoir, Phase 1 Project
- Regional Climate Action Plan
- Central and Southern Florida Flood Resiliency Study
- Lake Okeechobee Surface Water Allocation Limitations
- Lowering Lake Okeechobee Level
- Infrastructure Planned to Attenuate Damaging Peak Flow Events from Lake Okeechobee
- Expanded Use of Reclaimed Water to Meet Future Water Supply Demands
- East Coast Floridan Aquifer System Groundwater Model
- Conclusions of the East Coast Floridan Aquifer System Groundwater Model May Not Represent the Actual Risk of Future Water Quality Degradation
- Other Potential Floridan Aquifer Risk Factors
- Wellfield Management to Prevent Undesirable Changes in Floridan Aquifer Water Quality

6.2 Climate Change

Investigations and evaluations conducted at the national, regional, and local levels have reinforced the need to plan for the predicted impacts of more frequent and severe drought, increases in tidal and storm-related flooding, and ensuring that future planning efforts are flexible to adapt to changes to ensure a sustainable water supply infrastructure.

The City of Fort Lauderdale, together with its municipal and regional partners, understands that it is imperative that local governments and water utilities begin to formalize the integration of water supply and climate change considerations as part of coordinated planning efforts and work to provide relevant updates to the 10-year Water Supply Facilities Work Plan and enhance Goals, Objectives and Policies (GOPs) of its comprehensive plan.

The City is a leader in developing planning tools and identifying achievable and cost-effective goals that meet the needs of its community. The City fully supports the Southeast Florida Regional Climate Change Compact. Furthermore, it recently issued the "Fort Lauderdale Net Zero Plan" which outlines strategies to achieve net zero greenhouse gas emissions by 2050. It includes energy efficiency, renewable energy adoption, transportation electrification, waste reduction, and urban greenery expansion, aiming for a 70% reduction in community emissions by 2040 and 97% by 2050 (City of Fort Lauderdale, 2025b).

Key considerations relative to climate change include: 1) Sea level rise and 2) saltwater intrusion. These topics are presented in the following subsections.

6.3 Sea Level Rise

The City of Fort Lauderdale is a participant in the Southeast Florida Regional Climate Change Compact. The Compact is an ongoing collaborative effort among the participants (local communities, regulatory agencies, along with Broward, Miami-Dade, Monroe and Palm Beach Counties) to foster sustainability and climate resilience on a regional scale.

Development of cost-effective sea level rise adaptation strategies to ensure the sustainability of the City's water supply is critical to all ongoing planning efforts. To facilitate planning, the Southeast Florida Regional Climate Change Compact developed the sea level rise graphic (Southeast Florida Regional Climate Change Compact, 2019) illustrated in Figure 6-1. The Southeast Florida Regional Climate Change Compact issued a statement in 2024 confirming continued use of the 2019 sea level rise graphic (Southeast Florida Regional Climate Change Compact, 2024). The 2019 sea level rise projection is being used as the basis for planning throughout the region.

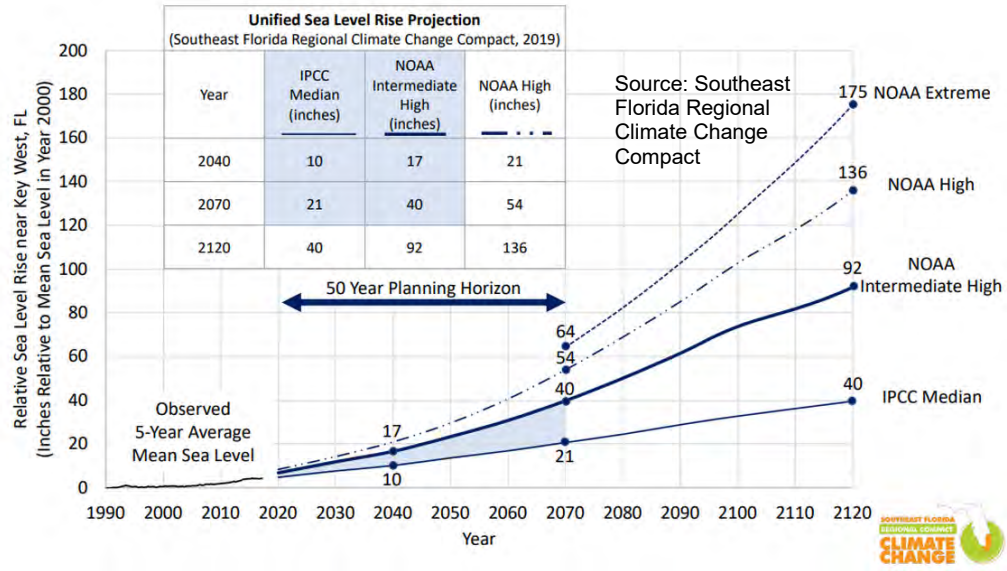

Figure 6-1: Sea Level Rise

6.4 ILA for Cost Sharing for Salinity Distribution Evaluation Agreement

The City contributed funding for Broward County and the United States Geological Survey (USGS) via the Interlocal Agreement titled "Cost Sharing Support of USGS Project for Evaluation of Changes to the Salinity Distribution Within the Surficial Aquifer Under Projected Future Hydrologic Conditions, Broward County, Florida" (City of Fort Lauderdale, 2023). Under this agreement, a variable density, numerical groundwater model capable of simulating the three-dimensional distribution of salinity within the surficial aquifer is being developed. The model could be used to simulate the encroachment of the saltwater front further into Broward County under various projections of future hydrologic conditions. The City is carefully following the development of this model.

6.5 Saltwater Intrusion

The Biscayne aquifer which serves as the City's primary water supply is a shallow, surficial aquifer characterized by limestone karst geology which is highly porous and transmissive. Coastal saltwater intrusion of the aquifer has occurred in eastern parts of Broward County. The mapping of the saltwater intrusion front (i.e., the depth and location of the 250 mg/L chloride concentration toe) is supported by local governments throughout the region, USGS, and the South Florida Water Management District (SFWMD). The saltwater interface map for Broward County is available at this link: 2024 Saltwater Map (SFWMD, 2024b).

The City reports that it estimates that approximately 20 million gallons of groundwater per day enters its gravity sewer system via infiltration. The City believes that decreasing infiltration (sewer leaks) would mitigate saltwater intrusion issues.

The 2024 Saltwater Map referenced above indicates that the 250 mg/L isochlor is approximately 1.9 miles to the southeast of the Prospect wellfield. Furthermore, the 2024 Saltwater Map indicates the 250 mg/L isochlor might be in the vicinity of the City's Dixie wellfield as illustrated in Figure 6-2. The mapping data issued by the SFWMD indicates the isochlor shown in red on the figure below is "location uncertain".

The City has operated the Dixie wellfield since the mid-1920s. Based on the City's data, there is no evidence of saltwater intrusion into the production zone (approximately 90 to 125 feet below land surface) of the City's Dixie wellfield. Hence, it is likely that the depth of the isochlor indicated in red in the figure below is much deeper than the region that the production interval . Given the uncertainty indicated by the SFWMD it is recommended that the City continue to invest in its partnership with Broward County and USGS to refine a groundwater model described in the section above along with careful monitoring of its water quality data. Additionally, the City will continue to study this issue during the update of its CUSMP.

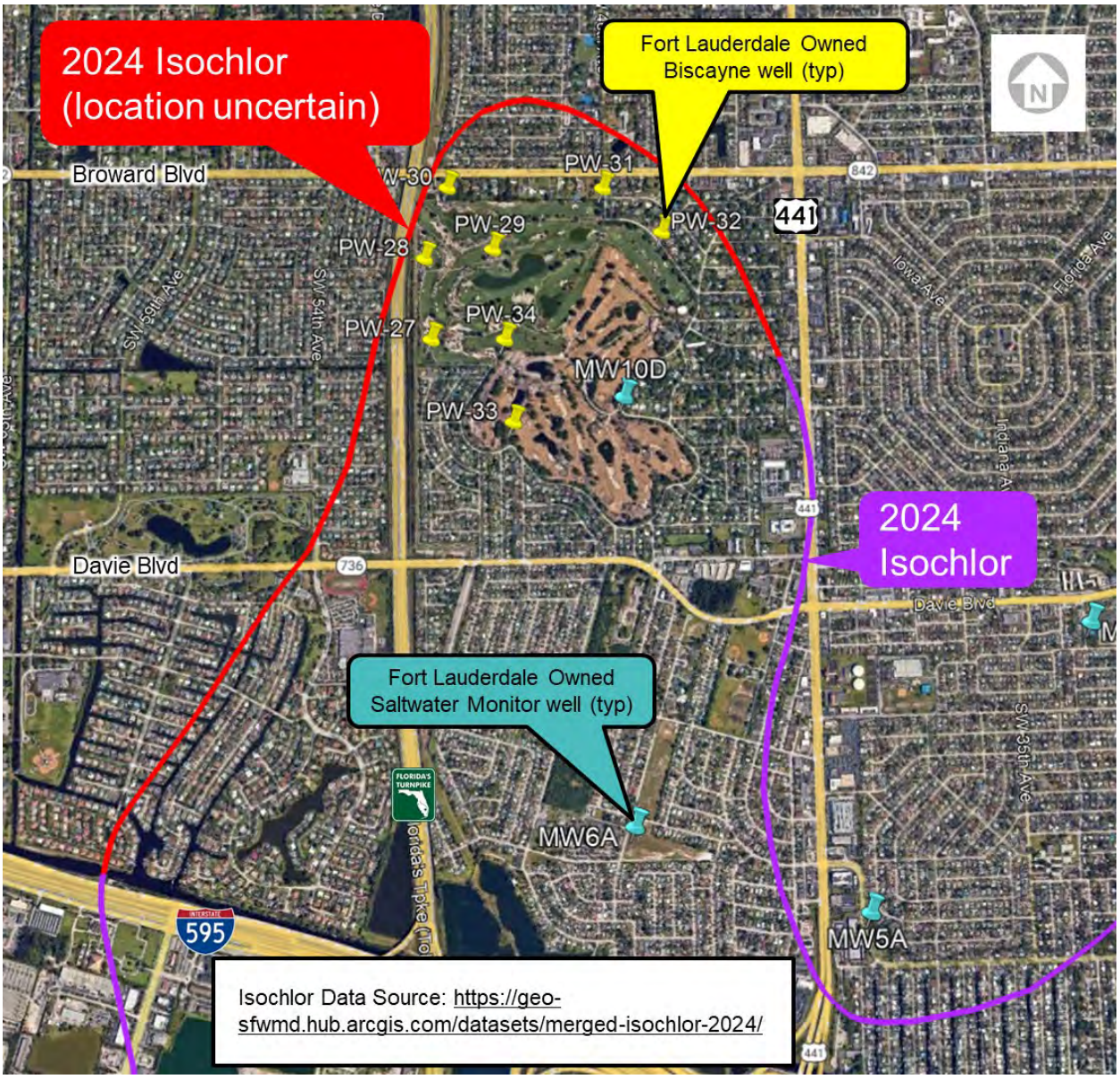

Figure 6-2: 250 mg/L Isochlor in the Vicinity of the Dixie Wellfield

The City has been proactively managing saltwater intrusion risk through a combination of managing wellfield pumpage and the collection of data from 10 saltwater monitoring wells constructed in 2002.

Furthermore, the City has replaced these wells over time as the need arose. Ten saltwater monitoring wells are operational. Table 6-1 summarizes the location of the City's saltwater monitoring wells.

Table 6-1: Fort Lauderdale Owned Saltwater Monitoring Wells

Name	Well ID	Lat	Lon	Location
MW1A	328213170	26.18851	-80.1709	NW 21st Ave & W. Commercial Blvd (NE corner)
MW2A	282737	26.2047	-80.1596	NW 12th Ave & W. Cypress Creek Rd (Pump Station E-11)
MW3A	282733	26.12218	-80.1864	NW 31st Ave & W. Broward Blvd (Pump Station A-43)
MW4A	Note 1	26.1033	-80.1904	SW 33rd Ter & 14th St. (Benenson Park)
MW5A	282734	26.09295	-80.1995	Riverland Rd. & SW 36th Ter
MW6A	282730	26.09595	-80.2088	Dixie Well (PW-18) SW 43 Way & 21 St.
MW7A	282736	26.11068	-80.1739	SW 24th Ave & 9th St. (SW corner)
MW8B	286493	26.15675	-80.1629	Mills Pond Park
MW9	212914	26.19266	-80.1389	5300 NE 6th Ave
MW10D	286505	26.11165	-80.2094	Ft. Laud Country Club (hole #11)

The City collects conductivity data from its 10 saltwater monitoring wells monthly. The purpose of the saltwater monitoring wells is to provide the City with data that it can use to manage wellfield withdrawals. The City reports these data to the SFWMD annually. The latest data available are presented in the City's report titled "2024 Annual Saltwater Intrusion Monitoring Report" (City of Fort Lauderdale, 2025a). The report documents evidence of potential saltwater impacts at MW-10D located at the Dixie wellfield. The 2024 conductivity data (the latest available) for MW-10D is presented in Figure 6-3 (City of Fort Lauderdale, 2025d). The conductivity data are converted to approximate chloride values using linear regression of available data.

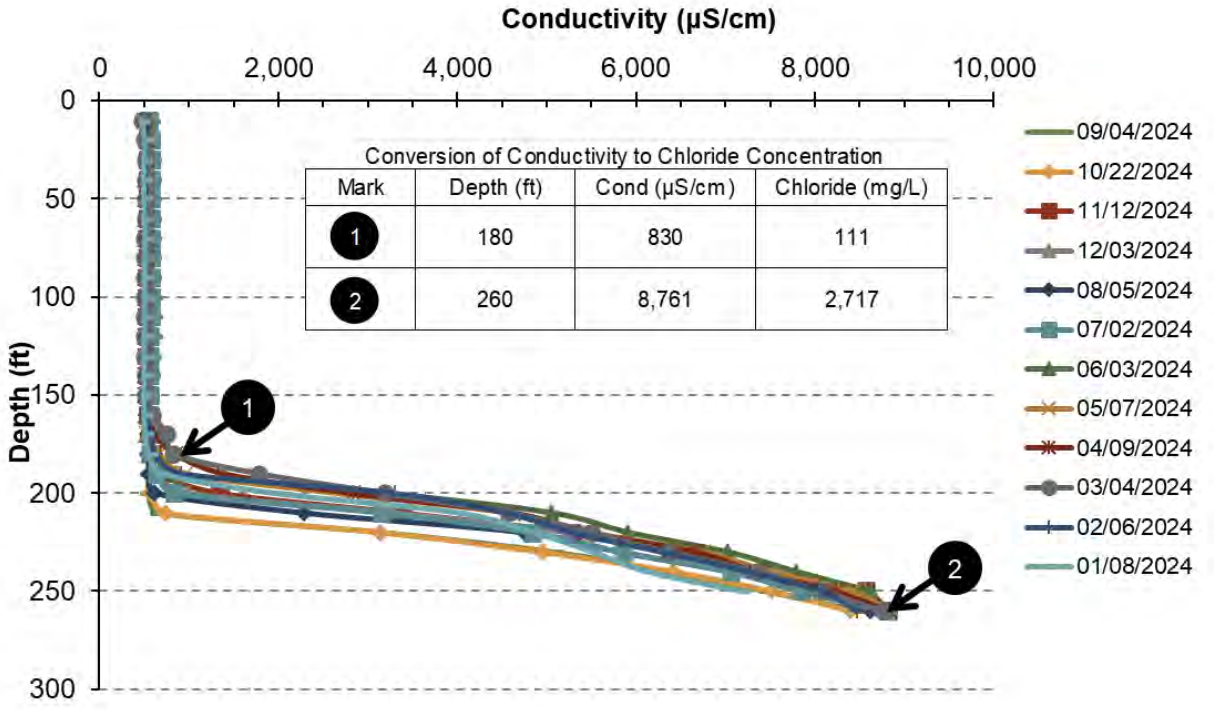

Figure 6-3: Conductivity Measured at Saltwater Monitor Well 10D

The City's 2024 data for monitor well 10D indicates conductivity of approximately 830 µS/cm at a depth of 180 feet below land surface and approximately 8,761 µS/cm at a depth of 260 feet below land surface (City of Fort Lauderdale, 2025d). These conductivity values correlate to a calculated chloride level of approximately 111 mg/L at a depth of 180 feet below land surface and 2,717 mg/L at a depth of 260 feet below land surface. Consequently, upconing of higher salinity groundwater from the base of the aquifer toward the wellfield production zone (approximately 90-feet to 125-feet below land surface) will continue to be monitored by the City.

The City's 2024 data indicates that composite raw water chloride concentration measured at the Peele-Dixie WTP averaged 34 mg/L. Hence, there is no evidence of increasing salinity entering the City's Dixie wells. Given the depth of the high chloride concentration below the production depth, upconing is not likely to be an immediate concern. It is recommended that the City continue to monitor its wells for saltwater intrusion and coordinate closely with the SFWMD. Additionally, the City will continue to study this issue during the update of its CUSMP.

6.6 Regional Water Availability Rule

The Regional Water Availability (RWA) rule was passed by the SFWMD on February 16, 2007. The RWA limits water withdrawals from the Biscayne Aquifer to the maximum quantity during any consecutive five years preceding April 2006. Water utilities needing additional water supplies are required to seek sources that are not dependent upon the Everglades for recharge. These alternative water supply solutions include recycling water, using reclaimed water to recharge the Biscayne Aquifer, or

drawing water from the deeper Floridan Aquifer (which requires high energy consumption treatment methods).

The City purchased a 3.0 mgd offset from the C-51 Reservoir, Phase 1 that augments its Biscayne supply. The City's water use permit limits[6] the City's Biscayne Aquifer withdrawal to the following (SFWMD, 2021) after the C-51 Reservoir, Phase 1 offset becomes available:

- Peele-Dixie is 5,475 MGY, or 15 MGD
- Prospect is 16,948 MGY, or 46.43 MGD
- Total from both wellfields is limited to 20,276 MGY, or 55.55 MGD

Note that the individual wellfield allocations do not equal the total permitted withdrawal allocation for the Biscayne aquifer. Although the total Biscayne aquifer withdrawal allocation is limited to 55.55 mgd (annual average), the higher individual wellfield allocations provide the City with operational flexibility. Demands more than the above annual (MGY) amounts would be met via conservation and alternative water supplies.

6.7 C-51 Reservoir Project

The C-51 Reservoir, owned and operated by Palm Beach Aggregates (PBA), is an alternative water supply project in South Florida designed to support the Lower East Coast (LEC) Utilities in meeting long-term water demands while protecting the Everglades and other sensitive ecosystems. Developed in response to the 2007 Regional Water Availability Rule, the reservoir aims to store excess stormwater during wet seasons for use during dry periods. The project is planned in two phases, with a total storage capacity of 62,000 acre-feet. Phase 1 (operational as of April 2024) provides 16,000 acre-feet, and Phase 2 (if implemented) would add 46,000 acre-feet. The reservoir connects to the L-8 Reservoir and is integrated into the SFWMD Regional System. It offers a cost-effective and environmentally sustainable alternative to other water supply methods like desalination or reverse osmosis. Participating utilities can use the reservoir to replace or supplement existing water supply projects, enhancing regional water security and resilience.

The C-51 Reservoir, Phase 1, has been fully allocated via executed agreements with the following utilities:

- Broward County: 6 mgd
- Sunrise: 5 mgd
- Dania Beach: 1 mgd

[6] The SFWMD specifies withdrawal limits as an annual allocation and a maximum monthly limit. The SFWMD has not provided any Biscayne aquifer withdrawal limits to the City in terms of maximum daily limits. Therefore, the values in millions of gallons per day (MGD) shown above are not raw water withdrawal limits and are included solely for reference.

- Hallandale Beach: 1 mgd
- Fort Lauderdale: 3 mgd
- Miami-Dade: 15 mgd

The City executed a Capacity Allocation Agreement (CAA) with PBA on December 23, 2019, for 3 MGD. The City paid a one-time capital cost of $13,800,000. Additionally, it pays a variable annual operations and maintenance cost. The first-year operations and maintenance cost, paid in September 2024, was $116,000.

To access the water, the City requests a release of water from the SFWMD in writing. The SFWMD then evaluates if the request can be met through system storage or whether a release of water from the C-51 reservoir is required into the reginal canal network to meet combined requests from the participating utilities.

6.8 Regional Climate Action Plan

The City of Fort Lauderdale participates in the Southeast Florida Regional Climate Change Compact. The Compact is a collaborative regional effort to address climate change. Compact members are actively involved in implementing the Compact's goals and strategies. These goals and strategies are documented in the Regional Climate Action Plan (RCAP). The RCAP has been updated over the years. The most recent update was issued in 2022 titled "Climate Action Plan 3.0".

The RCAP aims to develop and apply water management strategies and infrastructure improvements, alongside conservation and alternative supply efforts, to mitigate climate change impacts, including sea level rise, on water resources. The RCAP includes 17 specific water supply recommendations. Table 6-2 presents the water supply related recommendations from the 2022 Climate Action Plan 3.0 document (Southeast Florida Regional Climate Change Compact, 2022). It is the City's policy to implement these recommendations.

Table 6-2: Water Supply Recommendations from the 2022 Climate Action Plan

Item	Recommendations
WS-1	Practice integrated water resources management and planning.
WS-2	Foster innovation, development and exchange of ideas for managing water.
WS-3	Foster scientific research for water resource management.
WS-4	Coordinate innovative regional investments in water management technologies.
WS-5	Expand the use of green infrastructure/nature-based and net zero solutions in water management.
WS-6	Ensure consistency in water resource scenarios used for policy and planning consideration of future climate conditions.
WS-7	Assess the potential of climate impacts on water infrastructure.
WS-8	Modernize infrastructure development standards in the region.
WS-9	Address the resilience of the regional flood control system.

Table 6-2: Water Supply Recommendations from the 2022 Climate Action Plan

Item	Recommendations
WS-10	Integrate combined surface and groundwater impacts into the evaluation of at-risk infrastructure and the prioritization of adaptation improvements.
WS-11	Implement strategies and capital projects to increase adaptive and resilient water infrastructure, and improve water quality.
WS-12	Phase out septic systems where appropriate to protect public health and water quality.
WS-13	Coordinate saltwater intrusion mapping across Southeast Florida.
WS-14	Develop a spatial database of resilience projects for water infrastructure.
WS-15	Support the Comprehensive Everglades Restoration Plan (CERP).
WS-16	Expand regional surface water storage.
WS-17	Expand information and engagement with property owners to support adaptation on private property to contend with increased flooding and higher groundwater.

Source: (Southeast Florida Regional Climate Change Compact, 2022)

6.9 Central and Southern Florida Flood Resiliency Study

With the support from the Florida Department of Environmental Protection (FDEP), Broward County, Miami-Dade County, and other local partners, SFWMD and USACE have been working to finalize the Reach A Central and Southern Florida (C&SF) Flood Resiliency Study scope (SFWMD, 2025a). An overall integrated strategy has been developed, and it will allow the project teams to pursue parallel efforts for each of the four original C&SF Flood Resiliency Study planning reaches. This integrated strategy allows the partners to advance these urgent feasibility assessments at a faster pace, and maintain consistency in scenario formulation, study assumptions, and regional planning standards.

SFWMD is advancing a feasibility assessment and initial engineering designs on C&SF coastal water control structures in portions of Broward County, Florida, respective to the Reach A of the C&SF Flood Resiliency Study. SFWMD will be utilizing Section 203 of the Water Resources Development Act (WRDA) of 1986, as amended, to advance the flood risk management study with support from FDEP and Broward County, and technical assistance from USACE, aiming for inclusion in the Water Resource Development Act (WRDA) 2026. The SFWMD maintains an information portal at the following link: Central and Southern Florida Flood Resiliency Study Broward Basins.

6.10 Lake Okeechobee Surface Water Allocation Limitations

Surface water allocations from Lake Okeechobee and the Water Conservation Areas are limited in accordance with the Lake Okeechobee Service Area Restricted Allocation Area (RAA) criteria. In 2008, the SFWMD adopted RAA criteria for the Lake Okeechobee Service Area as part of the Minimum Flow and Minimum Water Level (MFL) recovery strategy for Lake Okeechobee. The criteria limit allocations from Lake Okeechobee and integrated conveyance systems hydraulically connected to the lake to base condition water uses that occurred from April 1, 2001 to January 1, 2008. After adoption of the RAA, all

irrigation users in the Lake Okeechobee Service Area were required to renew their water use permits (SFWMD, 2018a).

In 2007, the SFWMD adopted the LEC Regional Water Availability criteria to prohibit increases in surface water and groundwater withdrawn from the North Palm Beach County/Loxahatchee River Watershed Waterbodies and Lower East Coast Everglades Waterbodies above base condition water uses permitted as of April 1, 2006. This also includes canals that are connected to and receive water from these water bodies. New direct surface water withdrawals are prohibited from the Everglades and Loxahatchee River watersheds and from the integrated conveyance systems. These criteria are components of the MFL recovery strategies for the Everglades and the Northwest Fork of the Loxahatchee River (SFWMD, 2018a). The City is not directly impacted by the Lake Okeechobee surface water allocation limitations.

6.11 Lake Okeechobee System Operating Manual (LOSOM)

The Lake Okeechobee System Operating Manual (LOSOM) is the updated water management plan developed by the U.S. Army Corps of Engineers (USACE) to replace the 2008 Lake Okeechobee Regulation Schedule (LORS08). LOSOM was designed to reflect the improved safety of the Herbert Hoover Dike and to better balance the needs of South Florida's communities, ecosystems, and water users. Developed over five years with input from more than 50 stakeholder groups, LOSOM emphasizes system-wide benefits, including reducing harmful discharges to estuaries, improving water supply reliability, and enhancing environmental conditions. It allows for more flexible, real-time decision-making based on current conditions and promotes collaboration between federal agencies and local stakeholders. LOSOM also supports the goals of the Comprehensive Everglades Restoration Plan (CERP) by enabling more water to flow south into the Everglades. LOSOM went into effect as of August 12, 2024, and the Jacksonville District of the USACE implements the plan. A copy of the LOSOM plan is available at this link: 2024 LOSOM Water Control Plan. The USACE maintains a LOSOM information website at this link: USACE LOSOM Webpage.

If Lake Okeechobee's level drops below Zone D, the system enters the Water Shortage Management Band, which can trigger restrictions on water use (SFWMD, 2025b). This could reduce the amount of water available to recharge the Biscayne Aquifer, the City of Fort Lauderdale's primary drinking water source. The City closely coordinates with the SFWMD to prepare for water supply restrictions during periods of limited rainfall.

6.12 Broward County Water Preserve Areas (BCWPA) Project

The BCWPA Project is a key component of the CERP. Its primary goals are to:

- Reduce seepage loss from Water Conservation Areas (WCA-3A/3B) to the C-11 and C-9 basins.
- Capture, store, and distribute surface water runoff from the western C-11 Basin that would otherwise be discharged into WCA-3A/3B.

Key project components are as follows:

- C-11 Impoundment – Stores runoff from the C-11 Basin and reduces discharges into WCA-3A.
- C-9 Impoundment – Captures runoff from the C-9 Basin and overflow from the C-11 Impoundment.
- WCA-3A/3B Seepage Management Area – A buffer zone to reduce seepage and improve water management.

The expected environmental and operational benefits to the region of this project are as follows:

- Reduces phosphorus loading to WCA-3A.
- Captures stormwater otherwise lost to tide.
- Enhances flood protection, groundwater recharge, and wetland restoration.
- Supports threatened and endangered species and improves hydroperiods in the Everglades.

The project was authorized by Congress in 2014, and construction is ongoing, with several components in various stages of design and implementation. The USACE maintains an information website on project status at this link: Broward County Water Preserve Areas. This regional project has no direct water supply impact on the City of Fort Lauderdale.

6.13 Expanded Use of Reclaimed Water to Meet Future Water Supply Demands

The City's Sewer System service area is in a critical water supply area, as designated by the SFWMD. As such, FAC Section 62-40.416 requires a reasonable amount of reuse of reclaimed water unless it is not economically, environmentally, or technically feasible. Section 403.064 of the Florida Statutes also requires domestic wastewater treatment plant permit applicants in a critical water supply problem area to submit a reuse feasibility study as part of their permit applications. Reuse feasibility studies were completed in 1994, 2008, 2012 for the City. Reclaimed water projects have been deemed non-economical. The City plans to continue to assess reclaimed water opportunities that are beneficial to the community as needed.

6.14 East Coast Floridan Model

The SFWMD developed the East Coast Floridan Model (ECFM) which is a peer-reviewed, calibrated regional Floridan aquifer system groundwater model. The ECFM is a density-dependent groundwater flow and solute transport model covering the Upper East Coast and Lower East Coast planning areas of the SFWMD. The ECFM simulates regional groundwater levels, flows, and quality changes (total dissolved solids) in the Floridan aquifer in response to withdrawals. The model was designed with seven layers as illustrated in 6-4. The Upper Floridan Aquifer (UFA) and Avon Park Permeable Zone (APPZ) are the two layers used as water supply sources in the Lower East Coast Planning Area.

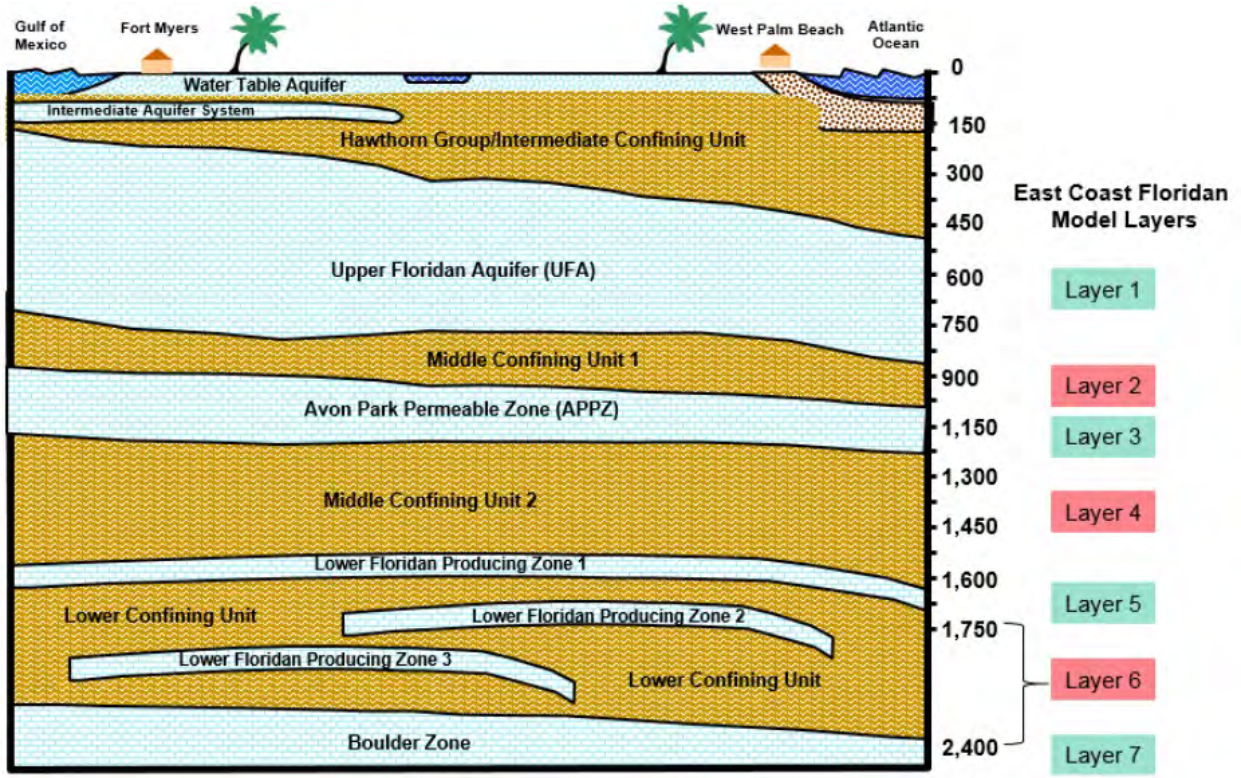

Figure 6-4: East Coast Floridan Model Layers

Adapted from South Florida Water Management District Lower East Coast Water Supply Plan 2018 Update Figure D-52

The 2023-2024 LEC Plan Update page E-7 asserts that the ECFM findings presented in the 2018 LEC Plan Update remain valid. Key ECFM findings presented in the 2018 LEC Plan Update are summarized below (SFWMD, 2018a).

- The model predicted stable total dissolved solids (TDS) of 6,000 to 8,000-mg/L in the UFA in the vicinity of the Dixie Wellfield from 2016 through 2040.
- The model predicted that TDS in the APPZ in the vicinity of the Dixie Wellfield would increase from 8,000-mg/L to approximately 9,000-mg/L from 2016 to 2040.

- The model predicts that the UFA ground water elevation would drop from approximately 40-ft National Geodetic Vertical Datum of 1929 (NGVD-29) to approximately 35-ft NGVD-29 in the vicinity of the Dixie Wellfield from 2016 to 2040.
- The model predicts that the APPZ ground water elevation would drop from approximately 45-ft NGVD-29 to approximately 40-ft NGVD-29 in the vicinity of the Dixie Wellfield from 2016 to 2040.
- The most significant TDS increase predicted by the modeling was at the South Miami Heights wellfield in Miami-Dade; the model predicted a 2,900-mg/L increase in TDS in the UFA.

While the modeling did not predict significant water quality degradation, the regional nature of the model limits the ability to account for specific wellfield operations used by utilities. Certain utilities have experienced significant water quality degradation in its Floridan Aquifer wells. For example, the Palm Beach County Utilities Department Western Regional Floridan Aquifer wells "TP-1" and "PW-6" had chloride increase from 1,600-mg/L to nearly 5,000-mg/L over a two-year period. Construction of additional wells and subsequent reductions in individual well pumping rates reducing the interference between wells resulted in distributing aquifer stress. Within two years the chloride concentration in "PW-6" decreased to 3,500-mg/L and remained steady. The chloride concentration has continued to increase in "TP-1", exceeding 6,000-mg/L in 2018 (SFWMD, 2018a).

To avoid undesirable changes in Floridan aquifer water quality, it is critical that the wellfield be designed and operated to minimize the risk of upconing (vertical migration) of lower quality water from lower depths into the production zone. Suggested wellfield design and operating protocols to minimize the risk of upconing are described in the subsection.

6.15 Conclusions of the ECFM May Not Represent the Actual Risk of Future Water Quality Degradation

The conclusions of the ECFM prepared for the 2018 LEC Plan Update were based on Florida aquifer withdrawals in year 2016 of 65-mgd and year 2040 of 146-mgd (SFWMD, 2018a). The SFWMD indicated that the Floridan aquifer withdrawal allocation is 212-mgd (SFWMD, 2018b). Hence, the model results presented in the 2018 LEC Plan Update do not include 66-mgd of potential Florida aquifer withdrawals. If the 212-mgd of Florida aquifer withdrawal allocation is fully realized it may result in increased Florida aquifer water quality degradation and reduced water elevation with resultant risk of upward movement of lower quality water over the long-term.

It is recommended that the City continue to support all efforts to produce refined modeling results going forward along with regulatory policy to restrict Floridan aquifer withdrawals to protect utilities that invest in this resource from unexpected water quality changes. Additionally, it is recommended that the City support all efforts in collection of additional Floridan aquifer well construction, aquifer test and lithologic data from new and existing Floridan wells for the SFWMD to use in future refinements of its ECFM.

6.16 Vertical Collapse Feature Risk

Vertical collapse features (VCFs) are geologic structures that form when overlying rock or sediment collapses into a void or weakened zone below. In the context of carbonate aquifers like the Floridan, these voids often result from dissolution of limestone or dolostone, a process known as karstification. VCFs might allow high salinity water from lower depths, such as the Boulder Zone, to migrate vertically into upper levels the aquifer, such as the UFA (Cunningham, et al., 2018).

VCFs are often narrow and deep, making them hard to identify without advanced geophysical tools like seismic stratigraphy. While the USGS has applied seismic stratigraphic mapping in parts of Broward County, a comprehensive regional assessment of VCFs is lacking. The risk that VCFs pose to Floridan aquifer water supply development projects is undefined. It is recommended that the support efforts to better define this risk on a regional basis. Furthermore, the City should consider this potential risk factor if it plans development of the Floridan aquifer as a water supply.

6.17 Wellfield Management to Prevent Undesirable Changes in Floridan Aquifer Water Quality

Demand currently does not require the City to implement an alternative water supply. If future demand projections due to increased population growth warrants an alternative water supply, the City might choose to implement treatment of the Florida aquifer. Using the Floridan aquifer requires careful design and wellfield management to prevent undesirable changes in water quality.

Several Floridan aquifer wellfields in the LEC Planning Area have experienced some water quality degradation. The SFWMD asserts that water quality degradation risks can be managed by utilities through appropriate wellfield design and operating protocols. The SFWMD recommended the following risk reduction strategies (SFWMD, 2018a):

1. Increasing well spacing between wells to more than 1,000 feet to minimize interference effects and to reduce stress on the Florida aquifer.
2. Rotating the operation of individual wells, thereby reducing overall pumping stress on the well's production zone.
3. Plugging and abandoning individual wells experiencing increases in chloride concentration and replacing them with new wells elsewhere within the wellfield area.
4. Reducing pumping rates at individual wells to minimize water level declines, which increases the potential for poor-quality water to enter the well's production zone from below (i.e., upconing).
5. Installing monitor wells to provide early warning of the need for changes to wellfield operations to minimize upconing or lateral movement of poor-quality water.
6. Utilities should use an incremental approach to install and test production wells due to geologic variability within the Florida aquifer. Wellfields should be designed and monitored to prevent over-stressing production zones and to minimize changes in water quality.

7. Public water supply utilities developing Florida aquifer sources are encouraged to share water quality, water level, and hydrologic data to increase understanding of the FAS and improve regional groundwater models.

8. The SFWMD should continue to use the ECFM to address regional resource questions. Refinements to and recalibration of the model should be made as new data becomes available.

9. Florida aquifer users and SFWMD staff should evaluate the effects of water quality degradation and coordinate on related permitting, modeling, and planning strategies to maintain the viability of the Florida aquifer as a water supply source.

The SFMWD used the ECFM for the 2018 LEC Plan Update. Based on this modeling, SFWMD concluded that increased utilization of the FAS will tend to increase the risk of water quality degradation. However, the 2018 LEC Plan Update noted that "…water quality should remain adequate for all users with RO treatment…" (SFWMD, 2018a).

The City has long recognized the risks of changes in water quality and quantity in the Florida aquifer. The City's planning documents recommended addressing this risk through the following design features (Hazen and Sawyer, 2008b):

1. Design the RO system to treat water with a TDS up to approximately 8,000-mg/L and chloride concentration of 4,300-mg/L

2. Size the skids to allow for installation of future pressure vessels to decrease flux rate

3. Size variable frequency drives and main electrical feed for higher feed pump pressure, but only install the motor horsepower initially required

4. Size feed pump can for additional pump stage, but only add it if required later

5. Install piping and valves at higher pressure rating

6. Design the energy recovery turbine for a compromise that optimizes boost over most of the operating range at the expense of performance at the extremes of feed water salinity

7. Select wellfield pumps and size wellfield power facilities to suit the horsepower requirements of the future estimated salinity and total dissolved solids

The City will monitor the issue of Florida aquifer water quality degradation and factor this risk into its investment decision making process relative to alternative water supply opportunities.

7. Goals, Objectives and Policies

7.1 Introduction

The City of Fort Lauderdale Comprehensive Plan addresses the needs and aspirations of the community. This has tremendous implications regarding the importance of community input in the development and implementation of the Comprehensive Plan.

The Comprehensive Plan also plays a significant role within Florida's growth management system. The Comprehensive Plan is required to be consistent with the State Comprehensive Plan (Chapter 187, Florida Statutes), and to be consistent with the Regional and County Comprehensive Plans. In short, the Comprehensive Plan provides a critical link between the City of Fort Lauderdale, State of Florida, Regional, and Broward County plans. The Comprehensive Plan establishes long-term direction of goals as well as short-term objectives and policies to guide implementation efforts.

The City of Fort Lauderdale's comprehensive plan goals, objectives, and policies (GOPs) relevant to water supply have been reviewed and are consistent with the 10-year Water Supply Facilities Work Plan 2025 Update.

7.2 Intergovernmental Coordination

7.2.1 Introduction

This subsection describes the City's intergovernmental coordination activities with the jurisdictions outside of the City of Fort Lauderdale that it supplies with finished water. Additionally, this subsection describes City coordination activities relative to long-range water supply planning with the SFWMD.

7.2.2 The City of Fort Lauderdale Actively Coordinates With the Agencies it Supplies With Finished Water

The City of Fort Lauderdale coordinates with the agencies it supplies with finished water on many levels. Examples of coordination between the City of Fort Lauderdale and its bulk finished water customers follows:

- The City of Fort Lauderdale oversees wholesale water consumption by conducting monthly meetings with users and generating monthly reports.
- The City of Fort Lauderdale maintains agreements with all its customers within its service area. The agreements with certain bulk finished water customers require periodic coordination by each party to the agreement to review issues related to water quality, quantity and technological advancements relevant to each party.

- The City's agreements with its bulk finished water customers require the bulk customers to coordinate with the City of Fort Lauderdale in advance of allowing developments to connect that are estimated to consume more than 100,000 gallons of water per day.
- The City coordinates with its bulk finished water customers on a monthly basis for billing for water purchases.
- The Environmental Laboratory of the City's Utilities Division collaborates with its clients to conduct water quality sampling and analyses for specific utilities receiving its water services.
- The City's Utilities Division provides operational coordination with its bulk finished water customers on an as-needed basis to ensure effective delivery of water
- The City leads the development of financial analyses to establish water rate adjustments and coordinates the acceptance of these adjustments with its customers.
- The bulk finished water customers that are supplied with water by the City of Fort Lauderdale own and operate their water distribution pipe network. The City of Fort Lauderdale assists these utilities on an as-requested basis.

7.2.3 Need for Additional Coordination Activities

Historically, there has been little need for additional coordination activities (beyond those described above) with the City's bulk finished water customers relative to planning future water supply. As the City's agreements with its bulk customers near expiration, the City may include requirements for additional coordination activities if the City determines it is needed for planning purposes.

7.2.4 The City of Fort Lauderdale Actively Coordinates with the SFWMD During LEC Plan Updates

Since 2017 the City of Fort Lauderdale's Assistant Public Works Director – Utilities, Environmental Compliance Supervisor and the Environmental Resource Supervisor have been responsible for coordinating with the SFWMD relative to the LEC Plan Update. These City personnel participated in workshops with the SFWMD during the LEC Plan Update development. Additionally, these City personnel are responsible for providing responses to the SFWMD's requests for information related to the LEC Plan Update.

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APPENDIX H

RESOLUTION NO. R-2025-214 – INTERLOCAL AGREEMENT FOR THE NATURESCAPE IRRIGATION SERVICE AND RESIDENTIAL IRRIGATION REBATE PROGRAM BETWEEN BROWARD COUNTY AND THE CITY OF HOLLYWOOD

RESOLUTION NO. ____R-2025-214_____

A RESOLUTION OF THE CITY COMMISSION OF THE CITY OF HOLLYWOOD, FLORIDA, APPROVING AND AUTHORIZING THE APPROPRIATE CITY OFFICIALS TO EXECUTE AN INTERLOCAL AGREEMENT WITH BROWARD COUNTY TO PROVIDE COST SHARE SUPPORT FOR NATURESCAPE IRRIGATION SERVICE EVALUATIONS AND THE RESIDENT IRRIGATION REBATE PROGRAM IN A TOTAL AMOUNT UP TO $133,825.55 OVER A FIVE-YEAR PERIOD; AMENDING THE FISCAL YEAR 2025 CAPITAL IMPROVEMENT PLAN.

WHEREAS, the City owns and operates several drinking water wells located within two distinct coastal aquifers, the Biscayne Aquifer and the Floridan Aquifer; and

WHEREAS, an adequate, high-quality water supply is key to the current and continued support of urban and natural systems in Broward County; and

WHEREAS, consumptive use water supply allocations are limited via the South Florida Water Management District's ("SFWMD") adoption of Restricted Allocation Areas; and

WHEREAS, Rule 40E-2.321 of the Florida Administrative Code and the SFWMD Applicant Handbook require public water utilities to develop and implement standard water conservation plans; and

WHEREAS, in 2015, Broward County entered into various interlocal agreements to share the cost of the County's NatureScape Irrigation Service Program ("NIS"), which were renewed in 2020 and included a Residential Irrigation Rebate Program ("RIR"), both of which will expire in 2025; and

WHEREAS, the services provided by the NIS and RIR Programs directly support measures within the aforementioned conservation plans to increase water use efficiency by providing water conservation opportunities to the City and Department of Public Utilities ("Department") customers; and

WHEREAS, the irrigation system evaluation services provided by the NIS and RIS Programs also directly support water quality objectives that comply with regional and state regulatory programs, and such support is dependent upon community-wide participation; and

WHEREAS, All the municipalities involved divide the estimated cost of the Programs, and each of the municipalities, including the City of Hollywood, must enter into an Interlocal Agreement ("ILA") with Broward County; and

WHEREAS, the overall cost-sharing support cost for the NIS and RIR Programs is in a total amount up to $133,825.55 for the five-year period as more specifically set forth in the attached ILA, with cost variations dependent on the number of services provided per year, but with a maximum annual amount up to $17,875.00 for the NIS, and up to $16,750.00 for the RIR program; and

WHEREAS, the Department recommends that the City Commission approve and authorize the appropriate City Officials to execute the attached ILA to provide cost share support of NIS and RIR Programs within the Water Utility Service Area as more specifically set forth in the ILA; and

WHEREAS, the FY 2025 Capital Improvement Plan was adopted and approved by the City Commission pursuant to Resolution R-2024-318 at the second Public Budget Hearing on September 18, 2024; and

WHEREAS, it is necessary to amend the approved FY 2025 Capital Improvements Plan as set forth in the attached Exhibit "1."

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COMMISSION OF HOLLYWOOD, FLORIDA:

Section 1: That the foregoing "WHEREAS" clauses are ratified and confirmed as being true and correct and are incorporated in this Resolution.

Section 2: That it approves and authorizes the execution, by the appropriate City officials, of the attached ILA with Broward County, together with such non-material changes as may be subsequently agreed to by the City Manager and approved as to form by the City Attorney.

Section 3: That these Amendments to the FY 2025 Capital Improvement Plan for the Fiscal Year beginning October 1, 2024, as set forth in detail in the attached Exhibit "1" are adopted and authorized as Amendments and/or Adjustments to the Capital Improvement Plan of the City of Hollywood, Florida, for the Fiscal Year 2025.

Section 4: That this Resolution shall be in full force and effect immediately upon its passage and adoption.

A RESOLUTION OF THE CITY COMMISSION OF THE CITY OF HOLLYWOOD, FLORIDA, APPROVING AND AUTHORIZING THE APPROPRIATE CITY OFFICIALS TO EXECUTE AN INTERLOCAL AGREEMENT WITH BROWARD COUNTY TO PROVIDE COST SHARE SUPPORT FOR NATURESCAPE IRRIGATION SERVICE EVALUATIONS AND THE RESIDENT IRRIGATION REBATE PROGRAM IN A TOTAL AMOUNT UP TO $133,825.55 OVER A FIVE-YEAR PERIOD; AND AMENDING THE FISCAL YEAR 2025 CAPITAL IMPROVEMENT PLAN.

PASSED AND ADOPTED this __18___ day of _____June_____, 2025.

_____
JOSH LEVY, MAYOR

ATTEST:

_____
PATRICIA A. CERNY, MMC
CITY CLERK

APPROVED AS TO FORM:

_____
DAMARIS HENLON
INTERIM CITY ATTORNEY

Exhibit 1: Budget and Capital Amendments
Water and Sewer Fund (442)

This item reallocates $ 133,825.55 from Water Contingency Program to the ILA for the cost share of a NatureScape Irrigation Service & Residential Irrigation Rebate Program

Transfer from

Description	Account Number	Amount
Water Contingency	442.409904.53600.599990.001643.000.000	133,825.55
Subtotal		133,825.55

Transfer to

Description	Account Number	Amount
Water Conservation	442.409901.53600.552010.000739.000.000	133,825.55
Subtotal		133,825.55

APPENDIX I

PROJECT MEMO – POPULATION PROJECTIONS

PROJECT MEMORANDUM

CITY OF HOLLYWOOD

Water Supply Facilities Work Plan (WSFWP) 2025 Update

Project No.:	203879
Date:	July 01, 2025
Prepared By:	Karen Liang, P.E., CFM; Evan Greenberg
Reviewed By:	Angelica Gregory, Ph.D., P.E.
Subject:	Population Projections

This document is released for the purpose of information exchange review and planning only under the authority of M. Angelica Gregory, July 2025, Florida P.E. No. 75583.

1.0 BACKGROUND AND PURPOSE

The City of Hollywood engaged Carollo Engineers, Inc (Carollo) to update the City's WSFWP. This memorandum documents the analysis and results from the population projection effort completed for the project.

2.0 POPULATION PROJECTIONS

Population in the City is expected to grow modestly throughout the forecast period. Less than one percent of the land area in the City is developable vacant land and most of these parcels are infill lots scattered throughout the City. Overall, the City is close to build-out and redevelopment is expected to accommodate the projected increases in population. The populations served by the City of Hollywood and Broward County Water and Wastewater Services (BCWWS) Districts 3A, B/C service areas reside in multiple municipalities. To account for the population growth within the service areas, growth within each municipality was considered. The geographic area of each municipality served was first delineated using GIS process to divide the service areas by municipality boundaries. Then, the square footage of each area was calculated using GIS calculation tool. The results are summarized for each service area in Table 1, Table 2 and Table 3. It is assumed that population is generally distributed across these municipalities evenly and the percentage of area served is representative of the percentage of population served.

The service area GIS shapefile used for this analysis was based on the 2024 Lower East Coast (LEC) report. When compared to the 2018 LEC, the City of Hollywood service area used in the 2024 LEC included minor corrections in the coastal area and the northwestern part of the City along Turnpike.

The City of Hollywood service area includes small areas of Davie and Dania Beach in addition to Hollywood. Historically, this service area also served approximately 100 acres of the Seminole Tribe of Florida reservation, but the service was disconnected recently. The geographic percentages of each municipality in the Hollywood service area are shown in Table 1.

Table 1 Municipalities in the Hollywood Service Area

Municipality	Total Area (sq ft)	Area in Hollywood Service Area	% of Municipality in Hollywood Service Area
Davie	991,435,984	8,634,780	1%
Dania Beach	231,466,636	2,000,596	1%
Hollywood	815,678,141	725,549,041	98%(1)

Notes:

(1) Although only 89 percent of the geographic area of Hollywood is within the boundaries of the Hollywood service area, it is assumed that service is provided to all residents. The 11 percent of area not included in the services is located near Port Everglades which is an industrial area served by the City of Fort Lauderdale. For this reason, 98 percent is used for the calculations with the other 2 percent included in the BCWWS District 3B/C.

BCWWS District 3A service area serves portions of Dania Beach and Unincorporated Broward County area as well as small areas of Davie and Fort Lauderdale. The geographic percentages of each municipality within the BCWWS 3A service area is shown in Table 2.

Table 2 Municipalities in the BCWWS 3A Service Area

Municipality	Total Area (sq ft)	Area in District 3A (sq ft)	% of Municipality in District 3A
Davie	991,435,984	10,928,036	1%
Dania Beach	231,466,636	113,139,266	49%
Fort Lauderdale	1,012,259,851	8,225,479	1%
Unincorporated	249,153,361	79,283,929	32%

BCWWS District 3B/C serves Pembroke Park and West Park as well as small areas of Hollywood, Pembroke Pines and Miramar. The geographic percentages of each municipality within the BCWWS 3A service area is shown in Table 3.

Table 3 Municipalities in the BCWWS 3B/C Service Area

Municipality	Total Area (sq ft)	Area in District 3B/C (sq ft)	% of Municipality in District 3B/C
Pembroke Park	46,722,240	45,642,761	98%
West Park	62,678,360	62,645,719	100%
Hollywood	815,678,141	17,903,881	2%
Pembroke Pines	968,508,474	34,106,838	4%
Miramar	869,168,675	16,296,464	2%

To project the population, the reference year of 2023 was selected because it was the best available population data provided by the US Census Bureau. These sources did not have data available for Tribal Land or Unincorporated Land, so those populations for 2023 were interpolated from Population Forecast and Allocation Model (PFAM) data. Table 4 shows the population of each municipality in the year 2023 which was used as a starting point for the population projection through 2045.

Table 4 Historic Population in 2023

Municipality	2023 Population
Pembroke Park	6,300(1)
West Park	15,109(1)
Davie	107,799(1)
Dania Beach	31,915(1)
Wilton Manors	11,403(1)
Hollywood	152,630(1)
Fort Lauderdale	184,255(1)
Pembroke Pines	171,119(1)
Miramar	138,319(1)
Unincorporated	15,557(2)

Notes:
(1) Source: May 2024 US Census Bureau population data.
(2) Source: 2024 Broward County PFAM.

The growth rate of each municipality was calculated using 2024 Broward County PFAM data. PFAM data was selected as the most accurate population projection data because it used 2021 Bureau of Economic and Business Research population count and enhanced it with Traffic Analysis Zones and redevelopment input from municipalities. While this data is the best available data for population projection, it needed to be combined with the best available historical population data which is derived from the US Census Bureau and Annual Water supply reports and shown above in Table 4.

PFAM population projection data for each municipality from 2020 to 20245 is provided below in Table 5. The 2023 data was interpolated with the 2020 and 2025 values and used as a reference point to establish growth rates for 2025 through 2045.

Table 5 PFAM Population Data

Municipality	Total Population (2020)	Total Population Interpolated By Carollo (2023)	Total Population (2025)	Total Population (2030)	Total Population (2035)	Total Population (2040)	Total Population (2045)
Pembroke Park	7,251	7,235	7,224	6,813	7,780	9,075	9,624
West Park	14,445	14,308	14,217	14,093	13,975	13,837	13,764
Davie	105,337	106,397	107,103	108,850	114,554	115,874	116,984
Dania Beach	32,567	32,880	33,088	38,033	40,164	41,514	42,253
Wilton Manors	11,873	11,764	11,691	13,940	14,794	15,300	15,554
Hollywood	151,815	151,744	151,696	155,640	159,806	164,558	167,706
Fort Lauderdale	181,838	186,807	190,119	200,926	211,625	222,450	229,618
Pembroke Pines	170,447	172,938	174,599	175,669	176,381	175,604	178,593
Miramar	133,540	135,161	136,241	139,464	143,726	145,963	148,898
Unincorporated	15,308	15,495	15,619	15,708	16,599	16,964	17,230

Source: 2024 Broward County PFAM data

The growth rates of each municipality from the reference year of 2023 were calculated below in Table 6.

Table 6 Growth Rates From PFAM Representing Changes Since 2023

Municipality	Growth Rate 2025	Growth Rate 2030	Growth Rate 2035	Growth Rate 2040	Growth Rate 2045
Pembroke Park	-0.1%	-5.8%	7.5%	25.4%	33.0%
West Park	-0.6%	-1.5%	-2.3%	-3.3%	-3.8%
Davie	0.7%	2.3%	7.7%	8.9%	10.0%
Dania Beach	0.6%	15.7%	22.2%	26.3%	28.5%
Wilton Manors	-0.6%	18.5%	25.8%	30.1%	32.2%
Hollywood	-0.03%	2.6%	5.3%	8.4%	10.5%
Fort Lauderdale	1.8%	7.6%	13.3%	19.1%	22.9%
Pembroke Pines	1.0%	1.6%	2.0%	1.5%	3.3%
Miramar	0.8%	3.2%	6.3%	8.0%	10.2%
Unincorporated	0.8%	1.4%	7.1%	9.5%	11.2%

Source: Carollo calculated based on 2024 Broward County PFAM data

These growth rates were applied to the percentage of population served by each service area (Table 1, Table 2 and Table 3) and their 2023 starting population (Table 4) to calculate the population projection from 2025 to 2045 shown in Table 7. The Hollywood Annual Water Supply Reports include historic estimates of the population served by the City's service area each year, this value from the 2024 report was used to adjust the projections for the City's service area in Table 7.

Table 7 Population Projections from 2025 to 2045

Year	City's Retail Service Area	BCWWS District 3A	BCWWS District 3BC	Total – Retail and Wholesale
2024	153,859(1)	23,322	33,238	210,420
2025	153,839(2)	23,409	33,224	210,472
2030	157,835(2)	25,890	32,931	216,655
2035	162,043(2)	27,335	33,828	223,206
2040	166,788(2)	28,193	34,906	229,887
2045	169,932(2)	28,699	35,526	234,157

Notes:
(1) From 2024 City of Hollywood Annual Water Supply Report.
(2) Adjusted based on 2024 population estimate from the 2024 City of Hollywood Annual Water Supply Report.

APPENDIX J

PROJECT MEMO – DEMAND PROJECTIONS

PROJECT MEMORANDUM

CITY OF HOLLYWOOD

Water Supply Facilities Work Plan (WSFWP) 2025 Update

Project No.:	203879
Date:	September 16, 2025
Prepared By:	Karen Liang, P.E., CFM; Evan Greenberg
Reviewed By:	Angelica Gregory, Ph.D., P.E.
Subject:	Demand Projections

This document is released for the purpose of information exchange review and planning only under the authority of M. Angelica Gregory, September 2025, FL PE 75583.

1.0 BACKGROUND AND PURPOSE

The City of Hollywood (City) engaged Carollo Engineers, Inc (Carollo) to update the City's Water Supply Facilities Work Plan (WSFWP). This project memorandum documents the analysis and results from the demand projection effort completed for the project.

2.0 DEMAND PROJECTIONS

The City provides retail water service to residents of the City of Hollywood, as well as small portions of the Town of Davie and the City of Dania Beach. Retail water service to a small area of the Seminole Tribe of Florida reservation that the City previously served was disconnected in recent years. Additionally, the City provides wholesale potable water service to Broward County through pipelines that serve the County's retail water customers located in its Districts 3A and 3B/C. District 3A serves residents and businesses in portions of the Town of Davie, the City of Dania Beach, the City of Hollywood, the City of Fort Lauderdale and Unincorporated Broward County. District 3B/C serves residents and businesses in the City of West Park, the Town of Pembroke Park, and portions of the City of Hollywood, the City of Pembroke Pines, and the City of Miramar. The City's water treatment plant (WTP) is the sole source of treated water to these customers. Port Everglades is in the City of Hollywood but receives water service from the City of Fort Lauderdale. The City of Hollywood has no plans to provide raw or finished water to any retail or wholesale customer outside of its existing water service areas. However, it is considering the possibility of establishing an interconnected emergency storage and supply diversification (ESSD) arrangement with the City of Hallandale Beach.

2.1 Historical Per Capita Demand

The historic data compiled from U.S. Census Bureau 2024 population report, City of Hollywood Annual Water Supply Reports, City of Hollywood Water Master Plan, and monthly operational data from the WTP is presented below in Table 1. This historic data was used to calculate the average per capita demand that is used to determine demand projections for the period 2025 through 2045.

Table 1 City of Hollywood Historical Service Area Population, Finished Water Production and Retail Per Capita Usage

Note Reference	Parameter	2020	2021	2022	2023	2024
(1)	City Retail Population Served	145,309	145,309	152,131	152,650	153,859
(2)	Avg. Daily Finished Water Production (mgd)	21.75	22.47	23.48	23.89	24.38
(3)	Avg. Daily Finished Water to City Retail Customers Excluding Large Users (mgd)	15.23	15.61	16.97	17.55	18.04
(4)	Large Users Consumption Excluding BCWWS (mgd)	0.1	0.1	0.1	0.1	0.1
(5)	City Non-Revenue Water (mgd)	2.3	2.3	2.3	2.3	2.3
(6)	Overall City Residential Retail Per Capita Demand Factor (gpcd)	88.3	90.9	95.8	99.2	101.7
	Two-Year Average City Residential Water Demand (gpcd)			98.9		
(7)	BCWWS Population Served	56,130	55,824	56,031	56,488	56,945
(8)	Avg. Daily Finished Water to BCWWS (mgd)	6.59	6.48	6.37	6.21	6.19
(9)	Overall BCWWS Residential Per Capita Demand Factor (gpcd)	117.4	116.1	113.7	109.9	108.8
	Five-Year Average BCWWS Residential Water Demand (gpcd)	113.2				

Abbreviations: BCWWS – Broward County Water and Wastewater Services; gpcd – gallons per capita per day; mgd – million gallons per day

Notes:

(1) (3) and (8) sourced from City of Hollywood Annual Water Supply Reports.
(2) Sourced from City of Hollywood monthly WTP Operation Reports.
(3) Total large users consumption rate is sourced from 2024 City of Hollywood Water Master Plan Table 5. Rate excluding BCWWS was calculated as total minus (8).
(4) Sourced from 2024 City of Hollywood Water Master Plan Table 5.
(5) Calculated as (3) - (4) - (5)*1000000/(1).
(6) 2020 to 2023 population data from the U.S. Census Bureau as published in May 2024. The 2024 value was extrapolated from the 2022 and 2023 data.
(7) Calculated as (8)*1000000/(7).

As shown in Table 1, the annual average water use of the City's residential retail customers was 98.9 gpcd over the most recent three-year period, 2022 to 2024. The three-year average was used instead of a five-year average due to the lower demand trend in water use observed from 2020 to 2021 during the COVID-19 pandemic. The annual average water use in the BCWWS Districts 3A and 3B/C was 113.2 gpcd. The trend during this five-year period was decreasing, so the five-year average represents a conservative estimate. These values, along with the population projection from Table 2, are used to forecast annual average daily water demands. Large users consumption and non-revenue water were then added to this demand for the total projected demand from the WTP. This is possible as large users consumption and non-revenue water are generally consistent and unaffected by population growth and are assumed to remain as such in the future. The large users consumption and non-revenue water are estimated as 0.1 mgd and 2.3 mgd, respectively, based on the 2024 Water Master Plan Table 5 which summarizes the billing data from 2021. The total finished water demand is projected to increase from 24.02 mgd in 2025 to 26.47 mgd in 2045 as shown in Table 2.

Table 2 Total Forecasted Average Daily Demand from 2025 to 2045

Year	City's Retail Population	City's Retail Demand Factor (gpcd)	City's Retail Demand (mgd)	BCWWS District 3A and 3B/C Population	BCWWS District 3A and 3B/C Demand Factor (gpcd)	BCWWS District 3A and 3B/C Demand (mgd)	Large Users Consumption (mgd)	Non-Revenue Water (mgd)	Total Demand (mgd)
2025	153,838	98.9	15.21	56,633	113.2	6.41	0.10	2.30	24.02
2030	157,835	98.9	15.61	58,820	113.2	6.66	0.10	2.30	24.67
2035	162,043	98.9	16.02	61,163	113.2	6.92	0.10	2.30	25.35
2040	166,788	98.9	16.49	63,099	113.2	7.14	0.10	2.30	26.03
2045	169,932	98.9	16.80	64,225	113.2	7.27	0.10	2.30	26.47

2.2 Peaking Factor and Maximum Day Demand

The maximum day flow to distribution from the WTP and the maximum day peaking factor were extracted and derived, respectively, from the WTP Monthly Operations data for years 2020 through 2024. The maximum day peaking factor is the ratio of the maximum day production to the annual average daily flow (AADF). Table 3 shows the annual average daily production, that maximum day production, and the maximum day peaking factors for the last five years. Table 3 also shows the average max day peaking factor for this period. It is industry practice that this average is used to forecast the maximum day water demand that needs to be supplied by the City's WTP in the future. The value of 1.15 was selected to forecast the maximum day demand required for the 20-year period 2025 through 2045.

Table 3 Historical Maximum Day Finished Water Production and Peaking Factor

Year	Finished Water Production		
	Annual Average Day Demand (ADD) (mgd)	Maximum Day Demand (MDD) (mgd)	Max Day Peaking Factor
(1)	(2)	(3)	(4)=(3)/(2)
2020	21.8	24.2	1.11
2021	22.5	25.6	1.14
2022	23.5	28.4	1.21
2023	23.9	28.0	1.17
2024	24.4	27.6	1.13
Average			1.15

To determine the MDD, the maximum day peaking factor is applied to the forecasted annual average demand. The forecasted finished water production, maximized, increases to 30.44 mgd by 2045 as depicted in Table 4.

Table 4 Total Forecasted Maximum Daily Demand from 2025 to 2045

Year	Annual Average Daily Demand (mgd)	Max Day Peaking Factor (-)	Max Day Demand (mgd)
(1)	(2)	(3)	(4) = (2)*(3)
2025	24.02	1.15	27.63
2030	24.67	1.15	28.37
2035	25.35	1.15	29.15
2040	26.03	1.15	29.94
2045	26.47	1.15	30.44

2.3 Raw Water Demand Projection

For the purpose of determining the amount of raw water needed to supply the forecasted finished water demand, it is necessary and industry standard practice to calculate the weighted average treatment loss. The water lost in treatment is then added to the forecast presented in Section 2.2.

The WTP's monthly operating report (MOR) data from 2023 to 2024 was analyzed to determine the proportion of raw water allocated to each treatment process in the existing WTP layout. With 40.1 percent of the raw water treated being used in the lime softening (LS) process, 39.3 percent treated using nanofiltration membrane softening (MS) technology, and 20.6 percent treated using reverse osmosis (RO) membranes, and using process efficiency indices from the 2024 Master Plan, the current weighted average percent treatment loss is 10 percent. Table 5 presents this breakdown of process type and process efficiency, and the calculated overall treatment loss of 10 percent.

Table 5 City of Hollywood Existing Percent Treatment Loss

Treatment Technology	Current Process Capacity, Annual Average (mgd)	% of Raw Water	Treatment Loss (%)
Lime Softening (LS)	9.9	40.1%	2%
Membrane Softening (MS)	9.7	39.3%	13%
Reverse Osmosis (RO)	5.1	20.6%	20%
Total/ Weighted Average	24.7	100%	10%

Source: 2023 to 2024 City of Hollywood WTP Monthly Operating Reports

To address the National Primary Drinking Water Regulation for six polyfluoroalkyl substances (PFAS) substances (U.S. Environmental Protection Agency, April 2024), changes to the existing plant layout are required. The proposed change includes decommissioning the LS system and replacing its capacity with MS treatment while maintaining the current RO capacity. This scenario is shown in Table 6.

Table 6 City of Hollywood Proposed Future WTP Percent Treatment Loss

Treatment Technology	Projected Process Capacity, Annual Average (mgd)	% of Raw Water	Treatment Loss (%)
Lime Softening (LS)	0	0%	2%
Membrane Softening (MS)	19.6(1)	79.4%	13%
Reverse Osmosis (RO)	5.1	20.6%	20%
Total/ Weighted Average	24.7	100%	14.4%

Notes:
(1) Calculated as 9.7 + 9.9 = 19.6 mgd.

The weighted average treatment loss with expanded MS treatment is 14.4 percent. This value was used to convert the finished water demand forecast to the total annual raw water withdrawal needed from the City's Biscayne and Floridan aquifer wellfields and the County's South Regional Wellfield.

The raw water forecast is calculated in Table 7. The total raw water withdrawal requirement is projected as 28.06 mgd in 2025, with an increase to 30.93 mgd by 2045. If the overall treatment loss were 10 percent, instead of the calculated 14.4 percent (which would be the case if nanofiltration treatment is not expanded and LS is kept), then the total raw water withdrawal would need to be about 1.5 mgd lower each year.

Table 7 City of Hollywood Forecasted Raw Water Withdrawals

Year	Finished Water Demand (mgd)	Annual Average Raw Water Withdrawal (mgd) At 10% Treatment Loss (Current WTP Layout)	Annual Average Raw Water Withdrawal (mgd) At 14.4% Treatment Loss (Proposed WTP Layout for Regulatory Compliance)	Difference
(1)	(2)	(3) = (2) / [1 – 0.10]	(4) = (2) / [1 – 0.144]	(5) = (4)-(3)
2025	24.02	26.69	28.06	1.37
2030	24.67	27.41	28.81	1.41
2035	25.35	28.16	29.61	1.45
2040	26.03	28.93	30.41	1.49
2045	26.47	29.41	30.93	1.51

2.4 Capacity Analysis

The City's combined permitted raw water withdrawal totals 38.64 mgd if interpreted on an annual average day basis, and 43.33 mgd on a maximum month basis, as summarized in Table 8.

Table 8 City of Hollywood Permitted Raw Water Withdrawal Quantities

Water Supply Source	Annual Average Day (mgd)	Maximum Monthly Withdrawal (mgd)
(1)	(2)	(3)
Biscayne Aquifer		
Chaminade (Western) Wellfield	14.72	16.35
South Wellfield	9.62	10.68
BCWWS – Piccolo Wellfield (contractual)	5.79	7.89
Subtotal – Biscayne Aquifer	30.12	34.92
Floridan Aquifer	8.52	8.52
Subtotal – Floridan Aquifer	8.52	8.52
Total	38.64	43.44

The maximum amount of finished water that can be produced was based on the firm raw water treatment capacity of the City's treatment processes, the permitted allocations from the Biscayne and Floridan aquifers, and the historical percent treatment loss of each treatment process. The calculation of the finished water treatment limit is provided in Table 9. The maximum treatment utilizing the full raw water allocation is 35.54 mgd.

Table 9 Calculation of Finished Water Quantity Limit based on Raw Water Permit Limit

Treatment Process	Treatment – Firm Capacity (mgd)	Treatment Loss (%)	Raw Water Treatment Capacity (mgd)	- LIMIT - Raw Water Treatment Allocation (mgd)(1)	- LIMIT - Finished Water Treatment (mgd)
(1)	(2)	(3)	(4) = (2) / [1 - (3)]	(5)	(6) = (5) x [1 - (3)]
Lime Softening (LS) – Biscayne Aquifer	22.50	2%	22.96	22.96	22.50
Membrane Softening (MS) – Biscayne Aquifer	12.00	13%	13.79	7.16	6.23
Total Permitted Quantity from Biscayne Aquifer	34.50		36.75	30.12	28.73
Reverse Osmosis (RO) (Floridan Aquifer)	6.00	20%	7.50	8.52	6.81
Total	40.50		44.25	38.64	35.54

Notes:

(1) The LS value is equal to the LS raw water treatment capacity of 22.96 mgd of raw water. The MS value is the permitted quantity of raw water from the Biscayne Aquifer (30.12 mgd) minus the amount of raw water treated using LS (22.96 mgd). The RO value is equal to the permitted quantity from the Floridan Aquifer (8.52 mgd). While RO treatment firm capacity is less than the permitted quantity from the Floridan Aquifer, it is assumed that the City would be able to increase treatment capacity to treat 8.52 mgd, when needed.

Comparison of the forecasted finished water demand (Table 4) and raw water withdrawals (Table 6) to the finished water treatment limit, WTP firm capacity, and raw water allocation (Table 8) is provided in Figure 1. During the period 2025 through 2045, the finished water and raw water demand is within the treatment plant firm capacity, permitted withdrawal limit and treatment limit.

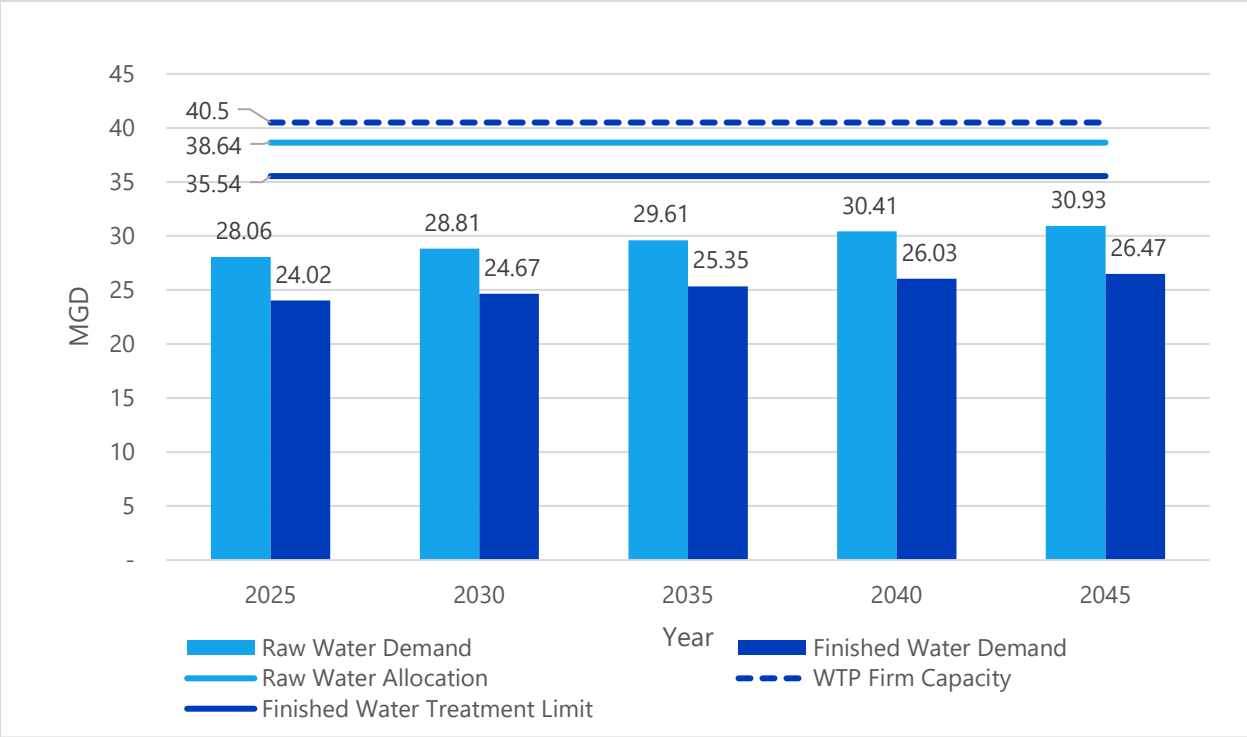


Figure 1 Comparison of Finished and Raw Water Demand Forecast to Treatment Capacity, Treatment Limit, and Withdrawal Limit – City of Hollywood Service Retail and BCWWS 3A and 3B/C from 2025 to 2045

Port Everglades purchases water from the City of Fort Lauderdale. The historical metered water to Port Everglades is provided in Table 10. The AADF over the five-year period from 2019 to 2024 was 1.06 mgd. Water flow varied within a narrow range of 0.95 mgd to 1.01 mgd from 2021 to 2023. In 2019, water flow was above average at 1.22 mgd. Water flow in 2020 and 2024 was slightly higher than average at 1.10 mgd both years.

Table 10 Historical Annual Average Daily Water Supplied to Port Everglades from the City of Fort Lauderdale

Calendar Year	AADF (mgd)
2019	1.22
2020	1.10
2021	0.95
2022	0.98
2023	1.01
2024	1.10
Annual Average	1.06

Source: 2025 City of Fort Lauderdale Water Supply Facility Work Plan, draft version dated June 19, 2025.

The adequacy of the City of Fort Lauderdale water system to supply Port Everglades is implicitly ensured in the City of Fort Lauderdale Water Supply Facility Work Plan 2020 Update. Within Fort Lauderdale's Plan, the forecasted water flow to Port Everglades is included within the forecast for "Unincorporated Broward Plus Port Everglades" and this category is projected to increase from 2.94 mgd in 2015 to 4.32 mgd in 2040.

APPENDIX K

DRAFT COMPREHENSIVE PLAN – CAPITAL IMPROVEMENT ELEMENT

**To be completed before Final submittal.*

APPENDIX L

DRAFT COMPREHENSIVE PLAN – INFRASTRUCTURE ELEMENT

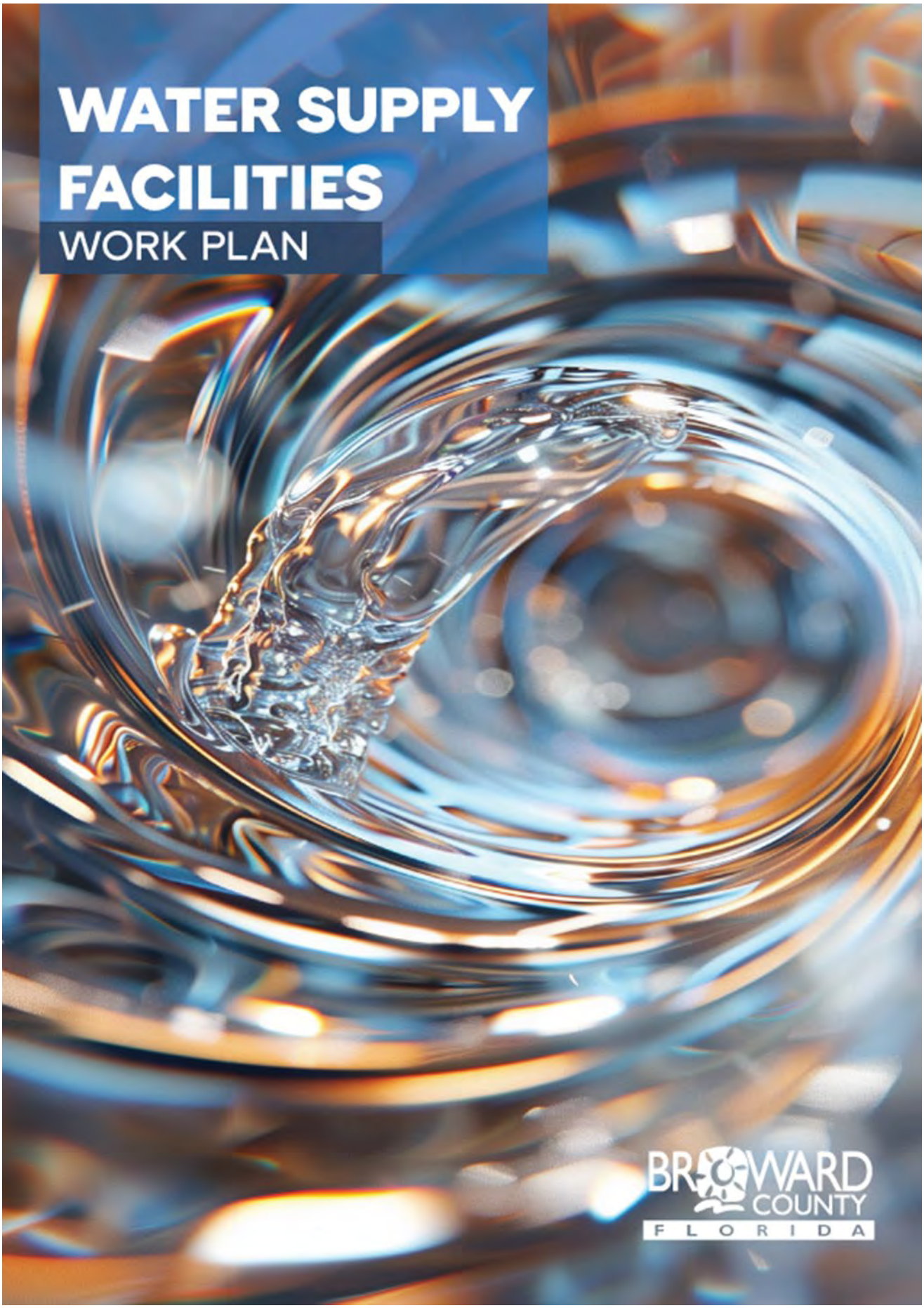
**To be completed before Final submittal.*

APPENDIX C

BROWARD COUNTY'S WATER SUPPLY FACILITIES WORK PLAN 2025 (FINAL)

WATER SUPPLY FACILITIES

WORK PLAN



BROWARD COUNTY
FLORIDA

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ASR	Aquifer Storage and Recovery
AWS	Alternative Water Supply
BCWWS	Broward County Water and Wastewater Services
BCUPD	Broward County Urban Planning Division
BEBR	Bureau of Economic and Business Research
BMP	Best Management Practice
BMSD	Broward County Municipal Services Districts
CADA	Central Aquifer Drainage Assessment
CEPP	Central Everglades Planning Project
CERP	Comprehensive Everglades Restoration Plan
CIE	Capital Improvements Element
CUP	Consumptive Use Permit
DSS	Domestic Self Supply
EPA	Environmental Protection Agency
EPGMD	Environmental Protection and Growth Management Department
RED	Environmental Planning and Community Resilience Division
FDEP	Florida Department of Environmental Protection
FPL	Florida Power and Light Corporation
F.S.	Florida Statutes
GOP	Goals, Objectives, and Policies
gpcd	Gallons Per Capita Per Day
IWRP	Integrated Water Resources Plan
LEC	Lower East Coast
LECWSP	Lower East Coast Water Supply Plan
LORS	Lake Okeechobee Regulation Schedule
LOS	Level of Service
LOSS	Level of Service Standard
LOSOM	Lake Okeechobee System Operating Manual
MFL	Minimum Flow and Minimum Water Level
MG	Million Gallons
MGD	Million Gallons Per Day
mg/L	Milligrams per Liter
MGM	Million Gallons Per Month
NADA	North Aquifer Drainage Assessment
NCA	National Climate Assessment

NIS	NatureScape Irrigation Services
PFAM	Population Forecast and Allocation Model
ppb	Parts per billion
RCAP	Regional Climate Action Plan
RO	Reverse Osmosis
SADA	South Aquifer Drainage Assessment
SAS	Surficial Aquifer System
SEFRCCC	Southeast Florida Regional Climate Change Compact
SFWMD	South Florida Water Management District
SRW	South Regional Wellfield
STA	Stormwater Treatment Area
SWR	Surface Water Routing
TAZ	Traffic Analysis Zones
TIP	Transportation Improvement Program
UAZ	Utility Analysis Zones
URO	Urban Runoff
USACE	U.S. Army Corps of Engineers
USGCRP	United States Global Change Research Program
USGS	United States Geological Survey
WCA	Water Conservation Areas
WPA	Water Preserve Areas
WRRDA	Water Resources Reform and Development Act
WTP	Water Treatment Plant
WWTP	Wastewater Treatment Plant

Water Supply Facilities Work Plan

EXECUTIVE SUMMARY

This Broward County Water Supply Facilities Work Plan (2025 Work Plan) addresses traditional and alternative water supply (AWS) source development and management strategies to meet existing and projected water use demand. The 2025 Work Plan primarily focuses on Broward County's Public Works Water and Wastewater Services (BCWWS) service areas and unincorporated Broward County Municipal Services District (BMSD). It also contains urban water resource management strategy updates, including the water conservation programs and resilience efforts promoted by the Broward County Resilient Environment Department (RED). Overall, approximately 240,000 people receive water and wastewater services in these areas, and the population is expected to be 281,000 by 2045. The BMSD's water and wastewater services are provided by BCWWS and the City of Fort Lauderdale's utilities. BCWWS' southernmost service area receives potable water through connections with the City of Hollywood.

Florida Law (Section 163.3177(6)(c)3., Florida Statutes [F.S.]) requires local governments to adopt water supply facilities work plans into their comprehensive plans within eighteen months of the South Florida Water Management District's (SFWMD) approval of a regional water supply plan update. The SFWMD approved the 2023 - 2024 Lower East Coast Water Supply Plan Update (LECWSP, SFWMD, 2024) on September 24, 2024. The 2025 Work Plan is Broward County's required update based on the LECWSP's state adoption.

Like most Southeast Florida water utilities, BCWWS' primary water source is the Surficial Aquifer System (SAS) located underground between the land surface and 240 feet below ground. BCWWS' groundwater withdrawal occurs between depths of 75 to 130 feet below ground, tapping the Biscayne Aquifer, which provides the vast majority of BCWWS and BMSD populations' water supply needs.

The SFWMD considers the Biscayne Aquifer a finite water resource. In 2007, the SFWMD mandated that AWS be developed to serve the water needs of future population growth in the

Lower East Coast planning area (SFWMD, 2007). AWS options include but are not limited to, treatment of brackish water sources, enhanced groundwater recharge, water conservation, water reuse, and surface water storage development. The 2025 Work Plan outlines how BCWWS will incorporate AWS to serve future populations and maintain and optimize BCWWS' current systems. Similar efforts are covered in the 2025 Work Plan for the Cities of Fort Lauderdale and Hollywood.

The regional C-51 Reservoir project is the primary BCWWS AWS project to meet future population growth demands. Located in Central Palm Beach County, the C-51 Reservoir project is a public-private partnership to construct 60,000 acre-feet (equal to almost 20 billion gallons) of surface water storage. Captured stormwater from the C-51 watershed will be stored in the reservoir and moved across the region via canal systems to recharge local aquifers. BCWWS has purchased and incorporated into its Consumptive Use Permits a total of six million gallons a day from the C-51 Reservoir project. The C-51 Reservoir has been delivering water requested by individual partner utilities since May 2024, based on monthly demand projections.

The Broward County and Palm Beach County water reuse partnership is another important regional AWS initiative. This beneficial reuse water project is BCWWS' strategy to comply with Florida's Ocean Outfall Law (Section 403.086(9), F.S). The project also provides a beneficial water reuse supply to the Southern Palm Beach County region and portions of the North Springs Improvement District, Coconut Creek, Deerfield Beach, and Pompano Beach. To implement this project, BCWWS is increasing its water reuse production capacity to twenty-six million gallons a day from the current ten million gallons a day. This project became operational on January 1, 2023.

Additional regional impacts on Broward County's water resources may include sea level rise, saltwater intrusion, and extreme weather events. Rising sea levels threaten South Florida's surface water conveyance and flood control management practices by reducing the ability to move or discharge excess water by gravity to alleviate flooding. Rising sea levels also increase saltwater intrusion along the coast and shrink our available water supplies from the Surficial Aquifer by contaminating them with saltwater. Lastly, unpredictable extreme weather events, both dry and wet, may increase saltwater intrusion's landward extent, cause excessive discharge of flood waters, and disrupt piped water production and conveyance, leading to water supply shortages.

Broward County, together with its municipal and regional partners, supports and facilitates water supply and resiliency planning and implementation through:

- The Broward County Climate Action Plan's water supply actions (Broward County, 2025) to maintain adequate water supply through conservation and adaptation, and integrated water resource management.
- The Southeast Florida Regional Climate Change Compact's (SEFRCCC) Southeast Florida Regional Climate Action Plan's (RCAP) critical water supply planning components (SEFRCCC, 2022).
- The goals of the Resilient Utility Coalition - an outgrowth from the Compact –to "operationalize resilience" in common water utility practices.

A major regional plan to restore Florida's Everglades – the Comprehensive Everglades Restoration Plan (CERP) – will also change future water resource conditions. CERP will construct additional water storage systems to capture wet season flow volumes, provide critical natural system water needs, and maintain the public water supply. CERP features within Broward County and the SFWMD should collectively benefit local water supply sustainability throughout South Florida.

The 2019 IWRP Update provides key planning, assessment and coordination tools to optimally manage water resources. Its five main objectives are to:

- Make the most of local water resources, so that Broward's long-term water supply needs are met.
- Coordinate a diverse water management community, ensuring the efficient and effective management of Broward's water resources.
- Match up local water sources and users to ensure that water supplies are available when and where they're needed.
- Diversify water supplies so that the needs of urban and natural systems are met under wet and dry conditions; and,
- Promote water resource resiliency by evaluating future conditions, including potential climate impacts and adopt strategies to mitigate, adapt, and prevent disruptions to our overall goal of more efficient and effective water management.

Additionally, as part of IWRP initiatives, RED continues to develop and apply numerical hydrologic models to guide decision-making and sustainable investments. Optimizing integrated secondary canal management is one hallmark of success supported by IWRP modeling. In addition, Broward County's Regional Reuse Master Plan was developed to help identify and prioritize coordinated expansion of reclaimed water systems county-wide. To further incentivize IWRP project implementation, the county offers cost share funding for local partners and water providers to support design, permitting and construction of AWS projects. Water conservation remains a critical AWS strategy in the 2025 Work Plan. In 2010, the Broward

County Board of County Commissioners passed an irrigation ordinance adopting year-round irrigation restrictions limiting landscape watering to two days per week. In addition, Broward County implements a broad set of water conservation programs designed to produce long-term demand reductions along with water quality improvements. These programs target various user groups, including Broward Water Partnership Conservation Pays, NatureScape Irrigation Services (NIS), Residential Irrigation Rebate Program (RIRP), NatureScape Broward, Water Matters Day, and the NatureScape Broward School Board Environmental Partnership Agreement. Water conservation efforts have already produced a 23% reduction in water consumption compared to 2006 and work continues to realize a further 10% reduction in pumpage by 2028 (relative to 2018).

The 2025 Work Plan data analysis confirms that BCWWS will continue to meet its Retail Potable Water Level of Service Standards. With the completion of the C-51 Reservoir Project ($27.6 million) and the Palm Beach County Reuse Partnership ($104 million), along with the recent renewal of three consumptive use permits for potable water, Broward County's water supply is well-positioned to meet both current and future demands, physically and in full regulatory compliance through the next reporting period.

To sustain this high level of service, the plan outlines critical water treatment plant (WTP) upgrades and water conservation initiatives. BCWWS' robust 5-year Capital Improvement Program allocates over $119 million for sixty projects aimed at maintaining, optimizing, and expanding the existing system.

Collectively, the 2025 Work Plan projects ensure that BCWWS is well-equipped to manage future challenges and continue delivering exceptional water and wastewater services throughout its service areas.

INTRODUCTION

Broward County is located on the Southeastern coast of Florida and is adjacent to the Atlantic Ocean to the east, Miami-Dade County to the south, the Everglades and Collier County to the west, and Palm Beach County to the north, as shown in Figure WS1 below. This Broward County Water Supply Facilities Work Plan Update (2025 Work Plan) identifies water supply source availability and facilities needed to serve existing and new developments within the local government's jurisdiction. Chapter 163, Part II, F.S., requires local governments to prepare and adopt work plans into their comprehensive plan within 18 months after the South Florida Water Management District (SFWMD) approves a regional water supply plan update. The SFWMD's Governing Board adopted the 2024 Lower East Coast Water Supply Plan (LECWSP) Update on September 24, 2024. Therefore, local governments within the Lower East Coast (LEC) region must amend their comprehensive plans and include an updated Water Supply Facilities Work Plan and related planning elements by March 24, 2026.

BCWWS produces potable water for its northern and central service areas. BCWWS' southernmost service area receives potable water through connections with the City of Hollywood. BMSD areas receive water and wastewater services from BCWWS and the City of Fort Lauderdale's utility. BCWWS and both cities are responsible for ensuring enough potable water supply capacity for existing and planning available capacity for future customers.

This 2025 Work Plan will reference the initiatives identified to ensure adequate water supply for BCWWS and BMSD. According to state guidelines, the work plan and comprehensive plan must address the development of traditional and alternative water supplies, service delivery, and conservation and reuse programs necessary to serve existing and new developments for at least a 10-year planning period. The work plan will have a planning schedule consistent with the comprehensive plan and the 2024 LECWSP update. The Broward County 2025 Work Plan is divided into seven sections:

Section 1 – Introduction
Section 2 – Regional Issues
Section 3 – Broward County
Section 4 – Data and Analysis
Section 5 – Special Recommendations and Actions
Section 6 – BCWWS Capital Improvements
Section 7 – Goals, Objectives, and Policies

Figure WS1 **Broward County Location**

A. Statutory History

The Florida Legislature enacted bills in the 2002, 2004, 2005, 2011, 2012, 2015, and 2016 sessions to address the state's water supply needs. Two of these bills, Senate Bills 360 and 444 (2005 legislative session), significantly changed Chapters 163 and 373, F.S., by strengthening the statutory links between the regional water supply plans 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 local land use and water supply planning.

B. Statutory Requirements

Broward County has considered the following statutory provision in updates to this 2025 Work Plan.

1. Coordinate appropriate aspects of its comprehensive plan with the LECWSP [Section 163.3177(4)(a), F.S.].
2. Ensure the future land use plan is based upon the availability of adequate water supplies and public facilities and services [Section 163.3177(6)(a), F.S.]. Data and analysis demonstrate that adequate water supplies and the associated public facilities will be available to meet projected growth demands must accompany all proposed Future Land Use Map amendments submitted for review.
3. Ensure that adequate water supplies and potable water facilities are available to serve new development no later than the issuance by the local government of a certificate of occupancy or its functional equivalent and consult with the applicable water supplier to determine whether adequate water supplies will be available to serve the development by the anticipated issuance date of the certificate of occupancy [Section 163.3180(2), F.S.].
4. For local governments subject to a regional water supply plan, revise the General Sanitary Sewer, Solid Waste, Drainage, Potable Water and Natural Groundwater Aquifer Recharge Element (the "Infrastructure Element") within 18 months after the water management district approves an updated regional water supply plan, to:
    a. Identify and incorporate the AWS project(s) selected by the local government from projects identified in the LECWSP, or alternative projects(s) proposed by the local government under Section 373.709(8)(b), F.S. [Section 163.3177(6)(c), F.S.].
    b. Identify the traditional and AWS projects and the conservation and reuse programs necessary to meet water needs identified in the LECWSP [Section 163.3177 (6) (c) 3, F.S.]; and

c. Update the work plan for at least a 10-year planning period for constructing the public, private, and regional water supply facilities identified in the element as necessary to serve existing and new development [Section 163.3177(6)(c) 3, F.S.].

5. Revise the Five-Year Schedule of Capital Improvements to include water supply, reuse, and conservation projects and programs to be implemented during the five years [Section 163.3177 (3)(a)4, F.S.].
6. To the extent necessary to maintain internal consistency after making changes described in Paragraphs 1 through 5 above, revise the Conservation Element to assess projected water needs and sources for at least a 10-year planning period, considering the LECWSP, as well as applicable consumptive use permit(s) [Section 163.3177(6)(d), F.S.]. The plan must address the water supply sources necessary to meet and achieve the existing and projected water use demand for the established planning period, considering the applicable regional water supply plan [Section 163.3167(9), F.S.].
7. To the extent necessary to maintain internal consistency after making changes described in Paragraphs 1 through 5 above, revise the Intergovernmental Coordination Element to ensure coordination of the comprehensive plan with the LECWSP [Section 163.3177(6)(h) 1, F.S.].
8. While an Evaluation and Appraisal Report is not required, local governments are encouraged to comprehensively evaluate and, as necessary, update comprehensive plans to reflect changes in local conditions. The evaluation could address the extent to which the local government has implemented the need to update its work plan, including the development of alternative water supplies, and determine whether the identified AWS projects, traditional water supply projects and conservation and reuse programs are meeting local water use demands [Section 163.3191(3), F.S.].

REGIONAL ISSUES

The regional issues impacting Broward County include:

1. Future Environmental and Water Supply Conditions: Future water supply conditions need to be integrated into water resources resilience planning efforts.
2. Alternative Water Supply: The need to develop alternative water sources to meet future water needs pursuant to SFWMD's Regional Water Availability Rule and Everglades and Lake Okeechobee Minimum Flow and Minimum Water Levels (MFL); and,
3. Federal Projects Implementation: CERP implementation, Central and Southern Flood Control (C&SF) restudy and project implementation.

C. Future Environmental and Water Supply Conditions

Investigations and evaluations conducted at the national, regional, and local levels have reinforced the need to plan for the predicted impacts of different rainfall patterns and more frequent and severe droughts, increases in tidal and storm-related flooding, and the loss of coastal wellfield capacity due to saltwater contamination in the Surficial Aquifer. In the absence of proactive planning, these impacts will present liabilities for coastal and inland communities with implications for urban water supplies, water and wastewater infrastructure, and both regional and local drainage/flood control systems.

Broward County and its municipal and regional partners understand that local governments and water utilities must formalize the integration of water supply and future conditions considerations in their coordinated planning efforts. Water resource resilience can be achieved with relevant updates to the Water Supply Facilities Work Plans and focused, actionable enhancements to comprehensive planning Goals, Objectives, and Policies (GOP). Key considerations for communities within the Southeastern Florida planning area include: 1) sea level rise, 2) saltwater intrusion, 3) extreme weather, 4) infrastructure investments to support diversification and sustainability of water supply sources, and 5) adaptive stormwater and wastewater systems.

The 2019 IWRP Report states that it is necessary to understand future conditions, particularly as related to potential climate impacts including extreme droughts and rainfall events, along with sea level rise and related saltwater intrusion, to ensure that Broward's water resources will be sustainable and to promote more effective and efficient water resources management. The Broward County water management community works with many partners, including the state and federal government, academia, and the private sector, to study the impacts of a changing climate and develop mitigation and adaptation strategies.

In addition, the Water Resources Objectives within the Broward County Climate Action Plan (2025) are intended to ensure existing water resources are protected and remain available through conservation and sustainable management, promote integrated water resource management and diversification of water sources, and balance the water needs of natural systems and public use. The eighteen (18) proposed actions include:

- Continue local water conservation programs
- Fully integrate water management strategies
- Seek future conditions analyses in regional water resources planning
- Investigate regionalization of water supply
- Undertake optimization study for wellfields

- Develop alternative water supply strategies
- Integrate water monitoring efforts
- Assess potential for contaminant mobilization and transport
- Expand reuse to mitigate the implications of sea level rise
- Develop strategies to mitigate impacts of wastewater and stormwater reuse to natural systems
- Implement stormwater reuse
- Promote green infrastructure
- Increase pervious areas
- Engage the community in flood mitigation programs
- Implement the County-wide Risk Assessment and Resilience Plan
- Pursue regional water management solutions
- Invest in technology and automation
- Promote advanced flood risk assessments

Both the 2019 IWRP Update and Broward's Climate Action Plan support the work of the Southeast Florida Regional Climate Change Compact (Compact) to develop the Regional Climate Action Plan (RCAP) (Compact 2022). The RCAP serves as a guiding tool for coordinated climate action across the four partner counties of Broward, Miami-Dade, Monroe, and Palm Beach Counties. Broward has taken a lead role as a Compact partner in organizing the Water section of the RCAP, with the goal to "identify, develop, and implement integrated water management strategies and infrastructure improvements concurrent with existing and enhanced water conservation and alternative water supply source efforts to mitigate the adverse effects of climate impacts, including sea level rise, on water resource systems and operations". Seventeen (17) recommendations are included within this goal. Other relevant documents produced by the Compact to assist policymakers, administrators, and program staff to make resilient water planning decisions include "Regionally Unified Sea Level Rise Projection for Southeast Florida (2019)" Integrating Climate Change and Water Supply Planning in Southeast Florida (2014)" and "Regional Impacts of Climate Change and Issues for Stormwater Management (2012)"

Sea Level Rise

The accelerating rise in sea level has significant implications for water management and water supply planning in Southeast Florida. From years 1901-1990, the global rate of sea level rise averaged approximately 1.2 ± 0.2 mm (0.05 ± 0.01 inches) per year. This rate nearly tripled to an average of 3.4 ± 0.4 mm (0.13 ± 0.02 inches) per year from 1993-2022. This trend of rising sea levels is reinforced by local tide data (tidal date retrieved from Key West and Virginia Key stations), that shows an average rise of 2.64 - 3.19 mm/yr (0.1 - 0.12 inches/yr) in relative/regional sea levels translating to a rise of about 0.87 - 1.05 ft during

the previous 100 years. However, during last 20-25 years, the rate of observed sea level rise has accelerated.

There continues to be uncertainty about the extent of the rise in sea level that might be realized in the coming century. The Fifth National Climate Assessment (NCA, USGCRP, 2023) report presents a probable range of 0.3 meters (1 foot) to 2.0 meters (6.6 feet) of global mean sea level rise by 2100. In 2024, the Compact counties collectively agreed to continue using the 2019 Regionally Unified Sea Level Rise Projection estimates developed using the NOAA 2017 Report on Global and Regional Sea Level Rise Scenarios for the United States and the IPCC Fifth Assessment Report (2014). Observed sea level rise at the Key West tide gauge from 2000 to 2023 is about 6 inches and generally follows or exceeds the Compact's 2019 IPCC Median Curve (Compact, 2024).

This unified sea level rise projection has been formally adopted by Palm Beach, Broward, Miami-Dade, and Monroe Counties and is consistently being used to inform planning processes and project design throughout the region. As the impacts of historic sea level rise are being realized and acceleration of the rate of rise is expected to compound local impacts and vulnerabilities, it is prudent that planning processes formally consider sea level rise as a future condition with recognized implications for near- and long-term planning decisions.

Sea level rise produces varied challenges for water resources sustainability, water management, water/wastewater facilities and infrastructure. Impacts include saltwater contamination of coastal wellfields, infiltration of salty groundwater into wastewater collection systems, impaired normal operations and maintenance, and opportunities for beneficial use of reclaimed water as an AWS. Water management systems are also at risk, constrained by rising groundwater and tailwater elevations, which reduce soil storage and gravity-discharge capacity, with increased potential for both inland and coastal flooding and less opportunity for long-term stormwater storage for beneficial use.

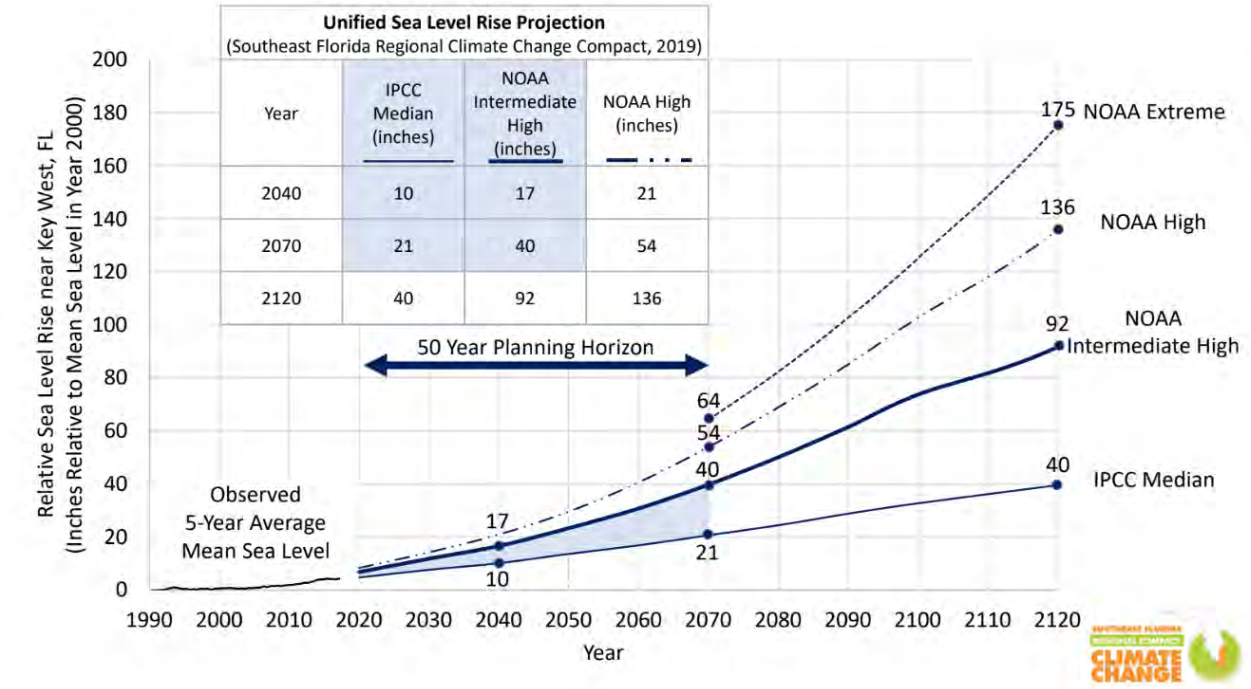

Figure WS2 **Florida Regional Climate Change Compact Unified Sea Level Rise Projection**[1]

These realities necessitate consideration of plans and investments that may be needed to compensate for the loss of existing water supplies through modified wellfield operations, relocation of wellfields, and the development of AWS sources while seeking opportunities to expand regional water storage. These investments and considerations are in addition to concurrency planning for population growth and water demands that are typical requirements for water supply planning.

Saltwater Intrusion

Along the coast of southeast Florida, and inclusive of areas several miles inland, groundwater supplies and potable wells are vulnerable to saltwater contamination. The Biscayne Aquifer, which serves as the region's primary water supply, is a shallow aquifer characterized by limestone karst geology, which is highly porous and transmissive. As a result, coastal saltwater intrusion of the Surficial Aquifer has begun to restrict coastal water supplies and necessitate the development of western wellfields, changes in wellfield operations, investments in aquifer recharge with reclaimed water, and Florida Aquifer water development and treatment. At the toe of the saltwater front, chloride concentrations in

[1] The unified sea level rise projection is updated every 5 years, the most recent analysis performed in 2024 recommended the continued use of the 2019 Southeast Florida Regionally Unified Sea Level Rise Projection: https://southeastfloridaclimatecompact.org/wp-content/uploads/2024/12/2024-SLR-Statement_120924_FINAL.pdf

the groundwater exceed the state drinking water standards of 250 milligrams per liter (mg/L) and thus restrict and/or require the abandonment of wellheads located east of the saltwater intrusion line.

Wellfield and water supply planning efforts have historically focused on the most at-risk utilities and wellfields. However, the accelerated rate of sea level rise has promoted advancements in modeling and planning tools to provide support and justification for a more holistic review of the anticipated water supply trends and necessary responses on both a local and regional scale.

As early as the 2000 LECWSP, impacted water supply entities were classified as:

- Utilities at Risk – Utilities with wellfields near the saltwater interface that do not have an inland wellfield, have not developed adequate alternative sources of water, and have limited ability to meet user needs through interconnects with other utilities; and
- Utilities of Concern – Utilities having wellfields near the saltwater interface that do have the ability to shift pumpage to an inland wellfield, or ability to supply an alternative water source not impacted by drought conditions.

Technical assessments have further identified changes in land use, Everglades drainage, wellfield operations, and sea level rise as contributing factors to the historical movement and current location of the saltwater front within the productive layer of the aquifer.

Hydrologic modeling has revealed that sea level rise, when combined with coastal wellfield pumping, accelerates the movement of the saltwater front, doubling the rate at which the front progresses. It is expected that sea level rise will constitute an increasingly significant influence on the rate of coastal saltwater migration during the decades to come and that critical wellfield capacity will be lost with an additional 2-foot sea level increase. Temporal hydrologic conditions and resource responses will influence water management operations in the coming years. It is prudent for water utilities throughout the region (both inland and coastal) to consider adaptation plans that might include wellfield relocation or expansion of western wellfields as part of their planned efforts to meet shared regional water needs. Continued groundwater monitoring and modeling efforts are critical to predicting the movement of the saltwater front under the sea level rise scenarios anticipated over the next several decades. Adaptation efforts should continue to be refined for realized and predicted trends. Regional and local data will be essential to informed decision-making.

Since 2006, Broward County has collaborated with USGS to develop and continuously update regional groundwater flow and transport models to help understand the effects of

current and future conditions, including sea level rise and increasing potable water demands, and groundwater supplies and saltwater intrusion. These modeling tools have proven effective in representing historic and future conditions and have been applied as planning tools for future water resources projects and in developing resilience strategies. These models have been used to simulate historic saltwater intrusion and to test the extent to which wellfield pumpage, surface water management, and sea level rise contribute to and influence the movement of saltwater and how the aquifer can be expected to respond to future climate conditions. Application of the county's variable density model (2016) investigated the implications of saltwater intrusion under various sea level rise scenarios, the sensitivity of saltwater intrusion to operational conditions, and changes in sea levels and testing of adaptation strategies for mid- and longer-term timeframes. The existing model is currently being updated using MODFLOW6 and will include the entire urban area in a single model framework that allows for finer spatial resolution simulations in critical areas, such as wellfields and complex signatures near tidally influenced waterways. This updated model is expected to be completed in 2026 and will further aid our exploration of more recent sea level rise trends and projections and water management alternatives in response to saltwater interface movement along the coast.

The county is also enhancing its investments with the concurrent development of a Climate Vulnerability/Inundation model focused on coupled hydrologic impacts of saltwater intrusion, surface water/groundwater elevations, and stormwater inundation. This model, also developed in cooperation with USGS, builds upon the county's Variable Density Model to assess the influence of changing climatic conditions on urban water resources and infrastructure. This effort integrates bias-corrected, dynamically downscaled data from Global Circulation models into the updated surface/groundwater model to be used for predictions county-wide. Refinements such as the Surface Water Routing (SWR) and Urban Runoff (URO) components offer a more detailed conceptualization of the surface water/groundwater interactions. These refinements are used to assess predictive scenarios and compare alternative water resource strategies in smaller study areas. Results from this first phase of modeling work were used to develop county's initial future conditions map titled WM 2.2 Future Conditions Average Wet Season Groundwater Elevation Map (2017). This map is used to guide planning decisions (e.g., land use), design standards, and the prioritization of resilience investments. Revisions to this model and the planning scenarios assessed informed update of the county's 2070 future conditions groundwater elevation map (2022).

The SFWMD began mapping of the saltwater interface (250 mg/l Isochlor) within Broward County in 2009. This saltwater interface or map is updated every five years using the end-

of-the-dry season data across groundwater monitoring stations maintained by local and regional governments and agencies throughout the region. The current Saltwater Interface for Broward County, Figure WS3, was updated in 2024, using data from 122 monitoring stations in Broward County. This recent mapping shows further landward intrusion of the saltwater interface in central and southern parts of the county, as compared to the last map published in 2019.

Extreme Weather Events

As extreme events increase in frequency and severity, comprehensive planning is being done to consider the impacts and risks associated with drought, water shortages, and reduced groundwater tables, all of which can hasten saltwater intrusion and exacerbate water supply impacts. Conversely, more intense rainfall will cause flooding, increased runoff, impacts on natural systems, and reduced recharge for water supply due to floodwater discharge efforts.

As global temperatures rise, record-breaking extreme weather events will occur more frequently. One example is the historic flash flood event that occurred on April 12, 2023, when Fort Lauderdale and surrounding areas reported 25.6 inches (650 mm) of rain within approximately 12 hours. The daily total was roughly equal to one-third of the historic average annual rainfall.

Flood impacts were exacerbated by heavy rainfall in the days prior which had raised the groundwater table before the most intense precipitation occurred. The National Weather Service in Miami issued a flash flood emergency at 7:58 p.m. EDT for Fort Lauderdale and Hollywood. The 25.91 in (658 mm) of rain measured at the airport was the most ever observed in Fort Lauderdale in a single day, eclipsing the previous record of 14.59 in (371 mm) set on April 25, 1979.

Integrated water resource management strategies are needed to mitigate these impacts, particularly those projects that can provide additional long-term storage of stormwater runoff and redistribution of excess rainfall during wet and dry periods. Regional surface water reservoirs and below-ground aquifer storage and recovery (ASR) systems are potentially viable AWS projects and climate adaptation strategies.

Infrastructure Development

There is a need to improve water and wastewater treatment to support the development of adaptive stormwater, wastewater, and water supply infrastructure for long-term sustainability. Emerging water treatment technologies and more active water management strategies must be weighed and designed carefully for optimization of their beneficial use,

energy demands, and carbon footprint. Strategic infrastructure planning can balance the benefits and constraints by using the Comprehensive Planning and Water Supply Facilities Work Plan processes to develop Goals, Objectives, and Policies that support desired long-term sustainability.

Intense storm events coupled with rising sea levels challenge the function of drainage systems and exacerbate flooding even for mild storm events in some areas. More extreme rainfall events may damage stormwater, wastewater, and water utility infrastructure and contribute to prolonged surface water flooding, contamination, and temporary loss of water supply. Planning for the combined influences of storm events, high tides, and sea level rise on drainage system functions and other public infrastructure is a critical need. Prolonged drought periods also have their place and may impact the viable water supplies and the sustainability of natural systems.

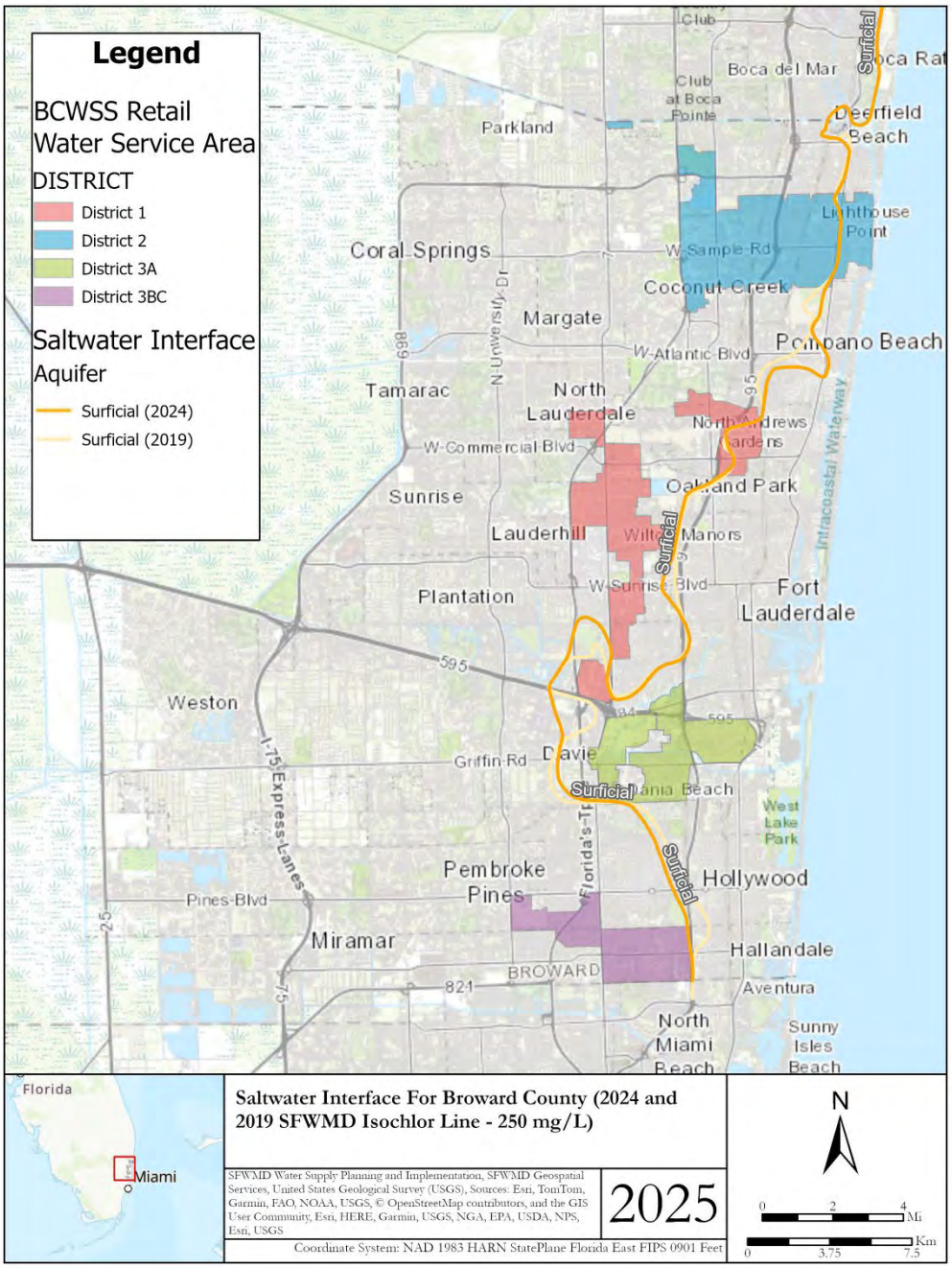

Figure WS3 Saltwater Interface (2024 and 2019 SFWMD Isochlor Line – 250mg/L) for Broward County

A mix of project options that provide for the development of resilient water systems to address both drought and flood conditions is fundamental. Water resource project options might include regional water storage; stormwater, reuse water, and potable water ASR; salinity barriers using highly treated wastewater; wellfield regionalization away from low-lying, flood-prone areas; and enhanced operational flexibility.

D. Water Use Limitation

The Minimum Flow Levels (MFLs) outlined in the Florida State Statutes are defined as the "limit at which further withdrawals would be significantly harmful to the water resources or ecology of the area" (Section 373.042(1), F.S.). They protect the SAS from saltwater intrusion, ensure adequate groundwater levels for the maintenance of natural systems, and prevent excessive groundwater seepage or surface water flows from the regional (Everglades) system.

As part of establishing MFLs, the regional water management district must determine whether the existing flow or level in the water body is below or projected to fall below the MFL criteria within the next 20 years. If so, then the district must develop a recovery or prevention strategy and, when appropriate, include the development of additional water supplies, water conservation, and other efficiency measures consistent with the provisions in Sections 373.0421 and 373.709, F.S., and provide the information and timelines for these strategies within the regional water supply plans. The 2005-2006 LECWSP Update (2005-2006, LECWSP) included MFLs for the Everglades and Biscayne Aquifer identifying key water resource development projects in the CERP as recovery and prevention strategies to meet MFL criteria.

In 2001, an MFL was adopted for the Biscayne aquifer, which exists beneath southeastern Florida. The MFL was based on the relationship between Everglades surface water and groundwater levels and their ability to inhibit the movement of saline water inland from the Atlantic Ocean. The primary MFL study (SFWMD 2000c) concluded that groundwater levels in the Biscayne aquifer were not endangered by present nor future year 2020 conditions. However, since the Biscayne aquifer and Everglades are supported by surface water from the Regional System, and since Everglades MFL is under recovery strategies, it was determined that any projected increase in allocations from the Biscayne would cause the Everglades MFL to be unobtainable. Additionally, the regional system was designated by the SFWMD in 2003 as a source of limited availability, leading to the limitation of consumptive use allocations in both the Everglades and Loxahatchee River Watersheds in 2006 under the "Regional Water Availability Rule." The Regional Water Availability Rule is codified in the Applicant's Handbook for Water Supply Permitting within the South Florida

Water Management District (SFWMD, 2015) in Section 3.2.1.E.3. Due to the limitation of groundwater from the Biscayne Aquifer to maintain MFL, Broward County is required to meet additional demands with alternative water supplies.

The SAS in the Southeast Florida peninsula, which includes the Biscayne Aquifer, is one of the most productive aquifers in the world and is currently the primary source of freshwater for residents of Broward County, Miami-Dade County, and Southeast Palm Beach County. In 1979, it was designated a sole source aquifer by U.S. Environmental Protection Agency (EPA), under the Safe Drinking Water Act (1974). The SFWMD is the state agency responsible for water supply planning in the Lower East Coast (LEC) planning area, which includes all of Broward County.

The SFWMD manages withdrawals from the SAS by issuing Consumptive Use Permits (CUPs). To secure and maintain a CUP, applicants consisting of water utilities, developers, agricultural operations, and water control districts, must meet the permitting criteria of: 1) being a reasonable and beneficial use of the resource; 2) demonstration of no adverse impact to other existing legal uses of water; and 3) assurance that the use of the requested quantity of water is necessary for economical and efficient use and is both reasonable and consistent with the public interest.

These uses must include compliance with the MFLs established for surface water and groundwater sources, Chapter 373, F.S. In implementing a prevention strategy for the Everglades, Lake Okeechobee, and Biscayne Aquifer MFLs, the Governing Board of the SFWMD adopted Restricted Allocation Areas in 2007 and 2008. For the LEC planning region, this mandated that new water demands requiring recharge from the Everglades regional system be met through the development of AWS. The numerous (115) AWS projects that were recommended as part of the 2005-2006 LECWSP Update were mainly driven by these Restricted Allocation Areas and the concurrent consumptive use restriction for future water supply withdrawals from the Surficial Aquifer to historical levels (before April 1, 2006).

Opportunities for assistance for these AWS projects occurred in 2005 with the passage of Senate Bill 444, creating a funding and incentives program to encourage the development of alternative water projects as defined in Section 373.019, F.S. The projects were described as from the following sources: saltwater; brackish water; surface water captured during wet-weather flows; sources made available through the addition of new storage capacity for surface or groundwater; water that has been reclaimed after one or more public water supply, municipal, industrial, commercial, or agricultural uses; the downstream augmentation of water bodies with reclaimed water; stormwater; and any other water

supply source that is designated as non-traditional for a water supply region in the applicable water supply plan.

This program funding has since been severely limited within the LEC region and has had a direct impact on the ability of local water supply entities to advance the development of AWS projects through their efforts.

E. Alternative Water Supply

Reclaimed Water

In 2008, the Florida Legislature enacted an ocean outfall statute (Section 403.086(9), F.S.). This requires the elimination of six ocean outfalls in southeast Florida as the primary means for disposal of treated domestic wastewater. Two of these outfalls are in Broward County, one is operated by Broward County Water and Wastewater Services and the other by the City of Hollywood. The affected wastewater utilities must reuse at least 60 percent of the historic outfall flows by 2025. The objective of this statute is to reduce the nutrient load into the environment and to achieve more efficient water use for water supply needs. Broward County has completed infrastructure improvements to allow 60 percent reuse and after December 31, 2025, may only use the ocean outfall in emergency situations to meet peak flows.

Upper Floridan Aquifer

The Floridan Aquifer has elevated chloride concentrations above those found in Northern and Central Florida. On occasions when southeastern Florida utilities seek to use the Floridan Aquifer to supplement their Biscayne Aquifer-sourced water, they are often faced with the higher energy costs associated with the reverse osmosis (RO) treatment of the brackish water quality and concentrate disposal facility costs. Typically, the utilities in Broward County that utilize the Floridan Aquifer mix the water with Biscayne Aquifer water supplies, diluting the chloride concentration and subsequently providing a finished water quality requiring less treatment than water derived solely from the Floridan Aquifer.

C-51 Reservoir Project

The C-51 Reservoir project is a public-private partnership to construct 60,000 acre-feet of stormwater storage that can be used as an AWS source for utilities in southeastern Florida. Diversion and improved management of freshwater flows was formally identified as a priority restoration strategy for the Lake Worth Lagoon in the 1992 Restudy of the Central & Southern Florida (C&SF) Flood Control Project. Coordination between Broward and Palm Beach water utilities and counties was initiated in 2006. The C-51 Reservoir Project is presented for the first time in the 2018 LECWSP as an AWS source to meet regional 2040 water demands. Beyond the water supply benefits of the project, the reservoir captures

excess stormwater flows, enhances local stormwater management, and reduces harmful discharges and associated nutrient loads to the Lake Worth Lagoon. Additionally, transmission of the C-51 Reservoir water to LEC utilities using the existing canal network will mitigate saltwater intrusion by maintaining higher canal stages and recharging coastal wellfields. C-51 reservoir has been designed to be completed in two phases with Phase 1 (14,000 ac-ft) solely dedicated to water supply and Phase 2 (46,00 ac-ft) being a multipurpose reservoir. Phase 1 was officially completed on March 15, 2025, and began deliveries in May 2025 while Phase 2 is currently in progress.

F. COMPREHENSIVE EVERGLADES RESTORATION PLAN Implementation

The Comprehensive Everglades Restoration Plan (CERP) is the blueprint for refitting the region's outdated water management infrastructure. The plan provides considerable benefits by addressing the needs of the natural system with those of the urban areas and agriculture. It is a first step towards a sustainable South Florida water system. CERP is designed to capture, store, and convey water, making it available for all users and yielding benefits for the regional system and local partners. The USACE and the SFWMD are partners in re-plumbing the Everglades to "get the water right". This watershed plan is linked to the SFWMD's LECWSP, which addresses water supply issues in Miami-Dade, Broward, and Palm Beach Counties over the next twenty years.

In October 2011, the South Florida Ecosystem Restoration Task Force endorsed a joint state-federal initiative to accelerate planning for key restoration projects in the heart of the Everglades. The Central Everglades Planning Project (CEPP) incorporates updated science and technical information gained over the last decade to allow more water to be directed south to the central Everglades, Everglades National Park, and the Florida Bay while protecting coastal estuaries.

The Water Preserve Areas (WPA) project, part of CERP, was authorized by Congress as part of the 2014 Water Resources and Development Act (WRDA). The two primary functions of the project are to reduce seepage losses from the WCA 3A/3B to the C-11 and C-9 basins and to capture, store, and distribute surface water runoff from the western C-11 basin that has discharged into the WCA 3A/3B. Indirectly, this will help to buffer the local water system against drought. The stormwater previously discharged via the S-9 pump station westward to the WCA will now be stored in the C-11 impoundment and slowly released into the canal system to be discharged via the S-9A structure eastward. Maintaining those canals at the control elevation will help recharge the aquifer and nearby wellfields like the Broward County South Regional, Cooper City, Pembroke Pines, Davie, and Miramar Wellfields. The project consists of three main structural/storage components – C-11 Impoundment (1,053

acres), C-9 Impoundment (1,600 acres) and adjacent Seepage Management Area (4,350 acres). Construction of Mitigation Area A berm for C-11 impoundment was completed in November 2018, while the land clearing contract for C-11 impoundment was awarded in September 2024. Construction of C-11 impoundment is currently scheduled to start in late 2025 and is expected to end in 2031. Preliminary investigation and design for C-9 impoundment and Seepage Management Area is expected to start in 2025 or 2026.

BROWARD COUNTY

This section identifies the future water supply needs of those areas serviced by either BCWWS or other BMSD water suppliers to ensure that water supply allocations and projects will be enough to meet projected demands. The role of RED and BCWWS is to identify the future water supply needs and available supplies of the BCWWS service area (see Data and Analysis Section) as well as for those served within the BMSD. BCWWS provides water service to the BMSD areas of Broadview Park and Hillsboro Pines. The City of Fort Lauderdale utility serves the BMSD areas of Washington Park, Franklin Park, Boulevard Gardens, and Roosevelt Gardens. In coordination with the City of Fort Lauderdale's Planning and Zoning Department and Water utilities, RED has identified current and future water supply needs and water supplies as detailed below.

G. Broward County Settings

Broward County is located along the lower east coast of Florida (see Figure WS1) and was formed from parts of Palm Beach and Dade Counties in 1915, resulting in a total land area of more than 1,225 square miles. Over time, the western two-thirds of the county was preserved as wetlands, concentrating development along the coastal one-third. in 1915, the population was 4,763 (Florida State Census). In 2024, The University of Florida's Bureau of Economic and Business Research (BEBR) estimate lists the county's population at 1,981,888, resulting in an average population density of approximately 4,700 people per square mile. Southeast Florida is widely considered one of the most vulnerable regions to climate impacts and sea level rise. This vulnerability is the result of several unique geographic characteristics, including low land elevations, flat topography, a porous geology, and dense coastal development. These geographic characteristics present significant challenges for water resource planning, management, and infrastructure for communities throughout the region. Balancing Everglades restoration efforts and changing climate conditions with our growing communities presents significant water resource planning challenges. However, Broward has long recognized that water is a shared resource, and that the effective and efficient management of resilience and water resources efforts requires county-wide and regional coordination. To this end, Broward is a founding member of the Southeast Florida Regional Climate Change Compact (Compact) and have agreed to partner in regionally coordinated climate mitigation and adaptation strategies. The Compact has developed and updated a Regional Climate Action Plan (RCAP 3.0, 2022) that includes 117 recommendations in 11 primary focal areas, with 17 strategies specific to "Water" (Table WS1 below). These recommendations are intended to meet the goal of:

Identifying, developing, and implementing "integrated water management strategies and infrastructure improvements concurrently with existing and enhanced water conservation and alternative water supply source efforts to mitigate the adverse effects of climate change, including sea level rise on water resources systems and operations (RCAP 3.0, 2022)."

Table WS1 **"Water" Recommendations from the Regional Climate Action Plan 3.0** [1]

[1]WS-1	Practice integrated water resources management and planning
WS-2	Foster innovation, development, and exchange of ideas for managing water
WS-3	Foster scientific research for water resource management
WS-4	Coordinate innovative regional investments in water management technologies
WS-5	Expand the use of green infrastructure/nature-based and net zero solutions in water management
WS-6	Ensure consistency in water resource scenarios used for policy and planning consideration of future climate conditions
WS-7	Assess the potential of climate impacts on water infrastructure
WS-8	Modernize infrastructure development standards in the region
WS-9	Address the resilience of the regional flood control system
WS-10	Integrate combined surface and groundwater impacts into the evaluation of at-risk infrastructure and the prioritization of adaptation improvements
WS-11	Implement strategies and capital projects to increase adaptive and resilient water infrastructure, and improve water quality
WS-12	Phase out septic systems where appropriate to protect public health and water quality
WS-13	Coordinate saltwater intrusion mapping across Southeast Florida
WS-14	Develop a spatial database of resilience projects for water infrastructure
WS-15	Support the CERP
WS-16	Expand regional surface water storage
WS-17	Expand information and engagement with property owners to support adaptation on private property to contend with increased flooding and higher groundwater

1. Source: Water Supply Recommendations from the Regional Climate Action Plan 3.0, November 2022 https://southeastfloridaclimatecompact.org/recommendations/

The Resilient Utility Coalition, established in 2016, seeks to advance utility infrastructure resiliency efforts and provide essential value to its members and partners. The Resilient Utility Coalition provides leadership in assessing and adapting utility operations to address risks and improve water management decision-making in the face of climate uncertainty. In its strategic plan, it has also prioritized the concept of One Water, including the development of the One Water Academy.

Recognizing that water is a shared resource, the One Water approach, promoted by the U.S. Water Alliance, is essentially an expanded version of integrated water resources planning. One Water envisions managing all water in an integrated, inclusive, and sustainable manner to secure a bright, prosperous future for our children, our communities,

and our country. One Water approaches are progressing in multiple arenas: from using advanced technologies to recover nutrients and energy from wastewater; to using green stormwater techniques to mitigate flooding while beautifying neighborhoods; to undertaking watershed-level planning and collaboration to address water quality issues; to implementing innovative financing and partnership models.

H. Broward County-Wide Integrated Water Resource Plan

In 1997, Broward County initiated its IWRP to improve the effectiveness and efficiency of local water management. The principle of the IWRP is that water should be viewed as a regional resource, independent of municipal and utility service area boundaries.

Broward's IWRP, approved by the County Commission in 2010, has four main objectives:

- To make the most of local water resources so that Broward's long-term water supply needs are met
- To coordinate a diverse water management community, ensuring the efficient and effective management of Broward's water resources
- To match up local water sources and users to ensure that water supplies are available when and where they're needed; and
- To diversify water supplies so that the needs of urban and natural systems are met under wet and dry conditions

A fifth objective was added in the 2019 IWRP Update: Promote water resources resiliency by evaluating future conditions, including potential climate impacts, and adopt strategies to mitigate, adapt, and prevent disruptions to our overall goal of more efficient and effective water management.

Successful implementation of the plan requires coordination across the water management community in Broward County which consists of 27 water providers, 23 special districts and 15 wastewater providers across 31 municipalities as listed below:

Broward County Municipalities:

City of Coconut Creek

City of Cooper City

City of Coral Springs

City of Dania Beach

Town of Davie

City of Deerfield Beach

City of Fort Lauderdale

City of Hallandale Beach

Town of Hillsboro Beach

City of Hollywood

City of Lauderdale Lakes

Town of Lauderdale-by-the-Sea

City of Lauderhill

Village of Lazy Lake Village

City of Lighthouse Point

City of Margate

City of Miramar

City of North Lauderdale

City of Oakland Park

City of Parkland

Town of Pembroke Park

City of Pembroke Pines

City of Plantation

City of Pompano Beach

Village of Sea Ranch Lakes

Town of Southwest Ranches

City of Sunrise

City of Tamarac

City of Weston

City of West Park

City of Wilton Manors

Potable Water Providers:

Broward County-District 1

Broward County District 2

Broward County District 3

Cooper City

Coral Springs

Coral Springs Improvement District

Dania Beach

Davie

Deerfield Beach

Fort Lauderdale

Hallandale

Hillsboro Beach

Hollywood

Lauderhill

Margate

Miramar

North Lauderdale

North Springs Improvement District

Oakland Park

Parkland Utilities Inc.

Pembroke Pines

Plantation

Pompano Beach

Royal Utility

Seminole Tribe of Florida

Sunrise

Tamarac

Tindall Hammock Irrigation and Soil Conservation District

Drainage and Water Control Districts:

Bonaventure Development District

Broward County Water Control District #2

Broward County Water Control District #3

Broward County Water Control District #4

Central Broward Water Control District

Cocomar Water Control District

Coral Bay Community Development District

Cypress Cove Community Development District

Indian Trace Development District

Lauderdale Isles Water Management District

North Lauderdale Water Control District

North Springs Improvement District

Oakridge Community Development District

Old Plantation Water Control District

Pine Tree Water Control District

Plantation Acres Improvement District

South Broward Drainage District

Sunshine Water Control District

Tindall Hammock Irrigation and Soil Conservation District

Turtle Run Community Development District

Twin Lakes Water Control District

West Lake Community Development District

Wastewater Providers:

Broward County North Regional

Cooper City

Coral Springs Improvement District

Town of Davie

Ferncrest

Fort Lauderdale – G.T. Lohmeyer

Hollywood

Margate

City of Miramar

City of Pembroke Pines

Plantation Regional

Sunrise No. 1 (Springtree)

Sunrise No. 3 (Sawgrass)

Sunrise Southwest

The work of the Water Resources Assessment Program within Broward County's RED provides vital information and guidance that supports the programs in the IWRP and the development of AWS sources such as water reuse, harvesting of excess stormwater (C-51 Reservoir Project), the use of the Upper Floridan Aquifer, ASR, and secondary canal integration. Among these urban water strategies, Broward County has prioritized water conservation as the least costly effort to offset future water demands. The technical assessment of these projects and planning for future climate conditions are investigated through several robust hydrologic models, developed over many years and with significant municipal partner support.

Water Reuse in Broward

Broward County has focused on advancing beneficial reuse and, in 2014, developed the Regional Reuse Master Plan in coordination with its regional partners. This effort included the active participation of local municipalities, water managers, water and wastewater utilities, local planning agencies, the Florida Department of Transportation, and other state and regional agencies. This plan sets the foundation for the long-term implementation strategy to further regional reclaimed water development through several innovative and dynamic planning tools. The plan data was updated in 2018, and the report design was modernized from a paper document to a digitally interactive format. The plan is now delivered to our regional partners in the new interactive online format. The Regional Reuse Master Plan and Implementation Strategy support a cost-effective, regional approach for the development of beneficial reuse throughout the County's water and wastewater providers.

The objective is to advance cost-effective development of reclaimed water initiatives through coordinated planning and implementation. The Plan is designed to:

1. Provide coordination and support among Broward County, state agencies, water and wastewater treatment providers, and municipalities to deliver, update, and maintain a comprehensive database of existing and planned reclaimed water infrastructure.
2. Coordinate the installation of reclaimed water lines for recommended projects with public works projects such as transportation improvements, stormwater and other wastewater improvement projects that may be necessitated through local, state, and federal permitting requirements.

To support this strategy, IWRP grant funds provide preferential funding consideration for those projects that are contained within and are consistent with the Regional Reuse Master Plan. IWRP grant program, initiated in 2008, provides grant funding for feasibility and design projects as well as construction projects on a bi-annual basis, as available funds allow. Including the last IWRP grant cycle 2023-25, Broward County has provided $3.1 million in cost-share dollars for water reuse projects in Broward County, the total cost of these projects was $22.5 million. Permitting incentives include the potential reuse credit that the SFWMD could allow as an offset to increase traditional water sources withdrawals in a CUP.

Additional financial incentives may be available through state funding as indicated in Section 373.1961(3)(f)(6), F.S., that provides encouragement for projects in which the construction and delivery to end users of reuse water is a major component. This statute

requires governing boards to give such projects significant weight when selecting AWS projects for funding under Section 403.89, F.S.; Water Protection and Sustainability Program (Florida Department of Environmental Protection [FDEP], 2016).

Requirements of the outfall program include a functioning reuse system that reuses a minimum of 60 percent of the facility's actual flow on an annual basis installed no later than December 31, 2025. State or the SFWMD funding assistance must give first consideration to water supply development projects that replace existing sources or implement reuse projects to eliminate ocean outfalls. Broward County is planning to meet the 60 percent reuse requirement by expanding its public access irrigation in Northern Broward and Southern Palm Beach Counties, including expanding reuse systems in the Cities of Pompano Beach and Coconut Creek and North Springs Improvement District which is described in more detail below under the Data and Analysis section of this report. Based on the FDEP records for 2023, Broward County's total Wastewater Flow is 169 Million Gallons Per Day (MGD) and the Reuse capacity is 40 MGD. To meet the 60% reuse goal under the Ocean Outfall program, significant progress needs to be made to increase reuse water capacity in Broward County.

C-51 Reservoir Project

Over the past decade, the SFWMD, Lake Worth Drainage District, Palm Beach Aggregates, local governments, water managers, and public water supply utilities from Broward and Palm Beach County jointly investigated the feasibility of a regional reservoir to capture and store excess surface water runoff discharged to Lake Worth Lagoon, primarily during wet weather conditions, and release into the C-51 Canal during dry periods to meet water demands.

The C-51 Reservoir project is a public-private partnership for the construction of 60,000 acre-feet of storage for use as an AWS source in Southeastern Florida. Diversion and improved management of freshwater flows were formally identified as a priority restoration strategy for the Lake Worth Lagoon dating to the 1992 Restudy of the C&SF Flood Control Project. C-51 Reservoir Project was presented in the 2018 LECWSP as an AWS source to meet regional projected 2040 water demands.

The C-51 Reservoir Project location is adjacent to the SFWMD's existing L-8 Flow Equalization Basin in Palm Beach County and shares the same impermeable geologic formation that provides for significant inground storage capacity with limited seepage losses or additional construction requirements. The initial intended purpose was to capture excess stormwater discharged to Lake Worth Lagoon via the C-51 Canal. Currently, the benefits of this proposed project include:

- Reduces harmful water quality and quantity discharges to the Lake Worth Lagoon via the S-155 structure.
- Supports water quality improvements in the Everglades Protected Areas by offering additional storage and, in conjunction with the L-8 Flow Equalization Basin, optimizing flows to the Stormwater Treatment Areas (STAs).
- Operated in conjunction with the L8 Flow Equalization Basin, could aid the SFWMD in meeting objectives of the Loxahatchee River Watershed Restoration Project.
- Provides an opportunity to improve water quality delivered to the STAs via blending with the L8 Flow Equalization Basin water.
- Mitigates stormwater impacts and flooding for Western and Central Palm Beach County.
- Mitigate saltwater intrusion and protects wellfields in coastal communities.
- Serves as a regional AWS source.
- Supports water resource protection and potential adaptation strategies considering sea level rise and drought.

Among the economic benefits, there are:

- Provides "Economies-of-Scale" as a regional water resource development project providing diverse benefits to the region.
- Capitalizes on the current construction and engineering work on the existing L-8 Flow Equalization Basin, including the use of the L-8 Flow Equalization Basin's intake structure and pumping facilities.
- The SFWMD will operate and maintain the C-51 Reservoir Project in conjunction with the L-8 Flow Equalization Basin, resulting in operational coordination and reduced costs.
- Provides a cost-competitive solution relative to end-of-pipe water quality treatment, environmental degradation and economic losses, impacts of flooding, and the costs of alternative water supplies and treatment technologies.
- Capitalizes on current mining activities and construction of rock pit.
- Relies largely upon existing conveyance infrastructure.
- Reducing the long-term need for new water infrastructure and energy-intensive treatment technologies.

The C-51 Reservoir is anticipated to be completed in two phases, Phase 1 and Phase 2. Phase 1 is solely dedicated to water supply and associated allocation increases. Phase 1 is designed to store an estimated 14,000 acre-feet of surface water and provide 35 MGD of canal/SAS recharge near public water supply withdrawals. In January 2017, the SFWMD designated the C-51 Reservoir Project Phase 1 as a pilot AWS development project, pursuant to Section 373.037, F.S. The construction for Phase 1 initiated in 2021 and was officially completed on March 15, 2025. Public water supply utilities executed agreements with the property owners to purchase generated AWS capacity as part of total reservoir storage. The utilities modified their water use permits to reflect this AWS source as a means for meeting future demands. The 35 MGD of AWS has been allocated to following utilities/entities - Broward County (6 MGD); Sunrise (5 MGD); Hallandale Beach (1 MGD), Dania Beach (1 MGD), Margate (2 MGD), Fort Lauderdale (3 MGD), Pompano Beach (2 MGD) and Miami-Dade (15 MGD).

Phase 2 of the project provides an additional 46,000 acre-feet of storage and will have a separate connection to the L-8 Reservoir. The Phase 2 reservoir will be a multipurpose reservoir intended to reduce discharges to Lake Worth Lagoon, support restoration of Loxahatchee River, mitigate saltwater intrusion, enhance water supply resiliency, expand operational flexibility and provide other water resources benefits. Work on Phase 2 is already in progress as of March 2025.

Floridan Aquifer

The expanded use of the Floridan Aquifer system has been explored with respect to its long-term viability as an AWS. Broward County, in cooperation with USGS, completed a Phase 1 Feasibility Study of the Upper Floridan Aquifer in March 2014. The study compiled available information and commissioned a new Floridan well (G-2984) to characterize the aquifer's depth, confinement, production, and water quality. Using borehole and core sample data (84 wells at 33 sites), the hydrogeologic framework of the Floridan Aquifer system in Eastern Broward County was delineated. This effort helped to construct unique cross-sections and maps representing the stratigraphic and hydrogeologic units of the Floridan Aquifer system in urban Broward County. An additional project component was to complete seismic profiling along approximately 14 miles of the Hillsboro Canal, resulting in seismic reflection data that were then correlated to the borehole geophysical data (Reese et al., 2014).

Building on the successful use of seismic profiling in the first study, Phase 2 of this Feasibility Study, completed in 2017 (Cunningham et al., 2018), refined the hydrogeologic framework and regional extent of information by collecting 80 miles of high-resolution seismic profiles from canals in Broward County, along with well logs and cores from 44 wells. The

hydrogeologic mapping of formations over the 425-square-mile study area identified hydrogeologic features where further study was warranted.

The SFWMD also completed water supply modeling of the Floridan aquifer as part of the 2018 LEC plan update. The model included an allocation of 3.0 MGD from BC 2A/NR in the year 2040 scenario. This pumping stress and other pumping in the region resulted in a drop of 5.1 to 10 ft in the Floridan aquifer water levels over levels recorded for 2016. The model also indicated that there would be no impact on water quality (chloride levels) in the Upper Floridan region (approximately 1,000 to 1,600 feet below land surface) as a result of production.

Although model results were favorable for Upper Floridan aquifer development, physical evaluation of the below-ground conditions and water quality would need to be completed prior to production. Modeling would then need to be updated with test well information, and new model runs performed with planned rates and proposed well sites before Broward County could rely on the utilization of the Floridan aquifer as an AWS.

Secondary Canal Integration

Secondary canal integration remains a relatively attractive urban water management strategy given the vast network of canals that exist in Broward County and the relatively inexpensive infrastructure (culverts, pumps, etc.) required to implement greater integration of the system.

Progress has been made on the Northern Broward County Recharge System integration with the completion of the C-1/C-2 interconnect from Sailboat Lake east to Bonnie Loch along the north side of Sample Road. The C-1/C-2 Interconnect project was completed in November 2023 and it is operational. This project allows Broward County Water Control District 2 to route water east from the C-2 canal system at Sailboat Lake to the C-1 canal system in the Bonnie Loch community. The ability to move water east will inhibit the movement of saltwater inland from the coast and make additional groundwater available to the public water supply wellfields located along the canal to the north.

The remaining IWRP project will connect the Cocomar Water Control District C-5 canal that currently ends at Cullum Rd. in Coconut Creek south to the C-7 canal that begins at the Sample Rd. basin divide. An application to develop the area (Mainstreet at Coconut Creek) was submitted to the Resilient Environment Department, Environmental Permitting Division, June 2022. Review of the application was conducted by multiple agencies, and the following permits and licenses were issued on January 30, 2025:

- Environmental Resource Permit No. 06-00551-S
- Surface Water Management License No. SWM2025-007-0
- Environmental Resource License No. DF22-1194

Construction of the project will occur as each phase of development is completed. The C-5/C-7 Interconnect will allow the establishment of flow north from Sample Rd. to the Hillsboro Canal for discharge and will provide opportunities to share water north to south across the basin divide at Sample Rd. when needed.

Water Use Efficiency/Conservation

Broward County has implemented diverse water conservation initiatives to protect the quantity and quality of Broward's existing and future water resources to help meet our current and projected demands. Consistent with this objective, the county has implemented a broad set of water conservation programs under the Natural Resources Division (NRD) Water Conservation Section. This section is focused on creating campaigns designed to produce long-term demand reductions along with improvements in water quality. These programs, targeted at various user groups, include: NatureScape Broward, Water Matters Day, Conservation Pays, NatureScape Irrigation Service (NIS), Residential Irrigation Rebate Program (RIRP), and the NatureScape Broward School Board Environmental Partnership Agreement. The overall goal of the Water Conservation Section programs are to reach a sustained minimum 10% reduction in water use over 20 years. Further support for water conservation is found in other conservation-oriented measures, including changes to the Florida Building Code for cooling towers and high efficiency plumbing devices, year-round irrigation measures, model irrigation codes, Climate Action Plan initiatives, and other water conservation policies and regulations. The water conservation initiatives are listed below.

- Conservation Pays Program - This effort was launched in 2011 in collaboration with 18 municipal and water utility partners to provide a coordinated regional campaign focused on water conservation and the distribution of rebates and other incentives. Rebate dollars are used for the replacement of older, inefficient toilets in addition to the distribution of other water-saving fixtures and devices such as aerators and commercial pre-rinse spray valves. A consistent marketing and media campaign advances water conservation efforts as part of the Board of Commissioners' value of encouraging investments in renewable energy, sustainable practices, and environmental protection. Additional Commission support is promoted by the goal to increase water quality protection efforts and lead creative approaches to water storage and aquifer recharge, as well as diversification of water supplies regionally. To

date, the program has saved more than two billion gallons of water in Broward County.

- NatureScape Irrigation Services - Launched in 2005, the NIS is implemented by the RED/NRD Water Conservation Section with cost-share provided by BCWWS and 17 local water utilities. The program targets large water users, including government facilities, parks, schools, and homeowner associations, where the greatest potential exists for significant water savings. To date, water savings exceed one and a half billion gallons with over 4,000 irrigation system evaluations. Best management practices that encourage the 'right plant in the right place' and smart irrigation help to promote water conservation messaging that adds to long-term water savings.
- NatureScape Broward Program - Launched in 2003, NatureScape Broward promotes water conservation, water quality protection, and the creation of wildlife habitat through Florida-friendly landscape practices that encourage the prudent use of water resources through planting of native, non-invasive and other drought-tolerant plants. Broward was the first county in the U.S. to be certified under the National Wildlife Federation's Community Wildlife Habitat program and is celebrating its 20th consecutive year of certification, the only County in the nation to achieve this landmark. In addition, there are 16 certified and 11 registered municipalities and over 5,500 landscapes that have been certified to date.

As a result of all these water conservation/efficiency efforts, wellfield pumping withdrawals as well as per capita water use in Broward County has shown a decline during last 25-years – water withdrawals and per capita water use reduced from 261 MGD (million gallons per day) and 161 GPD (gallons per day) in year 2000 to 239 MGD and 121 GPD in 2023.

Technical Water Resources Assessment

The numerical hydrologic models developed within the IWRP program provide for informed decisions and sustainable investments essential for comprehensive and integrated water resource management strategies throughout Broward County and the LEC planning region.

In 2006, Broward County's RED contracted with the USGS to develop a numerical model to evaluate various influencing factors on the saltwater movement within the Biscayne Aquifer in the northern third of the county. This tool was proven to be effective in representing historic and future conditions and was demonstrated to have utility as a planning tool for future water resources projects and development of resilience strategies. This modeling effort was subsequently expanded to the central and southern portions of the county to simulate historic saltwater intrusion and to test the extent to which wellfield pumpage,

surface water management, and sea level rise contribute to and influence the movement of saltwater and how the aquifer can be expected to respond to future climate conditions. The tool also investigates the viability of water supplies and can be used to identify and test possible adaptive strategies.

Broward County is also enhancing this investment with concurrent development of an Inundation Climate Vulnerability Model focused on coupled hydrologic impacts of saltwater intrusion, surface and groundwater elevations, and stormwater inundation. This model, developed in cooperation with USGS, builds upon the County's Variable Density Model to assess the influence of changing climatic conditions on urban water resources and infrastructure. The initial effort integrated bias-corrected, dynamically downscaled data from Global Circulation models into the updated surface/groundwater model for predictions countywide. A smaller study of the county was later refined using SWR and URO components that offered more detailed conceptualization of the surface/groundwater interactions, used to assess the predictive scenarios and comparison of alternative water resource strategies. Based on the successful implementation of the SWR and URO packages, the countywide model was also updated to include these two packages for better surface water representation. This updated model formed the basis for creation of the Future Conditions Average Wet Season Groundwater Elevations map adopted in 2017.

In February 2017, Broward County approved the creation of a Future Conditions Map Series in the Broward County Code of Ordinances and effective July 01, 2017, adopted the first regulatory map of the series, the Future Conditions Average Wet Season Groundwater Elevations Map. The approved map ensures that future climate conditions are accounted for in the design and construction of local surface water management systems and that future investments will deliver the necessary level of flood protection and water quality treatment necessary for the duration of the expected useful life of both public and private investments. This map provides an important basis for advancing the resiliency standards and investments needed across our entire region, as it provides a model for the establishment and application of modernized standards based on the integration of science and technology in policy and planning and community buy-in achieved through a comprehensive public process. This map was recently updated in July 2024, using the modeling results from the latest modeling study that uses the updated sea level rise projections for 2070 planning horizon.

The updated Future Conditions Groundwater Elevation Map represents the predicted future average wet season groundwater elevations in Broward County based on model outputs for the months of May through October for the year 2070. The models used are MODFLOW-based Broward County Inundation Models Phase 1 and Phase 2, and the

Broward County Northern Variable Density Model developed by the USGS. The modeled future conditions are precipitation and sea level rise. The future precipitation pattern is based on the COAPS downscaled CCSM global model and represents an increase of 9.1% from the base case of 1990-1999 (53.4 to 58.2 in/yr). This map is an update to Plate WM 2.2 - 2060 Future Conditions, in accordance with the 2017 NOAA Intermediate-High Sea Level Rise Scenario for 2070 with a predicted increase of 40 inches relative to the year 2000.

Currently, all the existing models of groundwater flow and transport are being combined to incorporate the entire urbanized area into an updated modeling framework (MODFLOW6) that allows finer spatial resolution simulations in critical areas such as wellfields. This updated model, that is expected to be completed in 2026, would be used to understand the effects of latest sea level rise projections and several water management (withdrawals) alternatives on saltwater interface movement countywide.

In a restudy of Flood Insurance Rate Maps completed in 2014 by FEMA, the County's MIKE SHE/MIKE 11 model was utilized and updated. The MIKE SHE platform was originally developed to look at surface water groundwater interaction issues beginning with the North Aquifer Drainage Assessment (NADA), which was then extended to the Central Aquifer Drainage Assessment (CADA [2000-2002]) and South Aquifer Drainage Assessment (SADA [2003-2005]). The county then combined the NADA, CADA, and SADA to form the Consolidated Broward County MIKE SHE model. As part of the 2011 Integrated Water Resources Master Management Plan, the consolidated model was updated to run additional water recharge projects to test whether demands for future population projections could be sustained without adverse conditions to the Biscayne Aquifer. In 2018, Broward County began updating the same FEMA model to develop a future (2060) 100-year flood elevations map, accounting for sea level rise and more intense rainstorms. The developed 100-yr Flood Elevation Map was adopted by the county in July 2021 as a second map in the future conditions maps series. The Future Conditions 100-Year Flood Elevation Map is intended to advance the resiliency efforts in Broward County by setting the foundation to improve standards for flood protection. The flood elevation mapping results (representing a 1% annual chance) are intended to serve as the basis for establishing future finish floor elevations for new buildings and major redevelopments. This updated hydrologic model (MIKE SHE/Hydro) incorporated future land use changes and the effects of projected sea level rise and precipitation changes to predict future flood conditions. The flood area approach for conveying the future 100-year flood elevation results for the updated community flood map was vetted through a collaborative process reflecting input from Broward staff and key stakeholders.

More recently, the same hydrologic model (MIKE SHE/Hydro) was updated to develop Broward County-wide Risk Assessment and Resilience Plan. The existing model was updated to expand up to intracoastal boundary and to include a denser canal network, updated pervious/impervious areas and a refined drainage routing component. The Resilience Plan addresses the impacts of rising sea levels, more intense rainfall, storm surges, and increasing heat and provides a clear and actionable roadmap for the next 50 years. The Plan is designed to provide the foundation for a basin-level multi-decade resilient infrastructure and redevelopment plan for Broward County. The Plan includes new water management strategies, recommendations for increased water storage, green and gray infrastructure improvements as well as long-term flood wall or storm surge barriers such as seawalls.

I. Comprehensive Everglades Restoration Plan

Central Everglades Planning Project

The USACE states that CEPP "will identify and plan for projects on land already in public ownership to allow more water to be directed south to the central Everglades, Everglades National Park, and Florida Bay." The full project's design will send an approximately 210,000 acre-feet of water south from Lake Okeechobee each year. The WCAs are a major resource affected by this future project. Thus, this regional CERP project is very important locally to Broward County as its water supply is critically linked to the WCAs. The CEPP was authorized in the 2016 Water Resources Development Act 2016. Currently, the USACE is working on a validation study to implement Phase 1 in the southernmost area that will increase flows to Everglades National Park.

(http://discover.pbcgov.org/wrtf/PDF/Documents/LOSOM_Broward_scoping_comments_17Apr2019.pdf)

Water Preserve Areas

The WPAs are a series of marshes, reservoirs, and groundwater recharge areas along the eastern side of the WCAs in Broward, Palm Beach, and Miami-Dade Counties. In Broward County, the WPA extends along the western urban limits, adjacent to Levees 37 and 68A. The projects within the WPAs are intended to serve multiple uses such as increasing the spatial extent of wetlands, reducing seepage losses from the WCAs, improving water supply and quality, and establishing a buffer between the Everglades and developed areas. The benefits to the county's urban area include: the storage of stormwater runoff; groundwater recharge; management of saltwater intrusion; and increased urban water supplies.

As part of the CERP, the Broward County Water Preserve Areas Project (BCWPA) was authorized in the 2014 Water Resources Reform and Development Act. The BCWPA project is designed to perform two primary functions; 1) Reduce seepage loss form WCAs 3A/3B

to the C-11 and C-9 basins, and 2) Capture, store and distribute surface water runoff from the western C-11 basin that has been discharged into WCA 3A/3B. The Project consists of three main components: C-11 Impoundment (1053 acres area, 4600 ac-ft storage), C-9 Impoundment (1600 acres area) and Seepage Management Area (4350 acres area). Mitigation Area A berm for C-11 impoundment was completed in November 2018, and the land clearing contract for C-11 impoundment was awarded in September 2024. The C-11 Impoundment Embankment and Mitigation Area A contract will be awarded in September 2025 with an expected completion in 2031. The C-11 Impoundment Pump Station and remaining Impoundment features are currently in final design, with completion expected in 2026. The C-9 impoundment and the Seepage Management Area, investigations and design is expected to start in 2025 or 2026, with a projected contract award date in 2028/2029.

(https://usace.contentdm.oclc.org/utils/getfile/collection/p16021coll11/id/2552

DATA AND ANALYSIS

The following section provides information in support of the requirements of Section 163.3177(1)(f), F.S., as outlined:

- All mandatory and optional elements of the comprehensive plan and plan amendments must be based upon relevant and appropriate data and an analysis by the local government that may include, but not be limited to, surveys, studies, community goals and vision, and other data available at the time of adoption of the comprehensive plan or plan amendment. (Section 163.3177(1)(f), F.S.).
- Data must be taken from professionally accepted sources (Section 163.3177(1)(f)2., F.S.) and reacted to in an appropriate way, to the extent necessary as indicated by the data available on that subject at the time of adoption of the plan or plan amendment at issue. (Section 163.3177(1)(f), F.S.).

The planning horizon for the 2025 Work Plan spans 20 years, covering 2025 to 2045.

J. County-Wide Population Analysis

This 2025 Work Plan identifies and analyzes the future water supply needs for the BMSD areas of Broward County, and those areas serviced by BCWWS. The role of RED is to identify the future water supply needs of BMSD areas of Broward County and to present regional strategies supporting county-wide water supply needs and water resource management. The role of BCWWS is to identify the future water supply needs of their service areas, which include both BMSD areas and incorporated areas, and to determine strategies to meet any unmet demands.

Several of the BMSD areas (Figure WS4) are provided with water service by BCWWS; hence these areas are included in the BCWWS analysis. For the remaining BMSD neighborhoods, the City of Fort Lauderdale is the largest of the water utility providers while the City of Sunrise is only providing for six residential units. The RED has coordinated with the Fort Lauderdale Planning and Zoning Department and the water utility to identify the current and future water supply needs within their water utility's service area.

Needs assessments were developed based on current utility operations and the existing customer base, compared to population projections through 2045. The population modeling was performed by Broward County Urban Planning (BCUPD) using the Broward County Traffic Analysis Zones (TAZ) and municipal forecasts updated in 2024 to develop the projected populations based on the University of Florida's BEBR Volume 57, Bulletin 198, "Projections of Florida Population by County. 2025-2050, with Estimates for 2023

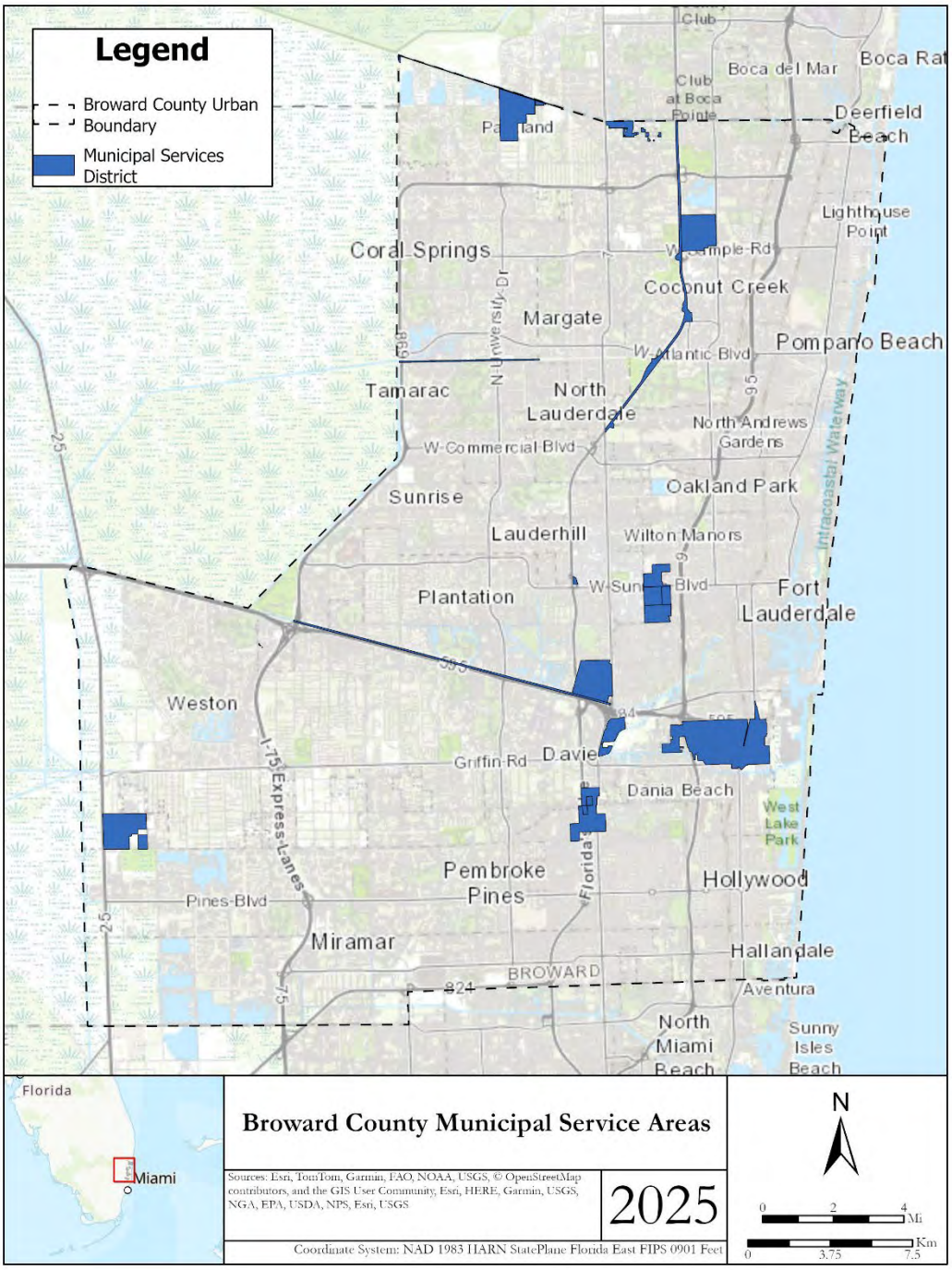

Figure WS4 **Broward County Municipal Service Areas**

to Broward County's 2024 Traffic analysis Zones (TAZ) and municipalities. The demographic forecast model update is detailed in, "Broward County and Municipal Population Forecast and Allocation Model (PFAM), 2024" (BCUPD, 2024).

This 2025 Work Plan includes analysis of existing water facilities; current and projected water demands versus water availability and the presentation of the water supply plan for the Fort Lauderdale water utility. Future water demands prepared for this analysis are compared to projected demands presented in the 2024 LECWSP Update, with discussion of any deviations.

The Broward County PFAM 2024 update was used to develop County population by jurisdiction. Updated population projections from University of Florida's BEBR Volume 57, Bulletin 198 and the Broward County PFAM 2024 update are summarized below in 5-year increments through 2045. Table WS3 below.

Table WS2 **Broward County Population Projections 2025-2045**

Year	BEBR Population Estimates [2]	BCUPD [1] Population Estimates [3]	SFWMD [1] Population Estimates [4]
2021	1,955,375	1,942,675	**1,951,637**
2024	1,981,888	1,982,395	1,987,410
2025	2,006,700	1,995,635	1,999,335
2030	2,076,200	2,061,835	2,058,960
2035	2,125,800	**2,128,027**	2,118,585
2040	2,161,100	2,158,975	2,178,210
2045	2,189,300	2,189,925	**2,237,800**

1. Reported population values are bold font. BCPUD reported populations for 2020, 2035, and 2050; SFWMD reported populations for 2021 and 2045; Populations in between reported years were calculated as a straight line and rounded up.
2. BEBR Medium Populations from "Projections of Florida Population by County, 2025-2050, with Estimates for 2023," January 2024; with 2024 population estimates from BEBR "Florida Estimates of Population 2024," April 1, 2024
3. BCUPD Broward County and Municipal Population Forecast and Allocation Model (PFAM), 2024
4. SFWMD, 2023-2024 Lower East Coast Water Supply Plan Update, September 2024

The percentage difference between the BEBR, BCUPD, and SFWMD projections is no more than one percent. The PFAM is structured using 973 TAZ polygons to cover the 31 municipalities in the county. The BEBR forecasts by age are converted to household using a weighted average of the households by age group data from the 2000, 2010, and 2020 Census. The household forecasts are then assigned to TAZ based on: "(1) the number of households by size and vacant units required by the next forecast year;" (2) Attractiveness of each TAZ to accept growth;" and (3) the household size distribution of the additional units for each TAZ. BCUPD shared initial projection data for 2020 through 2050 with local governments to obtain buy-in that the forecast reflects reasonable growth expectations.

Although all three projections were similar, the BC PFAM 2024 was used in utility centric projections due to the fidelity of data available.

K. Current and Future Served Areas

The current and future served areas for BCWWS are described in the sections below.

BCWWS

BCWWS is one of 25 utilities that provide potable water service within the urbanized area of the County. The utility was created on January 31, 1962, with the County's purchase of a small, investor-owned water and wastewater utility. Between 1962 and 1975, the County acquired several investor-owned systems. Under the County Code of Ordinances, the Broward County Board of County Commissioners exercises exclusive jurisdiction, control, and supervision of the utility system. BCWWS is the County organizational unit directly responsible for the utility.

The water utility delivers potable water to customers in service areas in north, mid, and south County and to one bulk water user. The water utility has grown to serve a population of approximately 258,150. The bulk water user, City of Coconut Creek, accounts for a population of approximately 60,000. Including the City of Coconut Creek, the utility serves about 14 percent of the County's total population. For the year 2024, treated water sold to retail customers equaled about 24.5 MGD on an annual average basis. Metered water sales to Coconut Creek equaled an additional 5.4 MGD. Notably, finished water production (treated water at point of delivery) has decreased in recent years. This may be attributable to a downturn in the economy, slowdown in population growth, and the County's water conservation efforts, including year-round irrigation conservation measures. Water conservation became increasingly important following a series of significant drought years, coupled with limitations to the County's traditional water source, and remains a critical initiative.

BCWWS also operates two regional wellfields that provide bulk raw Biscayne aquifer water to Deerfield Beach in north county and Dania Beach, Hallandale Beach, Hollywood and Florida Power and Light in south county through large user agreements.

BCWWS operates three service districts known as District 1, District 2, and District 3. These service districts are shown on Figure WS5 below and cover about 43 square miles. The three service districts operate as independent entities, but are supported by BCWWS Operations as a single entity:

- District 1 service area contains all of Lauderdale Lakes and portions of the Cities of Fort Lauderdale, Lauderhill, North Lauderdale, Oakland Park, Plantation, Pompano Beach, and Tamarac
- District 2 service area contains portions of the Cities of Deerfield Beach, Lighthouse Point, and Pompano Beach and provides water to portions of the City of Coconut Creek as described below; and
- District 3 service area contains portions of the Cities of Dania Beach, Davie, Fort Lauderdale, Miramar, West Park, Pembroke Park, Pembroke Pines, and Hollywood and provides water to the Fort Lauderdale-Hollywood International Airport.

All three service districts also include some small BMSD as highlighted on previously shown Figure WS4. Within these BMSD areas, some domestic self-supply (DSS) exists accounting for half of one percent of the total County population. Based on the 2018 LEC Water Supply Plan Update, "All permanent residents outside of Public Water Supply (PWS) utility service area boundaries were considered DSS population." Current raw water usage for the estimated DSS population is approximately 1 MGD and is expected to decrease by 2040 to approximately 0.5 MGD (SFWMD, 2018). There are no immediate plans for BMSD neighborhoods like Hillsboro Ranches which consist of 23 single family homes on domestic self-supply to be provided potable water service by WWS.

BCWWS supplies water primarily to retail customers but also provides water to the City of Coconut Creek under a bulk water resale agreement. Without prior approval from the County, the City is prohibited from buying or otherwise providing water within its service area from any source other than the County.

To plan and coordinate water supply utility activities within its three service areas, BCWWS uses utility analysis zones (UAZ) which divide service districts into smaller units by UAZ. Pulling TAZ information into UAZ involves allocating populations based on the split in residential units between the TAZ-UAZ subsections using the Broward County Property Appraiser parcel shapefile. The parcel shapefile permits the calculation of single-family and multi-family units within each TAZ-UAZ subsection.

A TAZ-UAZ subsection is a portion of a UAZ that sits within a TAZ. The calculation method sums up the total residential units (single family and multi-family) within each TAZ-UAZ subsection. The population is allocated based on the percentage of residential units in a TAZ-UAZ subsection out of the total count of TAZ dwelling units. The projected BCWWS populations by district are shown in Table WS4 below and populations within Districts 1, 2, 3A and 3BC by municipality served are shown in Tables WS5, WS6, WS7 and WS8, respectively are based on the results of an update to the Broward County Population Forecast and Allocation Model (Broward County Urban Planning Division, 2024).

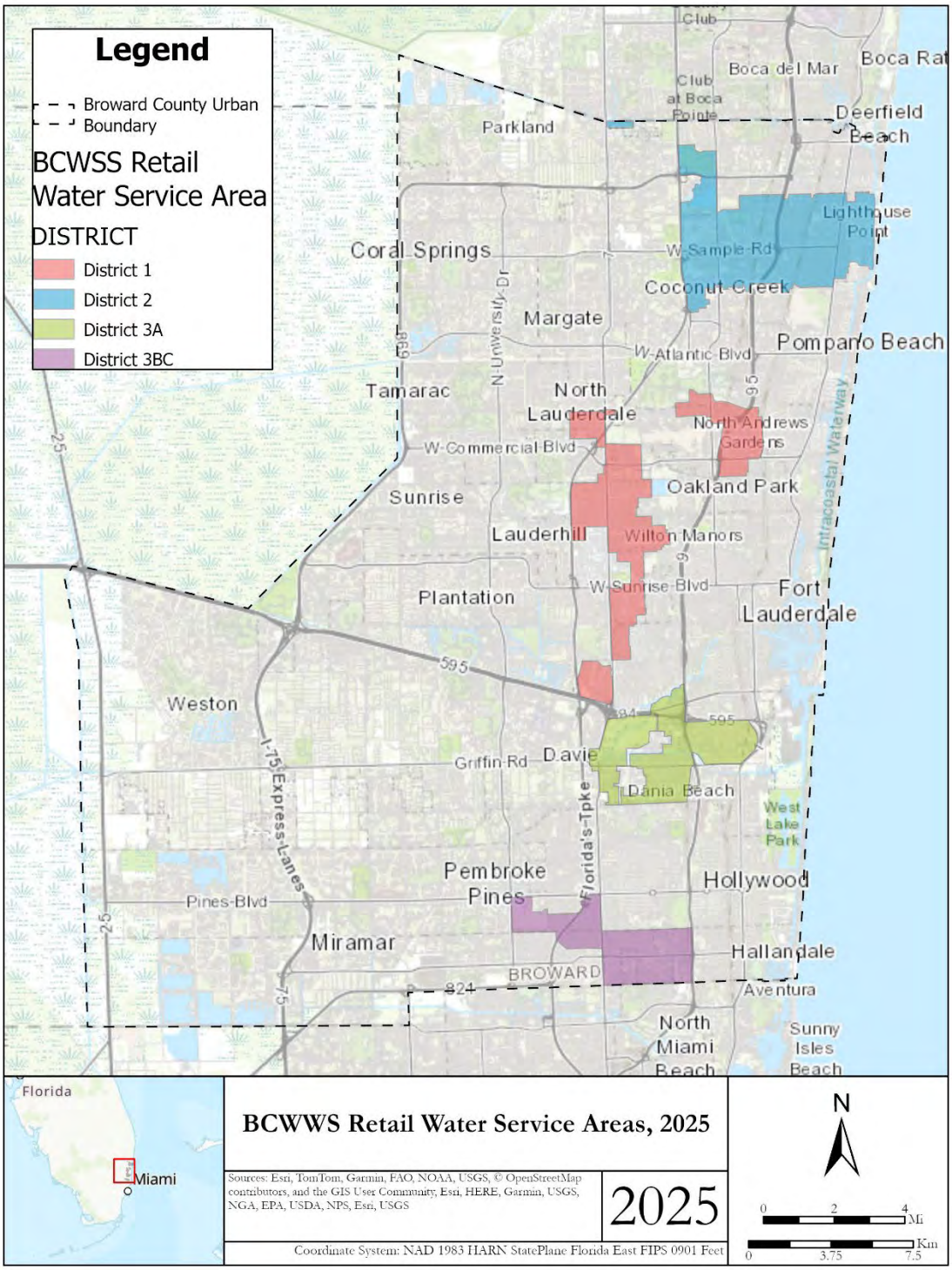

Figure WS5 BCWWS Retail Water Service Areas

Table WS3 BCWWS Service Area Population Projections 2020-2050[1]

BCWWS Service Area	2020	2025	2030	2035	2040	2045	2050
District 1	80,444	80,409	81,029	81,681	81,943	82,044	82,169
District 2	125,383	127,377	132,719	140,405	149,233	155,046	147,131
District 3A	16,107	16,978	17,446	18,719	19,333	19,739	20,020
District 3BC	33,944	33,386	32,787	33,969	35,254	35,911	37,076
BCWWS Total	255,878	258,150	263,981	274,773	285,763	292,739	286,396

1. Based on 2024 BC UPD PFAM update & BC WMD refinements for Service Areas

Table WS4 District 1 - Population Projection by Municipality [1]

Municipality	2020	2025	2030	2035	2040	2045	2050
BMSD	6,866	6,800	6,758	6,890	6,826	6,792	6,761
Davie	141	139	138	141	140	139	139
Fort Lauderdale	7,700	8,120	8,678	8,944	9,071	9,169	9,260
Lauderdale Lakes	34,625	33,822	33,798	33,531	33,223	32,982	32,750
Lauderhill	7,854	7,991	7,979	7,943	7,877	7,826	7,793
North Lauderdale	7,570	7,410	7,361	7,305	7,246	7,210	7,174
Oakland Park	12,642	12,995	13,148	13,765	14,290	14,600	14,907
Plantation	884	881	875	872	867	867	864
Pompano Beach	508	523	539	539	648	722	794
Tamarac	1,654	1,728	1,755	1,752	1,755	1,737	1,727
District 1 Total	80,444	80,409	81,029	81,681	81,943	82,044	82,169

1. Based on 2024 BC UPD PFAM update & BC WMD refinements for Service Areas

Table WS5 District 2 - Population Projection by Municipality [1]

Municipality	2020	2025	2030	2035	2040	2045	2050
BMSD	559	555	551	547	542	539	538
Coconut Creek	18	18	18	18	17	17	17
Regional Facilities	6	7	7	7	7	7	7
Deerfield Beach	28,523	30,654	30,978	36,289	39,704	41,965	30,684
Hillsboro Beach	8	8	7	7	7	7	7
Lighthouse Point	10,058	9,917	9,854	9,769	9,750	9,698	9,671
Pompano Beach	26,446	26,377	27,117	28,811	30,849	32,201	33,461
District 2A Retail Totals	65,617	67,535	68,532	75,448	80,877	84,435	74,386
Coconut Creek Service Area	59,766	59,843	64,187	64,956	68,356	70,610	72,746
District 2A Retail + Coconut Creek	125,383	127,377	132,719	140,405	149,233	155,046	147,131

1. Based on 2024 BC UPD PFAM update & BC WMD refinements for Service Areas

Table WS6 District 3A - Population Projection by Municipality [1]

Municipality	2020	2025	2030	2035	2040	2045	2050
Regional Facility	9	9	9	9	9	9	9
Dania Beach	13,769	14,630	15,065	15,891	16,357	16,627	16,809
Davie	631	627	640	1,094	1,253	1,397	1,507
Fort Lauderdale	528	500	498	494	494	492	490
Hollywood	1,154	1,195	1,218	1,214	1,204	1,197	1,189
Tribal Land	17	17	16	16	16	16	16
District 3A Totals	16,107	16,978	17,446	18,719	19,333	19,739	20,020

1. Based on 2024 BC UPD PFAM update & BC WMD refinements for Service Areas

Table WS7 District 3BC - Population Projection by Municipality [1]

Municipality	2020	2025	2030	2035	2040	2045	2050
Hollywood	4,467	4,333	4,311	4,286	4,244	4,229	4,221
Miramar	5,452	5,315	5,285	5,623	5,821	5,946	6,055
Pembroke Park	6,863	6,829	6,422	7,382	8,668	9,212	10,261
Pembroke Pines	2,499	2,468	2,456	2,486	2,471	2,548	2,632
West Park	14,663	14,441	14,313	14,191	14,050	13,975	13,907
District 3BC Totals	33,944	33,386	32,787	33,969	35,254	35,911	37,076

1. Based on 2024 BC UPD PFAM update & BC WMD refinements for Service Areas

L. Potable Water Level of Service Standard

BCWWS

BCWWS has the responsibility to determine if it can adequately serve existing and potential customers. To that end, BCWWS has set a potable water level of service in gallons per person per day or gallons per capita day (gpcd) to a maximum of 150 gpcd. Table WS9 summarizes the five-year average (2020-2024) gallons per capita day for each WWS utility service area that is used to project water use into the future. Annually calculated values of gallons per capita day will fluctuate based on environmental, socioeconomical, physical, operational and other service area characteristics or changes.

The following is the current available information.

Table WS8 BCWWS Retail Potable Water Level of Service Standards [1]

District of BCWWS	Finished Water Level of Service (gpcd)
District 1	87
District 2	106
District 3A and 3BC	113

1. Based on demand development in Section D - Water Supply Provided by Local Governments of this plan.

M. Water Supply Provided by Broward County Water and Wastewater Services

Water supply provided by local governments is summarized in the sections below.

BCWWS District 1

District 1 has a combined service area of 11.9 square miles with 248 miles of water distribution and transmission mains. BCWWS maintains water system interconnections with the City of Fort Lauderdale, the City of Tamarac, the City of Plantation, and the City of Lauderhill to provide for emergency water supply. In District 1, raw water is treated at the District 1 WTP located in the City of Lauderdale Lakes prior to distribution to retail customers. The plant was expanded in 1994 to its current capacity of 16.0 MGD to treat Biscayne Aquifer raw water using lime softening treatment. Figure WS6 shows the location of the District 1 service area.

The District 1 wellfield is in the area surrounding the WTP and is comprised of nine Biscayne Aquifer wells, all of which are currently in service. The total design capacity of the wellfield is approximately 23.5 MGD. Two Floridan Aquifer test wells were completed in 2014; one well is located on the WTP site and one is in an easement northeast of the WTP. Test results from the Floridan well construction revealed that upper Floridan Aquifer production zone chloride concentrations are approximately 4,000 mg/L and total dissolved solids concentrations are 7,500 mg/L (MWH, 2013). Based on the water quality test results, water produced from the well will likely require high pressure RO treatment. Currently, BCWWS has no plans to build a RO WTP at the District 1 site nor to convert the Floridan test wells to production wells.

BCWWS was issued a SFWMD CUP (No. 06-00146-W) in September 2020 for a 20-year permit duration to withdraw water from the Biscayne Aquifer and Floridan Aquifer. Additionally, an allocation for C-51 offset water was issued which expires on December 27, 2065. The permit allocates an annual withdrawal from the Biscayne Aquifer of 3,989 million gallons (MG) with a maximum month of 362 MG and an annual withdrawal from the Floridan Aquifer of 1,044 MG with a maximum month of 95 MG. Water use demand projections are presented in Table WS9 and Table WS10 below for finished water and Table WS11 and Table WS12 for raw water through year 2045. Finished water projections are also shown by municipality within the District 1 service area. The projected raw water use accounts for 44 percent of the WTP capacity in year 2045.

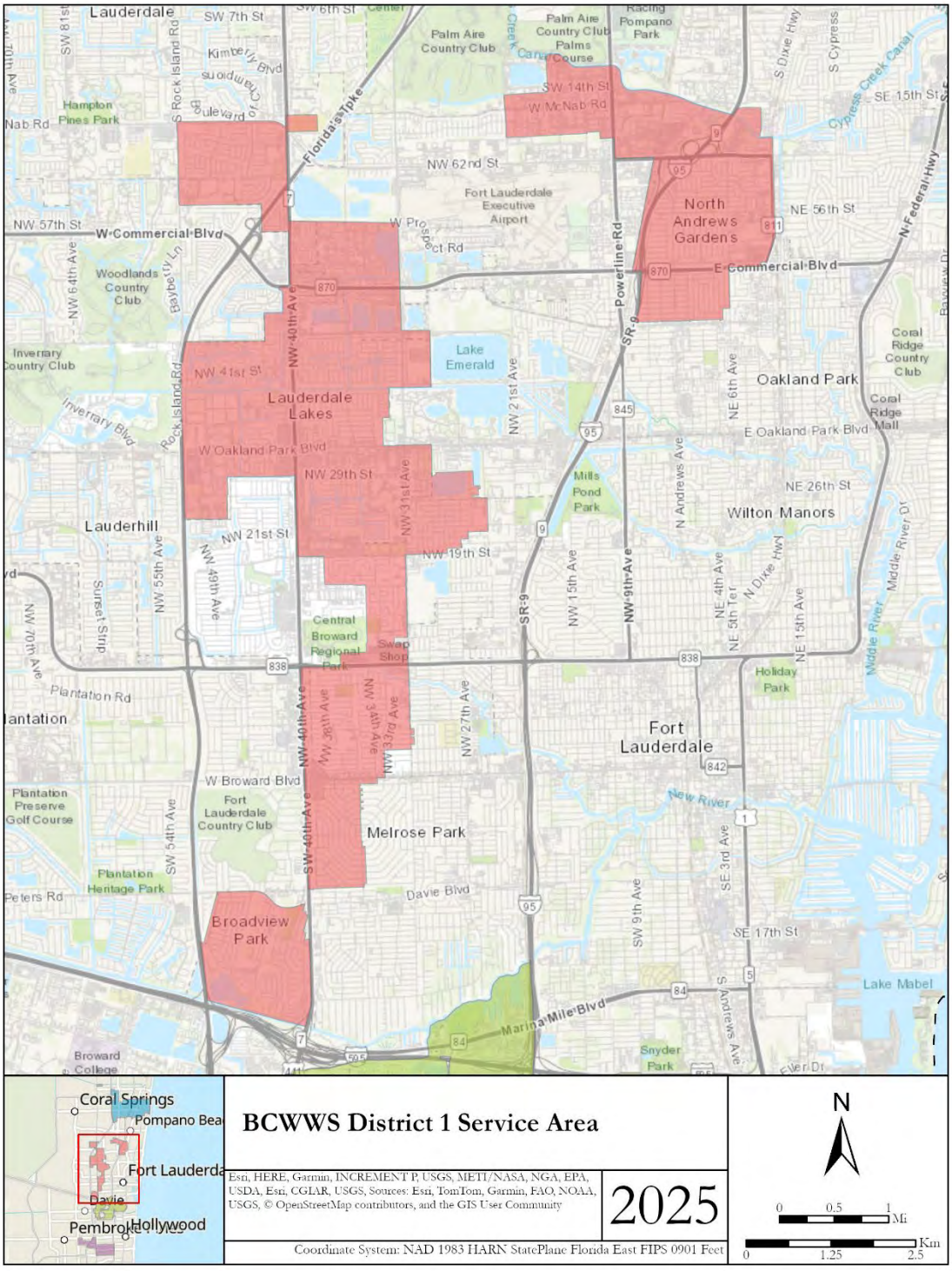

Figure WS6 BCWWS District 1 Service Area

Figure WS7 District 1 Actual Finished Water Demands

Planning Year	Population (UAZ Estimate)	Finished Water Demands, Annual (MG)	Finished Water Demands, Average Day (MGD)	Finished Water Demands, Per Capita Use (MGD)
2020	80,444	2,627	7.177	89
2021	80,437	2,523	6.911	86
2022	80,430	2,475	6.782	84
2023	80,423	2,452	6.718	84
2024	80,416	2,645	7.227	90

BCWWS Monthly Operating Reports for Water Treatment Plant Finished Water Flow

Figure WS8 District 1 Projected Finished Water Demands

Planning Year	Population (UAZ Estimate)	Finished Water Demands, Annual (MG)	Finished Water Demands, Average Day (MGD)	Finished Water Demands, Per Capita Use (MGD)
2030	81,029	2,560	7.01	87
2035	81,681	2,581	7.07	87
2040	81,943	2,589	7.09	87
2045	82,044	2,593	7.10	87

Projected Water Use based on Finished Water Per Capita (5-Year Average) of 87 gallons per capita day

Table WS9 District 1 Actual Raw Water Demands

Planning Year	Finished Water Annual Demand (MG)	Raw Water Demands Raw : Finished Ratio	Raw Water Demands Annual (MG)	Raw Water Demands Average Day (MGD)	Raw Water Demands Maximum Month (MGM)
2020	2,627	1.02	2,674	7.31	241
2021	2,523	1.04	2,617	7.17	239
2022	2,475	1.05	2,609	7.15	226
2023	2,452	1.05	2,582	7.08	234
2024	2,645	1.04	2,745	7.5	253

BCWWS Monthly Operating Reports for Individual Well Pumpages

Table WS10 District 1Projected Raw Water Demands

Planning Year	Finished Water Annual Demand (MG)	Raw Water Demands Raw : Finished Ratio	Raw Water Demands Annual (MG)	Raw Water Demands Average Day (MGD)	Raw Water Demands Maximum Month (MGM)
2025	2,541	1.04	2,642	7.24	238
2030	2,560	1.04	2,663	7.3	240
2035	2,581	1.04	2,684	7.35	242
2040	2,589	1.04	2,693	7.38	243
2045	2,593	1.04	2,696	7.39	243

Projected Raw Water based on Actual Raw Water to Finished Water Ratio (5-Year Average) of 1.05
Projected Maximum Month based on Actual Maximum Month to Average Day Ratio (5-Year Average) of 32.91

BCWWS District 2

District 2 has a service area of 14.8 square miles and contains 253 miles of water distribution and transmission mains. The facilities of District 2 are interconnected with the City of Deerfield Beach, the Town of Hillsboro Beach, the City of Pompano Beach, and Palm Beach County to provide emergency water supply. In District 2, raw water is treated at the District 2 WTP located in the City of Pompano Beach prior to distribution to BCWWS retail customers and the City of Coconut Creek. The District 2 WTP was expanded in 1994 to its current capacity of 30.0 MGD to treat Biscayne Aquifer raw water using lime softening treatment. Figure WS7 shows the location of the District 2 service area.

The District 2 WTP treats raw water supplied by the District 2 and the North Regional Wellfields under SFWMD CUP No. 06-01634-W issued in October 2020 for a 20-year permit duration to withdraw water from the Biscayne and Floridan Aquifers. Additionally, an allocation for C-51 offset water was issued which expires on December 27, 2065. The District 2 wellfield has a design capacity of 27.1 MGD and is comprised of seven production wells. The North Regional wellfield has a design capacity of 20.2 MGD and is comprised of 10 production wells. The District 2 and North Regional Wellfields each provide approximately 50 percent of the raw water demand. While Floridan Aquifer production wells were planned as part of the original permit to provide AWS, no wells have been constructed to date. The permit allocates an annual withdrawal from the Biscayne Aquifer of 6,356 million gallons (MG) with a maximum month of 580 MG and an annual withdrawal from the Floridan Aquifer of 1,664 MG with a maximum month of 152 MG. Water use demand projections are presented in Table WS13 and Table WS14 for finished water and Table WS15 and Table WS16 for raw water through year 2040. Finished water projections are also shown by municipality within the District 2 service area. The projected raw water use accounts for approximately 55 percent of the WTP capacity in year 2045.

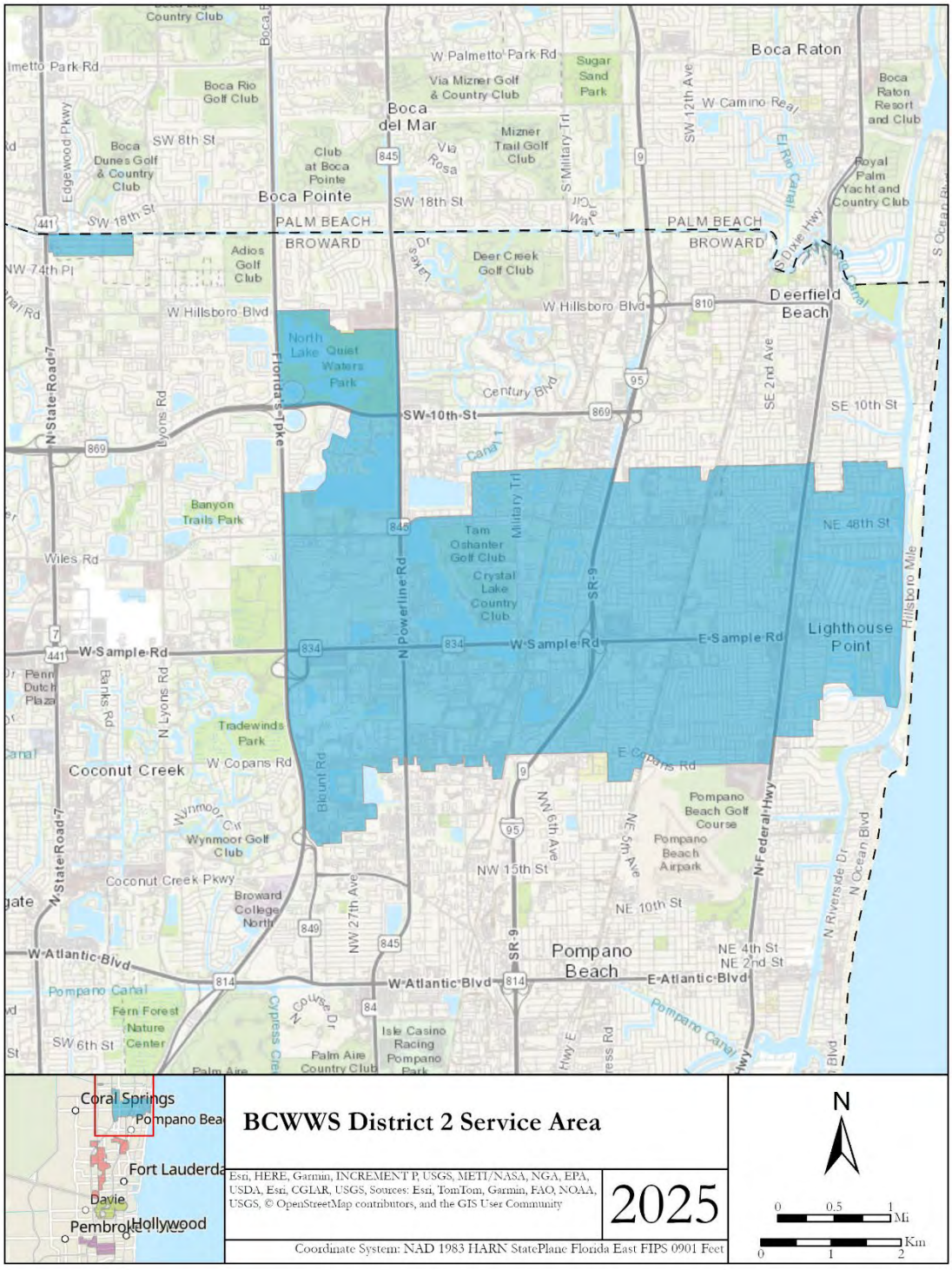

Figure WS9 BCWWS District 2 Service Area

Table WS11 District 2 Actual Finished Water Demands

Planning Year	Population (UAZ Estimate)	Finished Water Demands, Annual (MG)	Finished Water Demands, Average Day (MGD)	Finished Water Demands, Per Capita Use (MGD)
2020	125,383	4,798	13.11	105
2021	125,782	4,949	13.56	108
2022	126,181	4,897	13.42	106
2023	126,580	4,855	13.30	105
2024	126,979	4,919	13.44	106

BCWWS Monthly Operating Reports for Water Treatment Plant Finished Water Flow

Table WS12 District 2 Projected Finished Water Demands

Planning Year	Population (UAZ Estimate)	Finished Water Demands, Annual (MG)	Finished Water Demands, Average Day (MGD)	Finished Water Demands, Per Capita Use (MGD)
2025	127,377	4,925	13.49	106
2030	132,719	5,131	14.06	106
2035	140,405	5,428	14.87	106
2040	149,233	5,770	15.81	106
2045	155,046	5,994	16.42	106

Projected Water Use based on Finished Water Per Capita (5-Year Average) of 106 gallons per capita day

Table WS13 District 2 Actual Raw Water Demands

Planning Year	Finished Water Annual Demand (MG)	Raw Water Demands Raw : Finished Ratio	Raw Water Demands Annual (MG)	Raw Water Demands Average Day (MGD)	Raw Water Demands Maximum Month (MGM)
2020	4,798	1.02	4,881	13.34	518
2021	4,949	1.02	5,060	13.86	443
2022	4,897	1.02	4,996	13.69	462
2023	4,855	1.01	4,926	13.50	469
2024	4,919	1.00	4,925	13.46	479

BCWWS Monthly Operating Reports for Individual Well Pumpages inclusive of the Deerfield Beach Raw Water Large User

Table WS14 District 2 Projected Raw Water Demands

Planning Year	Finished Water Annual Demand (MG)	Raw Water Demands Raw : Finished Ratio	Raw Water Demands Annual (MG)	Raw Water Demands Average Day (MGD)	Raw Water Demands Maximum Month (MGM)
2025	2,541	1.04	2,642	7.24	238
2030	2,560	1.04	2,663	7.3	240
2035	2,581	1.04	2,684	7.35	242
2040	2,589	1.04	2,693	7.38	243
2045	2,593	1.04	2,696	7.39	243

Projected Raw Water based on Actual Raw Water to Finished Water Ratio (5-Year Average) of 1.02
Projected Maximum Month based on Actual Maximum Month to Average Day Ratio (5-Year Average) of 34.96

BCWWS District 3A and 3BC:

District 3 service area is divided into two geographically separate subdistricts 3A, Figure WS8, and 3BC, Figure WS9. The County purchases bulk treated water primarily from the City of Hollywood and distributes the treated water through the County's distribution system. District 3 has a combined service area of approximately 14.3 square miles and contains 223 miles of transmission and distribution mains. Subdistrict 3A contains the Fort Lauderdale-Hollywood International Airport which is approximately 20 percent of the total area of the district. District 3A has interconnects with the City of Hollywood, for is primary water supply, and with the City of Fort Lauderdale and the City of Dania Beach, to provide for emergency water supply. Subdistrict 3BC has interconnects with the City of Hollywood for its primary water supply, and the Cities of Pembroke Pines and Miramar to provide for emergency water supply.

The City of Hollywood is responsible for ensuring adequate raw water supply and treatment facilities to serve the County District 3 service areas. The City's existing CUP (Permit No. 06-00038-W) was issued by the SFWMD on April 9, 2008, and expires April 10, 2028. The Hollywood CUP raw water allocation for the subdistrict 3A/3BC areas is 13.16 MGD to meet demands through the year 2028.

BCWWS' current finished water demand for District 3 averages around 6.09 MGD and is projected to increase to 6.31 MGD by 2045 as shown Table WS17 And Table WS18 below. District 3's raw water demand is anticipated to be around 6.88 MGD in 2045 as shown in Table WS19 and Table WS20, based on historical raw to finished water ratio of 1.09. BCWWS continues to coordinate closely with the Hollywood to ensure that future demands for District 3 are adequately addressed.

Raw water demand was estimated as shown in Table WS19 and Table WS20 by using the finished water 5-year historical gallons per capita day of 113 and the municipal populations for District 3A and District 3BC.

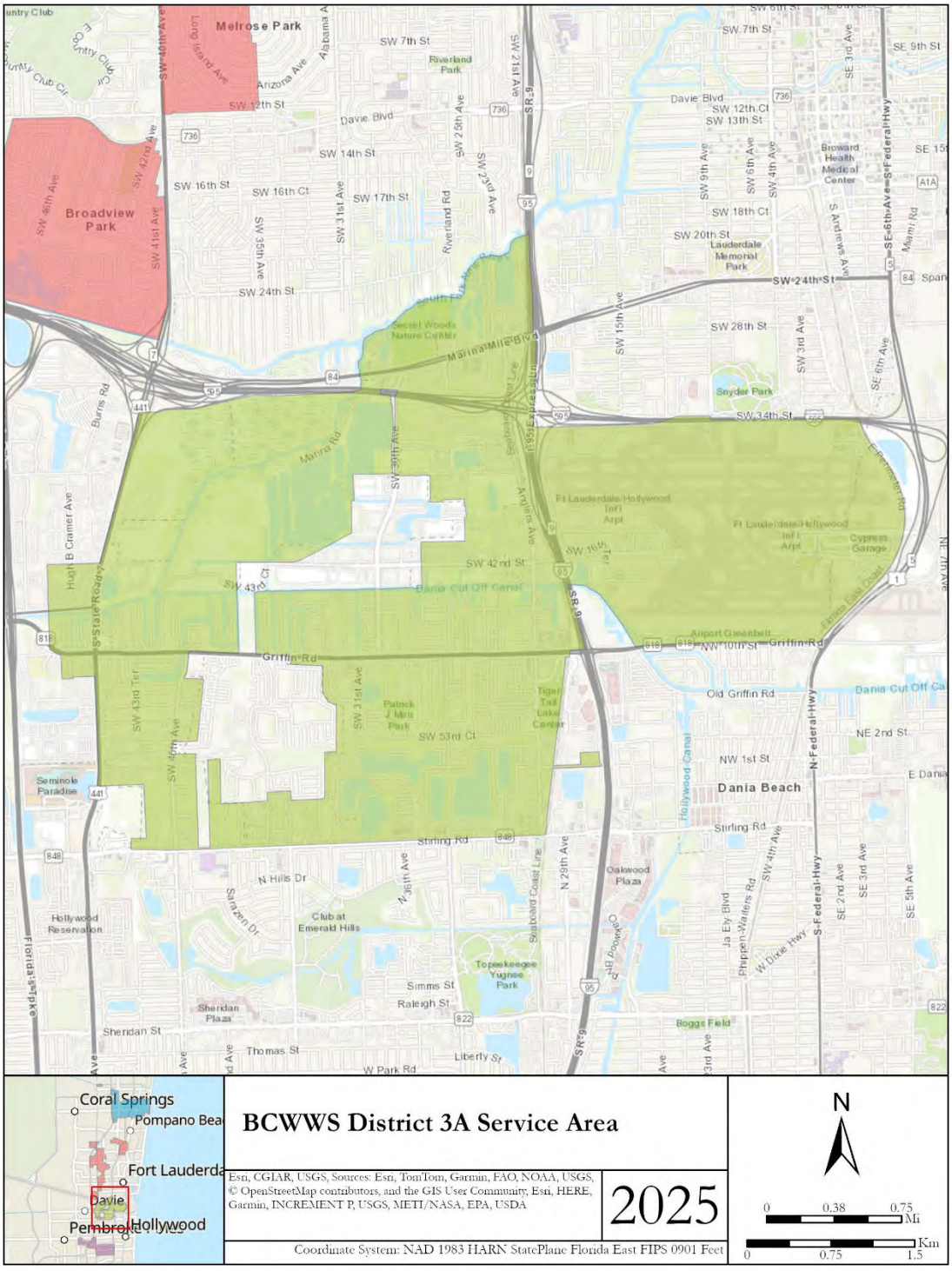

Figure WS10 **BCWWS District 3A Service Area**

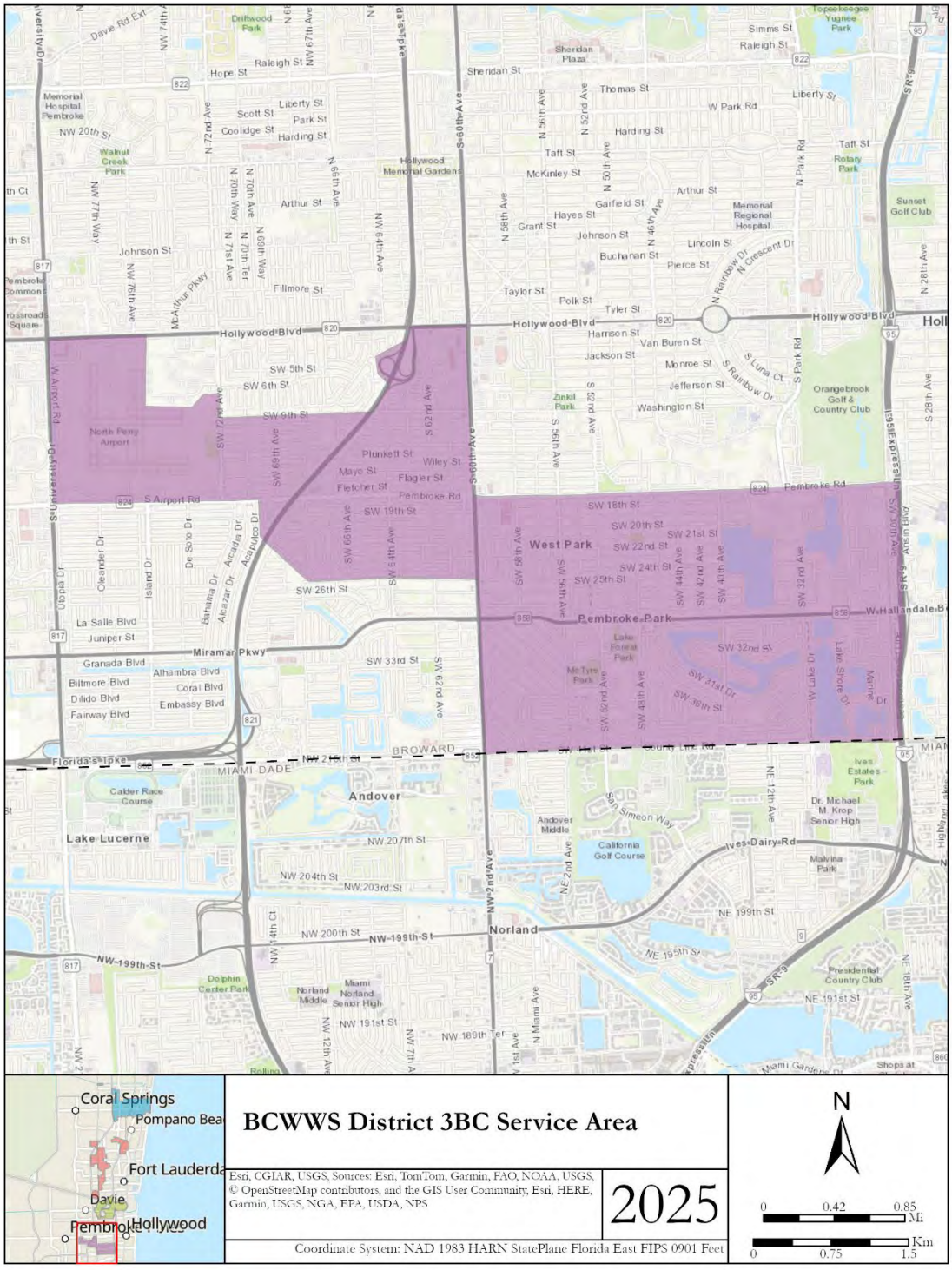

Figure WS11 BCWWS District 3BC Service Area

Table WS15 District 3A and 3BC Actual Finished Water Demands

Planning Year	Population (UAZ Estimate)	Finished Water Demands, Annual (MG)	Finished Water Demands, Average Day (MGD)	Finished Water Demands, Per Capita Use (MGD)
2020	50,050	2,241	6.12	122
2021	50,113	2,173	5.95	119
2022	50,176	1,688	4.63	92
2023	50,238	2,068	5.67	113
2024	50,301	2,228	6.09	121

BCWWS Monthly Operating Reports for 3A, 3B, and 3C Finished Water Meters

Table WS16 District 3A and 3BC Projected Finished Water Demands

Planning Year	Population (UAZ Estimate)	Finished Water Demands, Annual (MG)	Finished Water Demands, Average Day (MGD)	Finished Water Demands, Per Capita Use (MGD)
2025	50,364	2,085	5.71	113
2030	50,233	2,080	5.7	113
2035	52,688	2,181	5.98	113
2040	54,587	2,260	6.19	113
2045	55,650	2,304	6.31	113

Projected Water Use based on Finished Water Per Capita (5-Year Average) of 113 gallons per capita day

Table WS17 District 3A and 3BC Actual Raw Water Demands

Planning Year	Finished Water Annual Demand (MG)	Raw Water Demands Raw : Finished Ratio	Raw Water Demands Annual (MG)	Raw Water Demands Average Day (MGD)	Raw Water Demands Maximum Month (MGM)
2020	2,241	1.09	2,443	6.67	205
2021	2,173	1.09	2,368	6.49	192
2022	1,688	1.09	1,840	5.04	199
2023	2,068	1.09	2,254	6.18	208
2024	2,228	1.09	2,428	6.63	199

BCWWS Monthly Operating Reports for 3A, 3B, and 3C Finished Water Meters

Table WS18 District 3A and 3BC Projected Raw Water Demands

Planning Year	Finished Water Annual Demand (MG)	Raw Water Demands Raw : Finished Ratio	Raw Water Demands Annual (MG)	Raw Water Demands Average Day (MGD)	Raw Water Demands Maximum Month (MGM)
2025	2,085	1.09	2,273	6.23	204
2030	2,080	1.09	2,267	6.21	203
2035	2,181	1.09	2,377	6.51	213
2040	2,260	1.09	2,463	6.75	221
2045	2,304	1.09	2,511	6.88	225

Projected Raw Water to Finished Water Ratio is based on communications with City of Hollywood staff as 1.09
Projected Maximum Month based on Actual Maximum Month to Average Day Ratio (5-Year Average) of 32.69

South System Regional Wellfield (SRW):

BCWWS operates the SRW located in Cooper City, west of Pine Island Road, just north of Sheridan Street. The SRW supplies Biscayne Aquifer raw water from eight production wells to the Cities of Dania Beach, Hollywood, and Hallandale Beach and to the Florida Power and Light (FPL) Dania Beach Energy Center under large user agreements. The SRW CUP (06-01474-W) issued March 2018, and successfully modified July 10, 2019, reflects the complexities of providing regional raw water. The CUP allocation is divided into three portions that have individual expiration dates as shown in Table WS16 and Table WS17 details the individual large user allocation limitations.

Table WS19 SRW CUP Allocation Summary

Limitation	Duration	Average Day (MGD)	Maximum Month (MGM)
Base Condition Allocation [1]	March 2023 to March 2038	11.62	396.13
TOTAL C-51 Offset Allocations [2]	March 2023-December 2065	5.00	170.33
TOTAL SR Wellfield Allocation	March 2023-December 2065 [2]	16.62	566.19

1. The Base Condition Allocation must be renewed every 20 years.
2. Broward County purchased 3.0 MGD of C-51 Reservoir Project storage to provide for demands in the BCWWS 3A/3BC service area through December 2065. The City of Dania Beach and the City of Hallandale Beach have purchased 1 MGD each of C-51 Reservoir Project storage to meet their projected demand with supply from SR Wellfield. Table WS16 summarizes the SRW raw water demands through 2040.

Table WS20 SRW Raw Water Large User Average Day Projections

Limitations	Dania Beach (MGD)	Hallandale Beach (MGD)	Hollywood-BCWWS 3A/3BC (MGD)	FPL (MGD)	TOTAL Allocation (MGD)
Base Condition Allocation [1] (March 2018 - March 2038)	1.58	3.26	5.78	1.00	11.62
C-51 Offset Allocations [2] (March 2023 - December 2065)	1.00	1.00	3.00	---	5.00
TOTAL SR Wellfield Allocation	2.58	4.26	8.78	1.00	16.62
C-51 Reservoir Project Allotments Under Agreements	1.00	1.00	3.00	---	5.00

1. Renewal of the Base Condition Allocation of 11.62 MGD is required every 20 years.
2. Broward County purchased 3.0 MGD of C-51 Reservoir Project storage to provide for demands in the BCWWS 3A/3BC service area through December 2065. The City of Dania Beach and City of Hallandale Beach have purchased 1 MGD each of C-51 Reservoir Project storage to meet their projected demand with supply from SR Wellfield.

N. Conservation

Conservation practices for Broward County are presented in the sections below. The County actively solicits participation in its conservation programs through coordination with the Broward Water Advisory Board and its Technical Advisory Committee. It develops interlocal agreements in coordination with local municipalities and water management agencies and coordinates with local municipalities and their residents using email, Instagram, X, Facebook, YouTube, news releases and other methods that support and encourage participation in these county-wide programs which are outlined below.

Broward County

Within the County's Comprehensive Plan, policies within the Water Management Element that support and guide the County's water conservation initiatives include:

(*https://www.broward.org/BrowardNext/Documents/CompPlanDocs/WME%20GOPS-Adoption%20March%202019.pdf*)

> POLICY WM3.27 Broward County will advocate for water conservation measures in building practices and will implement programs to support plumbing retrofits, toilet rebates, Florida-friendly landscaping and Florida Yards and Neighborhoods best management practices (BMP), and water conservation education.
>
> POLICY WM3.33 Broward County will continue to enforce Chapter 39, "Zoning," Article VIII, "Landscaping for Protection of Water Quality and Quantity," of the Broward County Code of Ordinances, which reflects the NatureScape Broward program principles that promote the use of native and Florida Friendly landscaping and the preservation of native habitats in support of sustainable urban landscapes and the conservation of water resources.
>
> POLICY WM4.17 Broward County, in partnership with local municipalities and water and wastewater entities, will continue to develop and implement programming for Countywide water conservation and initiatives, including the Conservation Pays Program, Water Matters education and outreach programs, NatureScape Broward, and the NatureScape Irrigation Services, to promote water and energy conservation.

The District's Comprehensive Water Conservation Program is organized into regulatory, voluntary, and education-based initiatives which are discussed in the 2023-2024 LEC Water Supply Plan Update. As mentioned in this plan, regulatory initiatives in Broward County that have been adopted include local landscape and irrigation ordinances.

Voluntary and incentive-based initiatives are offered primarily through both the Broward Water Partnership's Conservation Pays and NatureScape Irrigation Service and Residential Irrigation Rebate programs, which are partnerships between the County and multiple municipalities and/or utilities which leverage their local funds to secure additional outside funds to realize additional water savings (e.g., Water Savings Incentive Program, Cooperative Funding Program).

Through the County's NatureScape/School Board of Broward County Environmental Partnership Agreement, water savings within Broward County Public Schools are recognized through the "How Low Can You Go Challenge", a contest in partnership with the Miami Heat, which challenges students and schools to reduce energy and water consumption over a three-month period. Winning schools receive plaques and are recognized during halftime at a Miami Heat game.

The County is particularly active in education, outreach, and marketing initiatives to help foster a stronger environmental conservation effort throughout the Broward community. All the programs and activities identified in the 2023-2024 LEC update as part of the District's Comprehensive Conservation Program, and as listed below, are part of the County's initiatives to promote water conservation:

School educational programs – The County regularly promotes water conservation in the schools through classroom programs and teacher and staff trainings. During the 2023-2024 school year, County staff distributed mini grants to youth as a part of the Bloomberg Project's Youth Climate Action Fund, including awards to schools who planted native trees and native butterfly gardens to help conserve water on their campuses.

Media campaigns – The Conservation Pays program promotes indoor water conservation through several media campaigns each year. A recent campaign, "Summer of Savings" received 64,000+ total impressions, driven by vibrant social media posts that emphasized water and cost savings through the adoption of water-efficient bathroom fixtures, effectively engaging participants and providing an exciting incentive: the chance to win a $250 gift card.

Informative billing – The Conservation Pays program provides utility partners with blurbs to include in its billing, as well as digital graphics and content to include in their e-newsletters.

Training staff and associates at facilities and operations that provide irrigation and landscaping materials, services, and supplies – The NatureScape Irrigation Services

provides training to irrigation industry professionals on an annual basis on developments in water-saving devices. In addition, through the Environmental Partnership with Broward Schools, training is provided to facility managers on ways to save water. The NatureScape Irrigation Services program also creates award-winning YouTube shorts that help inform the public about water conservation best practices.

Florida-Friendly Landscaping™ is promoted through the NatureScape Broward program which works with Broward communities, garden clubs, and homeowner's associations to promote Florida-friendly™ landscaping and awards Emerald awards to a select group of homeowners/businesses/municipalities that exemplify excellent landscapes.

Workshops and exhibits – The County regularly offer workshops to promote water conservation and annually promotes water conservation to residents at Broward Water Matters Day, an event in March which draws annual attendance of approximately 4,000 residents.

Landscape design and irrigation education for residents is also promoted at Water Matters Day.

Irrigation water audits for residential and other users are conducted regularly by the NatureScape Irrigation Service and in the schools as part of the Environmental Partnership Agreement.

Indoor water use audits are conducted within Broward schools as part of the Environmental Partnership Agreement.

Retrofit and rebate programs for replacing inefficient water-using devices, such as toilets and faucet heads, with efficient ones are promoted through the Conservation Pays program. The NatureScape Irrigation Service's Residential Irrigation Rebate Program provides residents with rebates for upgrading to smart irrigation controllers and for replacing sprays and rotors.

Through the County's water conservation initiatives, as of the end of September 2024, cumulative water savings of 2.6 billion gallons have been realized. Some draft results are presented in Table WS18 and the estimation of municipal participation across the County is presented in Table WS19.

Table WS21 **Water Savings Realized Through County Water Conservation Programs**

Name of Program	Metric	Cumulative gallons saved
NIS	4,300 evaluations	1,908,534,312
Environmental Partnership Irrigation Evaluations	271 evaluations	352,744,709
Conservation Pays Program	162,777 toilet rebates	2,591,182,300
NatureScape Broward	5,697 Florida-friendly habitats	33,042,600

Source: County Water Conservation Program. The information contained in this table is in draft and subject to change.

Table WS22 **Participation in County water conservation programs**

Municipality/Utility/Other	NatureScape Irrigation Services and/or RIRP	Broward Water Partnership Conservation Pays (Indoor Conservation)	NatureScape Broward (Florida-Friendly Practices)	Water Matters Education &Outreach
BMSD/WWS	YES	YES	YES	YES
Broward County Public Schools	YES	YES	YES	YES
Coconut Creek	YES	YES	YES	YES
Cooper City	YES	YES	YES	YES
Coral Springs	YES	YES	YES	YES
Coral Springs Improvement Dist.	YES	NO	NO	NO
Dania Beach	YES	YES	NO	YES
Davie	YES	YES	YES	YES
Deerfield Beach		YES	YES	YES
Fort Lauderdale	YES	YES	YES	YES
Hallandale Beach	YES	YES	YES	YES
Hillsboro Beach	NO	NO	NO	YES
Hollywood	YES	YES	YES	YES
Lauderdale-by-the-Sea	NO	NO	YES	YES
Lauderdale Lakes	NO	NO	YES	YES
Lauderhill	NO	YES	YES	YES
Lazy Lake	NO	NO	NO	YES
Lighthouse Point	NO	NO	YES	YES
Margate	YES	YES	YES	YES
Miramar	YES	YES	YES	YES
North Lauderdale	NO	NO	YES	YES
Oakland Park	YES	NO	YES	YES
Parkland	NO	NO	YES	YES
Pembroke Park	NO	NO	YES	YES
Pembroke Pines	YES	YES	YES	YES
Plantation	YES	YES	YES	YES
Pompano Beach	YES	NO	YES	YES
Sea Ranch Lakes	NO	NO	NO	YES
Southwest Ranches	NO	NO	YES	YES
Sunrise	YES	YES	YES	YES
Tamarac	NO	NO	YES	YES
West Park	NO	NO	YES	YES
Weston	NO	YES	YES	YES
Wilton Manors	YES	NO	YES	YES

Source: County Water Conservation Program. The information contained in this table is in draft and subject to change.

Water Use Restriction/Initiatives: As required in Chapter 40E-24, Florida Administrative Code, Broward County has enacted its own irrigation ordinance under Chapter 36, "Water Resources and Management," Article II, "Water Emergencies," Section 36-55 "Restrictions on landscape irrigation, Year-round landscape irrigation measures", of the Broward County Code of Ordinances. These measures mirror the measures found in Chapter 40E-24 and impose year-round, 2-day landscape irrigation restrictions per week. However, this only applies to BMSD areas. Municipalities within Broward County may adopt the provisions in Section 36-55 into their own municipal code. The County's mandatory irrigation restrictions are posted on the County's Water Resources website at:

https://www.broward.org/waterresources/Pages/IrrigationRestrictions.aspx

and in the Broward County Code of Ordinances at:

https://library.municode.com/fl/broward_county/codes/code_of_ordinances?nodeId=PTIICOOR_CH36WAREMA_ARTIIWAEM_S36-55YEUNLAIRMEVA

The County's service areas have been under either the SFWMD's mandatory Phase I and/or Phase II water restrictions or under the County's year-round ordinance since 2005. Since then, the overall per capita consumption has dropped in response to a combination of conservation messaging, financial incentives (High Efficiency Toilet rebates), and ordinance restrictions.

BCWWS has developed and implemented a successful strategy to systematically identify and eliminate, where possible, causes of lost water due to inaccurate flow metering and/or leaky pipes. This comprehensive strategy includes regular inspection, calibration and repair/ replacement of meters, and the replacement of aging infrastructure. These actions have significantly improved water losses by reducing leaks and per capita consumption.

An essential part of the Broward initiatives is the implementation of high efficiency plumbing requirements supported by the Broward County Board of County Commissioners, the Broward League of Cities, and the Broward Water Resources Task Force. Chapter 6, Section 604.4, of the Florida Building Code contains standards for ultra-low volume plumbing fixtures to be used in all new construction and Chapter 9, Section 908.8.1, requires a minimum of 8 cycles of concentration for cooling towers and contains requirements for reuse concentrate of cooling tower makeup water for air

handling systems with a 4-ton BTU capacity air handling system or greater as a condition for the receipt of a certificate of occupancy.

Use of Florida-Friendly Landscape Principles: Pursuant to Section 373.228, F.S., Chapter 39, "Zoning," Article VIII, "Landscaping for Protection of Water Quality and Quantity," of the Broward County code of Ordinances, reflects the Florida-Friendly and NatureScape Broward program principles that promote water and energy conservation, while creating a climate resilient landscape. This is in effect for the BMSD areas of Broward County and individual municipalities are adopting as a model landscape code. The Florida-Friendly Landscaping™ program has developed nine principles for sustainable landscapes:

1. Right plant, right place
2. Water efficiently
3. Fertilize appropriately
4. Mulch
5. Attract wildlife
6. Manage yard pests responsibly
7. Recycle yard waste
8. Reduce stormwater runoff
9. Protect the waterfront

Water Conservation-Based Rate Structure: Rate structures that encourage water conservation reward consumers that have low rates of water consumption with the lowest per gallon charge and penalize those showing higher rates of water consumption with a higher per gallon charge. BCWWS adopted a tiered rate structure in 2012 to incentivize water conservation. More information on the rate structure may be found at the web address below:

http://www.broward.org/WaterServices/RatesAndFees/Pages/SingleFamily.aspx

Rain Sensor Overrides for New Lawn Sprinkler System: Broward County's "Landscaping for Protection of Water Quality and Quantity" ordinance is codified in the Broward County Code of Ordinances Sections 39-75 to 39-94. Subsection 39-79(b)(11) includes the requirement for the location and specification of controllers of rain shutoff devices and soil moisture sensors as part of the landscape plan.

Public Information Program: Broward County has several targeted outreach programs for residents including NatureScape Broward, Water Matters Day, NatureScape Irrigation Services, and the NatureScape Broward School Board Environmental

Partnership Agreement. NatureScape Broward provides educational workshops and training on the need for water conservation, the principles of NatureScape, and assistance in the design of a NatureScape landscape. Residents are encouraged to apply for NatureScape certification following adoption of NatureScape best management practices on their landscapes.

BCWWS has developed a public education program that includes the development and distribution of brochures, educational materials for elementary and high school students, and presentations to homeowner and condominium associations regarding water supply, treatment, and conservation.

O. REUSE

Section 373.250(1), F.S., states that, "the encouragement and promotion of water conservation and reuse of reclaimed water, as defined by the department, are state objectives and considered to be in the public interest." In addition, Section 403.064(1), F.S., states, "reuse is a critical component of meeting the state's existing and future water supply needs while sustaining natural systems." This section highlights the current levels of reuse within each water supply entities' service area.

Broward County

BCWWS operates the Broward County North Regional Wastewater Treatment Plant (WWTP) located in the City of Pompano Beach. The facility has a FDEP-permitted capacity of 95.0 MGD. It provides wastewater services for northern Broward County. In 2024, the annual average daily wastewater flow at the facility was 72.8 MGD. Wastewater effluent is divided between deep injection well disposal and ocean outfall discharge. Approximately 5.7 MGD of the treated wastewater is reused at the facility or at adjacent facilities for irrigation, process or cooling water. Approximately 0.17 MGD of the reuse generated at the North Regional WWTP is delivered for residential and public access area irrigation . The primary users include Broward County Septage Receiving Facility, Broward County North Regional WWTP, Fedex, Pompano Business Center, Freshpoint Pompano, and Pompano Center.

Based on historic flows to the ocean outfall, the facility is required to reuse 21.45 MGD (60 percent) of treated wastewater by 2025 to comply with the 2008 Ocean Outfall statute (Section 403.086(9), F.S.). BCWWS is promoting collaborative regional water supply strategies to meet the required 60 percent water reuse by 2025. BCWWS has developed a Regional Reuse Master Plan and County Ordinance No.2017-05 created mandatory reuse under Chapter 34, Article XI, Reclaimed Water, in the Broward County Code of Ordinances.

Disposal of the treated wastewater is primarily via deep injection wells (40.5 MGD) and by ocean outfall (26.7 MGD). However, of the water sent to the ocean outfall, an average of 2.89 MGD was captured by the City of Pompano Beach for further treatment and distribution for irrigation use. The City of Pompano Beach Oasis Reclaimed WTP has a capacity to treat 7.5 MGD of secondarily treated wastewater. Overall, water reuse at the facility and through the City of Pompano Beach accounts for approximately 5 percent of the wastewater treated at the facility.

The County has initiated several reclaimed pipeline projects over the past few years. Northeast of the North Regional WWTP is the City of Pompano Beach, Pompano Highlands neighborhood. BCWWS has installed reclaimed water pipelines as part of a neighborhood improvements program. The reclaimed system is complete, and the City of Pompano Beach has agreed to provide reclaimed water for residential landscape irrigation from the City of Pompano Beach Oasis Reclaimed WTP, which draws secondarily treated effluent for feed water from a North Regional WWTP pipeline. The City of Coconut Creek entered into an interlocal agreement with BCWWS in April 2016 to receive up to initially 1.4 MGD of reclaimed water with a long-term expectation of 3 MGD. Two connections were established to serve Coconut Creek.

BCWWS has completed the expansion of the North Regional WWTP Reclaimed System as well as extending a 42-inch diameter reclaimed pipeline to serve beneficial reuse users in both Broward and Palm Beach Counties as of January 2023. The project scope includes approximately 5 miles of 42-inch diameter reclaimed transmission main from the North Regional WWTP to the Palm Beach County line (Reclaimed Status Report submitted January 24, 2018). Approximately 20 MGD of potential reclaimed users have been identified in the "Broward County Outfall Rule Detailed Plan North Regional Wastewater Treatment Plant Report," prepared by Hazen and Sawyer in 2013. County staff are also pursuing new potential users. The County has met requirements of the 2008 Ocean Outfall statute and after December 31, 2025 the outfall will only be used to manage peak emergency flows.

SPECIAL RECOMMENDATIONS AND ACTIONS

BCWWS, as a Water Supply Entity, is responsible for the implementation of the water supply development projects identified in the 2023-2024 LECWSP Update, as approved by the SFWMD governing Board. The County projects listed in Chapter 8 and Appendix B of the 2023-2024 LECWSP Update are listed below.

P. Broward County Water Reuse Projects

BCWWS, in compliance with the requirements of the ocean outfall legislation, developed the "Broward County Outfall Rule Detailed Plan North Regional Wastewater Treatment Plant Report", prepared by Hazen and Sawyer in 2013. This plan documents the County's intent to produce an additional 21.45 MGD of reclaimed water. Of the 21.45 MGD reclaimed water production, 19.7 MGD will be produced at North Regional WWTP. (The remaining reclaimed water will be produced through the Pompano Beach filter facility.) BCWWS reclaimed system projects are outlined below.

North Regional WWTP Capacity Improvements: The capacity improvements construction project will consist of a 16 MG reclaimed water filter capacity expansion with high level disinfection and associated pumping facilities for future expansion of the reclaimed water distribution system at the North Regional WWTP. The project will expand the use of reclaimed water for irrigation. The expansion will include a treatment module, pumping, piping and chemical modifications, emergency power, and related site improvements. Construction was completed in 2023.

North Regional WWTP Reclaimed Water Transmission System: The reclaimed water transmission system for new customers in Palm Beach County will be constructed through an Interlocal Reclaimed Water Agreement between Broward County and Palm Beach County. In this agreement, Broward County is tasked with construction of transmission and treatment facilities to provide approximately 15 MGD of reclaimed water to Palm Beach County and 3 MGD to North Springs Improvement District. In addition, potential new users along the transmission corridor in Broward County will be identified for service. The project will expand the use of reclaimed water for irrigation. The project construction was completed in 2023

North Regional WWTP Reclaimed Water Transmission System Expansion: Approximately four miles of 24-inch diameter reclaimed water main will be constructed from NW 39th Avenue in Coconut Creek to North Springs Improvement District, to connect with approximately 4,000 linear feet of reclaimed water main that was constructed as part of the County's Hillsboro Pines Neighborhood Project. The project will expand the use of reclaimed water for irrigation. The project construction was completed in 2023.

Q. C-51 Reservoir Project

BCWWS has associated 3 MGD of their total 6 MGD purchase with their SR Wellfield CUP to offset demands for raw water from their 3A/3BC service area. Construction was completed in May 2024 and deliveries commenced in May 2025.

R. Technical Water Resources Assessments

Changing climate conditions and sea level rise pose significant threats to regional water supplies. Local impacts are accelerated by increased wellfield pumpage, rising sea level, and aging urban drainage infrastructure, leaving municipalities and water utilities grappling with how to balance the planning needs with the financial challenges.

The County is continuing to partner with USGS to advance the expansion of the Inundation Climate Vulnerability Model focused on coupled hydrologic impacts of saltwater intrusion, surface and groundwater elevations, and stormwater inundation, using the SWR and URO packages, throughout the entire urban extent of the County.

The County is also using the results of the 2014 FEMA study to calculate Future Conditions 100-year flood elevations that are anticipated to occur in 2070 accounting for sea level rise and more intense rainstorms. The effort includes data collection of recent or previously not included drainage infrastructure, refined model grid and associated LiDAR, land use update, addition of detention storage and ponded drainage routine, model calibration to a recent flooding storm event, and incorporation of future tide levels and a 100-year rainstorm event. It is anticipated that the modeling will be completed in the Fall of 2019 and once approved, will be formalized as the second map of the Future Conditions Map Series.

Upper Floridan Aquifer Geotechnical Study

Broward County, in cooperation with USGS, completed the Phase 1 Feasibility Study of the Upper Floridan Aquifer in March 2014. The study has compiled all available well information and commissioned a new well (G-2984) to be drilled, cored, and logged. Using borehole and core sample data (84 wells at 33 sites), the hydrogeologic framework of the Floridan Aquifer system in Eastern Broward County was delineated. This effort helped to construct unique cross-sections and maps representing the stratigraphic and hydrogeologic units of the Floridan Aquifer system in urban Broward County. An additional component of the project was to complete seismic profiling along approximately 14 miles of the Hillsboro Canal, which resulted in seismic reflection data that were then correlated to the borehole geophysical data (Reese et al., 2014).

The results offer better definition of the stratigraphic and hydrogeologic characteristics of the aquifer, which will improve upon the selection of new well locations or for water storage

options, such as ASR. Building on the successful use of seismic profiling in the first study, Phase 2 of this Feasibility Study was commissioned and completed in 2017 (Cunningham et al., 2018). It further refined the hydrogeologic framework and regional extent of information by collecting 80 miles of high-resolution seismic profiles from canals in Broward County along with well logs and cores or cutting from 44 wells. Mapping of the Oldsmar, Avon Park, and Arcadia formations was completed over the 425 square mile study area. In addition, many unconformities that might identify faults that are either near-vertical reverse faults or karst collapse structures throughout the County were identified. Water utilities in these areas may consider further studies around these features when planning projects near their vicinities.

S. Broward County Water Partnership

The Broward County Water Partnership is an ongoing High Efficiency Toilet Replacement and Water Conservation Incentives Program. Broward Water and Wastewater Services are media partners in the Water Conservation Incentives Program, launched in 2011. This program has provided approximately 29,500 high efficiency toilets with an estimated water savings of 51,000 gallons per day. The program utilizes monthly promotional material, public service announcements, radio adds, etc., to promote a consistent water conservation messaging throughout the partner service areas. This covers almost 80 percent of Broward County. Historically, this program has been supported, in part, through the SFWMD's Water SIP and Cooperative Funding Programs, which have provided $277,000 in matching funds through 2018. Neither of these programs are currently funding the partnership.

Additionally, BCWWS' High Efficiency Toilet Rebate Program has been in existence since 2010 and has offered over $250,000 in billing credits for replacing 2,500 water wasting toilets. This effort is supported by $30,750 of matching funds from SFWMD. Promotion of this program throughout the BCWWS service area will continue through this next five-year planning period unchanged.

T. NatureScape Irrigation Service

The NIS water conservation program provides irrigation system evaluations for large properties in 18 cities and water districts. The NIS team conducts a test of the irrigation system and provides comprehensive recommendations for improving overall efficiency - saving water, reducing runoff of pollutants, and keeping canals and water bodies clean in our urban areas. The program has saved more than 1.5 billion gallons of water since 2005. In 2019, the program initiated a new residential incentive program to offer rebates for outdoor irrigation systems updates.

BCWWS CAPITAL IMPROVEMENTS

This section provides a brief description of the BCWWS Capital Improvements Program and Policies for Water Supply.

U. Work Plan Projects

The 2020 Work Plan includes the listing of public and regional water supply projects and programs over the next 10-year period (at a minimum) that may be necessary to serve the BCWWS service area and large users. The following sections include additional information related to the development of traditional and AWS sources, and conservation and reuse initiatives that are being advanced to support water resource and water supply protections.

Broward County, as a Water Supply Entity, is responsible for the implementation of the water supply development projects identified in the 2023-2024 LECWSP Update. BCWWS reviewed the information in the 2023-2024 LECWSP Update pertaining to the AWS projects. BCWWS determined that, because additional water supply above what is currently permitted by the SFWMD is not needed in the next 20-year period, the District 1 and District 2A/North Regional WTP expansion and Floridan Aquifer development projects would be unfunded in the County's Capital Improvement Plan. These projects will be re-evaluated and re-established as funded projects when the need for additional water supply arises.

BCWWS continues to evaluate raw and finished water demands throughout their utility service areas and provide the SFWMD with annual progress reports regarding the status of the AWS projects. Table WS20 and Table WS21 below summarize the AWS and water conservation projects contained in the 2023-2024 LECWSP Update that are directly related to BCWWS' water supply development. Table CI-F, excerpted from the 2019 Broward County Capital Improvement Plan, is provided below for comparison.

- District 2A Treatment Plant Expansion and Floridan Aquifer Development. (RO, WTP, Floridan Wells, and a Disposal Well) The addition of 6 MGD of RO treatment, concentrate disposal, development of a Floridan Aquifer source, and raw water transmission piping and pumping facilities project has been unfunded and will be evaluated annually for future funding based on projected water demands.
- C-51 Reservoir Project Phase 1 – North Regional Wellfield. BCWWS has entered into an agreement for capacity allocation in Phase 1 of the C-51 Reservoir Project with Palm Beach Aggregates and has modified the existing CUP to add 2 MGD of C-51 Reservoir Project offset water to create more operational flexibility between the

District 2A and North Regional Wellfields. The C-51 Reservoir Project was completed in March 2025 and commenced deliveries in May 2025.

- C-51 Reservoir Project Phase 1 – District 1. BCWWS has entered into an agreement for capacity allocation in Phase 1 of the C-51 Reservoir Project with Palm Beach Aggregates and has modified the existing CUP to add 1 MGD of C-51 Reservoir Project offset water for use towards District 1 future demands. The C-51 Reservoir Project was completed in March 2025 and commenced deliveries in May 2025.
- C-51 Reservoir Project Phase 1 – South Regional Wellfield. BCWWS has entered into an agreement for capacity allocation in Phase 1 of the C-51 Reservoir Project with Palm Beach Aggregates and has a CUP allocation for 3 MGD of C-51 Reservoir Project offset water to offset the SR Wellfield raw water demands for the 3A/3BC service area. Additionally, the South Regional Wellfield has access to an additional 2 MGD of C-51 allocation via agreements with Dania Beach and Hallandale Beach for 1 MGD from their respective utilities. The C-51 Reservoir Project was completed in March 2025 and commenced deliveries in May 2025.
- Broward Water Conservation Programs. The conservation programs detailed in the previous sections have a water savings goal of reducing the per capita consumption by 10 gallons per day by 2029, as established in the 2019 IWRP update.

Table WS23 Proposed Potable and Non-Potable Public Water Supply Development Projects Listed in SFWMD 2023-2024 LECWSP Update

Implementing Entity	Project Name	Project Description	Project Capacity (MGD)	Total Capital ($M)	Date Complete
BCWWS	District 2 Water Treatment Plant Expansion	Construct Floridan Aquifer System water supply wells, connecting raw water transmission main, and RO treatment facility	6	33.3	2035
BCWWS	South Regional Wellfield C-51 Reservoir Project Phase 1 Recharge Offset	BCWWS and PBA agreement for capacity allocation in C-51 Reservoir Project Phase 1 for BCWWS South Regional Wellfield (Authorized under Current CUP)	3	13.8	2024
BCWWS	District 2/ North Regional Wellfield C-51 Reservoir Project Phase 1 Recharge Offset	BCWWS and PBA agreement for capacity allocation in C-51 Reservoir Project Phase 1 for BCWWS North Regional Wellfield (Authorized under Current CUP)	2	9.2	2024
BCWWS	District 1 C-51 Reservoir Project Phase 1 Recharge Offset	BCWWS and PBA agreement for capacity allocation in C-51 Reservoir Project Phase 1 for BCWWS North Regional Wellfield (Authorized under Current CUP)	1	4.6	2024
Dania Beach	BCWWS South Regional Wellfield C-51 Reservoir Project Phase 1 Recharge Offset	Dania Beach and PBA agreement for capacity allocation in C-51 Reservoir Project Phase 1 for BCWWS South Regional Wellfield (Authorized under Current CUP)	1	4.6	2024
Hallandale Beach	BCWWS South Regional Wellfield C-51 Reservoir Project Phase 1 Recharge Offset	Hallandale Beach and PBA agreement for capacity allocation in C-51 Reservoir Project Phase 1 for BCWWS South Regional Wellfield (Authorized under Current CUP)	1	4.6	2024