



City of Pompano Beach



WATER SUPPLY FACILITIES WORK PLAN 2020 UPDATE

FINAL | October 2020





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Contents

Chapter 1 - Introduction	1-1
1.1 Background	1-1
1.2 Purpose and Objectives	1-3
1.3 Local Government Overview	1-3
1.3.1 Relevant Regional Issues	1-8
1.3.2 Surficial Aquifer System and Limited Water Availability	1-8
1.3.3 Additional Storage Systems	1-9
1.3.4 2008 Ocean Outfall Program and Reclaimed Water Options	1-10
1.3.5 Floridan Aquifer System	1-11
1.3.6 Climate Impacts	1-12
Chapter 2 - Water Service Area	2-1
2.1 Service to Other Local Government Jurisdictions	2-1
2.2 BCWWS District 1 and 2 Service Areas	2-1
2.3 Private Suppliers	2-2
Chapter 3 - Existing Water Supply System	3-1
3.1 Water Supply Facilities	3-1
3.1.1 City Wellfields	3-1
3.1.2 City Consumptive Use Permit Conditions	3-1
3.1.3 BCWWS Districts 1 and 2 Wellfields	3-1
3.1.4 BCWWS Consumptive Use Permit Conditions	3-1
3.2 Existing Water Treatment, Storage, and Pumping Facilities	3-2
3.2.1 City Water Treatment Facilities	3-4
3.2.2 City Water Storage Facilities	3-6
3.2.3 City Pumping/Booster Stations	3-6
3.2.4 BCWWS Water Treatment Facilities	3-7
3.2.5 BCWWS Finished Water Storage Facilities	3-7
3.3 Water Transmission/Distribution Facilities	3-8
3.3.1 City Water Distribution System	3-8
3.3.2 BCWWS Water Distribution System	3-8
3.4 Potable Water Level of Service Standards	3-8

Chapter 4 - Reclaimed Water System	4-1
4.1 Reclaimed Water Treatment Facilities	4-1
4.1.1 Reclaimed Treatment Facilities Expansion	4-1
4.2 Reclaimed Water Storage	4-3
4.3 Reclaimed Transmission and Distribution Facilities	4-3
4.3.1 Reclaimed Use and Restrictions	4-3
4.3.2 Reuse Agreements	4-5
4.3.3 Reclaimed Transmission and Distribution Network Expansion	4-5
4.4 BCWWS District 2 Reuse Water Facilities	4-5
Chapter 5 - Data and Analysis	5-1
5.1 Planning Time Frames	5-1
5.2 Historical Population	5-1
5.3 Population Projections	5-1
5.3.1 Discrepancies between BEBR and City's Projections	5-2
5.3.2 City Population	5-2
5.3.3 City Water Service Area Population	5-3
5.4 Historical Water Use	5-6
5.4.1 Large User Demands	5-7
5.5 Level of Service, Per Capita Water Demand Factor	5-10
5.6 Finished Water Demand Projections	5-13
5.6.1 Average Annual Demand Projections	5-13
5.6.2 Maximum Month Demand Projections	5-13
5.6.3 Maximum Day Demand Projections	5-13
5.6.4 Peak Hour Demand Projections	5-13
5.6.5 Summary of Finished Water Demand Projections	5-14
5.7 Raw Water Demand Projections	5-14
5.8 Reclaimed Water Use Demands Projections	5-15
5.9 Water Conservation	5-16
5.9.1 OASIS Infrastructure and Program	5-16
5.9.2 "I Can Water Campaign"	5-17
5.9.3 Public Information Program	5-17
5.9.4 Dropcountr Application	5-17

5.9.5 Leak Prevention and Detection Program (LP/DP)	5-18
5.9.6 System Maintenance	5-18
5.9.7 Automatic Flushers	5-18
5.9.8 Broward County Mobile Irrigation Lab (BC MIL)	5-18
5.9.9 Residential Irrigation Rebate Program	5-18
5.9.10 Conservation Rate Structures	5-19
5.9.11 Metering and Water Efficiency Tracking	5-19
5.9.12 Retrofit Program	5-19
5.9.13 In Plant Initiatives	5-19
5.9.14 City Staff Education and Activities	5-19
5.9.15 Year-Round Landscape Irrigation Conservation Measures (YRR)	5-20
5.9.16 Conservation as Regulatory Objective	5-20
5.10 Water Loss Monitoring	5-21
5.11 Supply and Demand Data Analysis Summary	5-21
Chapter 6 - Intergovernmental Coordination Activities	6-1
6.1 Coordination with the SFWMD Regional Water Supply Plan	6-1
6.2 2020 Broward County 10-Year Water Supplies Facilities Work Plan and Inter-Agency Coordination Activities	6-1
6.3 Local Service Agreements and Coordination	6-1
Chapter 7 - Water Supply Facilities Work plan	7-1
7.1 Traditional Water Supply Projects	7-1
7.1.1 Wellfield Capacity and Projects	7-1
7.1.2 Water Treatment Plant Capacity and Projects	7-2
7.2 City Alternative Water Supply Projects	7-2
7.2.1 Reuse Distribution System Expansion and Offset Credits	7-3
7.2.2 C-51 Reservoir Project	7-3
7.2.3 Concentrate Recovery and Potential Other AWS Projects	7-4
7.3 BCWWS Alternative Water Supply Projects	7-5
7.3.1 BCWWS District 1	7-5
7.3.2 BCWWS District 2	7-5
7.3.3 BCWWS Alternative Water Supply Projects	7-6
7.4 10-year Work Plan and Capital Improvement Plan	7-9
7.4.1 City's 10-year Work Plan and Capital Improvement Plan	7-9

7.4.2 BCWWS 10-year Work Plan and Capital Improvement Plan	7-9
7.5 Summary	7-9
Chapter 8 - Comprehensive Plan	8-1
8.1 Goals, Objectives, and Policies	8-1
8.1.1 Potable Water Element Component	8-1
8.1.2 Conservation Element Component	8-1
8.2 Related Amendments	8-1
8.2.1 Water Element Component	8-1
8.2.2 Conservation Element Component	8-2
Chapter 9 - Summary and Conclusions	9-1
9.1 City Service Area	9-1
9.2 Existing Potable Water Facilities	9-1
9.3 Existing Reclaimed Water System	9-3
9.4 Data and Analysis	9-4
9.4.1 Population Projections	9-4
9.4.2 Finished and Raw Water Demand Projections	9-4
9.4.3 Reclaimed Water Demand Projections	9-6
9.4.4 Water Conservation and Water Loss Monitoring	9-7
9.5 Intergovernmental Coordination Activities	9-7
9.5.1 SFWMD Regional Water Supply Plan	9-7
9.5.2 2020 Broward County 10-Year Water Supplies Facilities Work Plan	9-7
9.6 Water Supply Facilities Work Plan	9-8
9.7 Comprehensive Plan	9-8
9.8 Conclusions	9-8

Appendices

Appendix A	2020 Broward County 10-Year Water Supply Facilities Work Plan
Appendix B	Individual WUP Holders by Use in the City of Pompano Beach
Appendix C	City of Pompano Beach Consumptive Use Permit
Appendix D	Reuse Agreement between the City of Lighthouse Point and the City of Pompano Beach
Appendix E	Reuse Agreement between the City of Pompano Beach and Broward County
Appendix F	Historical and Projected Annual Population and Demands

Appendix G	Letter to South Florida Water Management District
Appendix H	Potable Water Element Component Proposed Modifications
Appendix I	Conservation Element Component Proposed Modifications
Appendix J	Proposed Concurrency Design Table for the City of Pompano Beach

Tables

Table 3.1	Well Capacity Summary Table	3-3
Table 3.2	Summary of City Finished Water Storage Facilities	3-6
Table 3.3	Summary of High Service Pumps	3-6
Table 3.4	Summary of BCWWS Water System Facilities and Capabilities	3-7
Table 3.5	BCWWS Finished Water Storage Facilities	3-8
Table 3.6	Broward County Districts 1 and 2 Standard Level of Service	3-9
Table 4.1	Summary of Additional Piping to be added to the Network by Planning Year	4-5
Table 5.1	Summary of Population Projections from Past Reports	5-2
Table 5.2	City Population Projections	5-2
Table 5.3	Water Service Area Population Projections Summary	5-3
Table 5.4	Large User Demands	5-7
Table 5.5	Per Capita Finished Water Demand Factor Selection	5-11
Table 5.6	Finished Water Demand Projections	5-12
Table 5.7	Raw Water Demand Projections	5-15
Table 5.8	Summary of City of Pompano Beach Reuse Water Standard Level of Service	5-15
Table 5.9	Projected Average Day Reuse Demands for the 20-year Planning Period	5-16
Table 5.10	City of Pompano Beach Reuse and Conservation Regulations	5-20
Table 7.1	Proposed Alternative Water Supply Projects	7-2
Table 7.2	BCWWS Proposed Reclaimed Projects	7-6
Table 7.3	BCWWS Water Conservation Project Summary	7-8
Table 7.4	City of Pompano Beach Alternative Water Supply Capital Improvement Program Summary	7-10
Table 7.5	Broward County Alternative Water Supply Capital Improvement Program Summary	7-10
Table 7.6	City of Pompano Beach Projected Water Demands and Supply Summary	7-11

Table 8.1	Potable Water Element Amendments Directly Related to this WSFWP Update	8-3
Table 8.2	Conservation Element Amendments directly Related to this WSFWP Update	8-8
Table 9.1	Wellfield Permit Allocation	9-2
Table 9.2	Water Storage Facilities	9-3
Table 9.3	Water Service Area Population Projections Summary	9-4
Table 9.4	Finished Water Demand Projections	9-5
Table 9.5	Raw Water Demands Projections	9-5
Table 9.6	Summary of City of Pompano Beach Reuse Water Standard Level of Service	9-6
Table 9.7	Projected Average Day Reuse Demands for 20-year Planning Period	9-6

Figures

Figure 1.1	City of Pompano Beach Location and Boundary	1-5
Figure 1.2	City's Organizational Chart	1-6
Figure 1.3	City of Pompano Beach Utility Service Area	1-7
Figure 3.1	City of Pompano Beach and BCWWS Districts 1 and 2 Wellfields	3-2
Figure 3.2	Location of Water System Facilities and Distribution System	3-3
Figure 3.3	Overall WTP Process Flow Diagram	3-5
Figure 4.1	Location of City Reuse Facility and Reclaimed Water Distribution Network	4-2
Figure 4.2	City of Pompano Beach and BCWWS Reuse Water Land Application Areas and Facilities	4-4
Figure 5.1	Water Utility Service Area and Related TAZs	5-4
Figure 5.2	Population Growth Distribution	5-5
Figure 5.3	Annual Average Finished Water Demand 2008-2018	5-7
Figure 5.4	Locations of Current and Future Large Users	5-9
Figure 5.5	Historical WTP Water Production and Projected Water Demands	5-14
Figure 5.6	Demand and Supply Projections Summary	5-23

Abbreviations

AC	acre
AFY	acre-feet per year
ADD	average day demand
AADF	annual average daily flow
AMI	Automatic Meter Infrastructure
ASR	aquifer storage and recovery
BC MIL	Broward County Mobile Irrigation Lab
BCWWS	Broward County Water and Wastewater Service
2020 BC WSFWP	2020 Broward County 10-Year Water Supply Facilities Work Plan, April 2020
Carollo	Carollo Engineers, Inc.
CERP	Comprehensive Everglades Restoration Plan
City	City of Pompano Beach
CIP	Capital Improvements Program
cf	cubic feet
Cfs	cubic feet per second
WUP	Consumptive Water Use Permit
F	Fahrenheit
FAS	Floridan Aquifer System
FDEP	Florida Department of Environmental Protection
F.S.	Florida Statute
FY	fiscal year
GIS	Geographic Information Systems
ft	feet
gpcd	gallons per capita per day
gpd	gallons per day
gpd/ac	gallons per day per acre
HSP	high service pump
hp	horsepower
LOSA	Lake Okeechobee Service Area
LORS	Lake Okeechobee Regulation Schedule
LEC	Lower East Coast
LEC Plan Update	Lower East Coast Water Supply Plan Update
MDD	maximum day demand
MG	million gallons
mgd	million gallons per day
MFL	minimum flows and levels
MMD	maximum month demand
MOR	monthly operating report
msl	mean sea level
NCA	National Climate Assessment

OASIS	Our Alternative Supply Irrigation System
O&M	operations and maintenance
OOL	Ocean Outfall Legislation
PFAM	Municipal Population Forecast and Allocation Model
PVC	polyvinyl chloride
psi	pounds per square inch
PWS	potable water supply
RO	reverse osmosis
RWTF	reuse water treatment facility
SWIMN	Saline Water Intrusion Monitoring Network
SAS	Surficial Aquifer System
SCADA	supervisory control and data acquisition
SFWMD	South Florida Water Management District
UFA	Upper Floridan Aquifer
USDA-NRCS	U.S. Department of Agriculture-Natural Resources Conservation Service
UV	UltraViolet
WMPU	Water Master Plan Update
WUP	Water use permit
WSFWP	Water Supply Facilities Work Plan
WWTP	wastewater treatment plant
WTP	water treatment plant

Chapter 1

INTRODUCTION

The City of Pompano Beach (City) is required to update their 10-Year Water Supply Facilities Work Plan (WSFWP) every five years or within 18 months after the South Florida Water Management District (SFWMD) governing board approves an updated regional water supply plan. Changes in the updated regional water plan pertinent to the City's local water supply shall be reflected in the City's updated WSFWP as per Florida Statutes, Section 163.3177 (6) (c). The City's WSFWP was last updated in December 2014. SFWMD completed the Lower East Coast Water Supply Plan Update (LEC Plan Update) in November 2018. The LEC Plan Update assesses projected water demands and potential sources of water through 2040.

The City of Pompano Beach adopted this WSFWP, dated October 2020, by reference into the City's Comprehensive Plan, for a planning period of not less than 10 years. Any changes affecting this WSFWP shall be included in the annual Capital Improvements Plan update to ensure consistency between the Potable Water Sub-element and the Capital Improvements Element."

This WSFWP update is not done in strike-through-and-underline format, as the City has instead deleted the previous WSFWP and started an entirely new electronic format.

1.1 Background

The Florida Legislature enacted Senate Bills 360 and 444 to address the finding that traditional supply sources will not be sufficient to meet demands of the growing population, industries, and the environment. As a result of these bills, significant changes were made to Chapters 163 Intergovernmental Programs and 373 Water Resources, Florida Statute (F.S.) to improve the coordination of water supply and land use planning by strengthening the statutory requirements linking regional water supply plans prepared by the water management districts and the comprehensive plans prepared by local governments.

The 2018 LEC Plan Update is consistent with the water supply planning requirements of Chapter 373 F.S., and presents population and water demand projections through 2040, a review of water supply issues and evaluations, and a list of water source options. The 2018 LEC Plan Update contains guidance to help focus future efforts in the region to meet projected water needs. Some of the key overall suggestions to regional stakeholders, including the SFWMD, utilities, other government agencies, agricultural interests, and environmental groups, are as follows:

- Employ robust water conservation programs to increase water use efficiency and reduce the amount of water needed to meet future demands.
- Implement minimum flows and levels (MFL) recovery and prevention strategies, in conjunction with future water supply plan updates.
- Continue development of alternative water supplies, including maximizing the use of reclaimed water.

- Design new Floridan Aquifer wellfields to maximize withdrawals while minimizing water level and quality changes.
- Develop regional and local reservoirs and other storage systems, where possible, to increase surface water availability for environmental, agricultural, and urban water supply needs.
- Continue supporting ecosystem restoration efforts, including the Restoration Strategies Regional Water Quality Plan and the Comprehensive Everglades Restoration Plan (CERP).
- Identify wells critical to long-term monitoring and modeling to ensure they are constructed, maintained, or replaced, as necessary.
- Continue to characterize, monitor, and design adaptation solutions in response to climate change and sea level rise impacts to water supply.

The current statutory provisions direct local governments to do the following with regard to water supply:

"1. Coordinate appropriate aspects of its comprehensive plan with the appropriate water management district's regional water supply plan. [s.163.3177 (4) (a), F.S.]

2. Revise the Potable Water Sub-Element to adopt a water supply facilities work plan covering at least a 10-year planning period to meet existing and projected demand. The work plan should address those water supply facilities for which the local government has responsibility and include the facilities needed to develop alternative water supplies. The work plan should also identify conservation and reuse measures to meet future needs. [Section 163.3177(6) (c), Florida Statutes.]

3. Revise the Conservation Element to assess current and projected water needs and sources for at least a 10-year planning period. The analysis must consider the existing levels of water conservation, use, and protection and the applicable policies of the water management district, and the district's approved regional water supply plan. In the absence of an approved regional water supply plan, the analysis must consider the district's approved water management plan. [Section 163.3177(6) (d) 3, Florida Statutes.]

4. Revise the Capital Improvements Element to identify capital improvements projects to be implemented in the first 5 years of the work plan for which the local government is responsible, including both publicly and privately funded water supply projects necessary to achieve and maintain adopted level of service standards; and adopt a five-year schedule of capital improvements to include those projects as either funded or unfunded, and if unfunded, assigned a level of priority for funding. [163.3177(3) (a) 4, Florida Statutes.]

5. Revise the Intergovernmental Coordination Element to adopt principles and guidelines to be used to coordinate the comprehensive plan with the regional water supply authority (if applicable) and with the applicable regional water supply plan. [163.3177(6) (h) 1, Florida Statutes.]

6. During the Evaluation and Appraisal review, determine if comprehensive plan amendments are necessary to reflect statutory changes related to water supply and facilities planning since the last update to the comprehensive plan. If necessary, transmit the amendments to incorporate the statutory changes as appropriate. [Section 163.3191(1) and (2), Florida Statutes.]

7. Ensure that adequate water supplies and facilities are available to serve new development no later than the date on which the local government anticipates issuing a certificate of occupancy and consult with the applicable water supplier prior to approving a building permit, 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) (a), F.S., effective July1, 2005.] Local governments should update their comprehensive plans and land development regulations as soon as possible to address this water supply concurrency requirement.”

This WSFWP Update is meant to satisfy portions of the above statutory requirements as stated in Item 1 above, to coordinate with the LEC regional water supply plan.

1.2 Purpose and Objectives

The purpose of this WSFWP is to update the City’s 2014 WSFWP to incorporate changes to the 2018 LEC Plan Update that are applicable to the City. The objective of this report is to assess the City’s current water supply and facility capacity to meet current and future water demands incorporating local and regional legislation, including the evaluation of traditional and alternative water sources. The WSFWP development will facilitate the required coordination efforts for water supply and land use planning between the City’s Planning and Development and Utility Departments, the SFWMD, and each of the local governments that receive water from the City (City of Lighthouse Point and Town of Lauderdale-by-the-Sea). The WSFWP incorporates information on Broward County Water and Wastewater Services (BCWWS), sourced from the 2020 Broward County 10-Year Water Supply Facilities Work Plan adopted on April 21, 2020 (2020 BC WSFWP). BCWWS provides water to portions of the City of Pompano Beach.

The information contained within this WSFWP 2020 Update will be included in an amendment to various elements of the City’s Comprehensive Plan.

1.3 Local Government Overview

The City of Pompano Beach is in northeastern Broward County along the Atlantic Ocean. It includes about three miles of beachfront, extending from the intersection of State Road A1A and Terra Mar Drive to the Hillsboro Inlet. The City covers the area extending from the Atlantic Ocean to Florida’s Turnpike and from Sample Road to McNab Road in northeast Broward County. The City is bounded by the following municipalities: the City of Deerfield Beach on the north, Town of Hillsboro Beach and City of Lighthouse Point on the northeast, Town of Lauderdale-by-the-Sea on the southeast, City of Fort Lauderdale on the south, and City of Margate and City of North Lauderdale on the west. Figure 1.1 depicts the City jurisdictional boundaries.

The City has a total area of approximately 25 square miles of which 1.4 square miles are water. The City’s current population is estimated to be 109,441. The City’s jurisdictional boundary is divided into five Commission Districts. The City manager oversees the three assistant City Managers in addition to the Community Redevelopment Agency (CRA), Fire, Police, and Public Communication Departments. The organization chart for the City is presented in Figure 1.2.

The City’s jurisdictional boundary differs from the utility service area. The City’s consultant had the opportunity to compare the utility service area GIS layer that was provided by the City against the water transmission and distribution system upon performing concurrent Water Master Plan assessments. It was found that the previous GIS boundary was covering areas that are not served by the distribution system. Confirmation was provided by utility personnel for each of the suspect areas. In addition, it was found that the previous GIS layer provided by the City was seldom in conflict with geographical elements like canals and ponds. The utility service

area boundary provided by the City was modified to closely surround those elements. The resulting GIS boundary reflects actual geographical boundaries and is corrected to the best of knowledge to include the existing water distribution system, excluding confirmed non-served areas. Figure 1.3 shows the City's jurisdictional boundary and modified utility service area along with the existing water distribution system.

Services pertaining to the utility include drinking water, wastewater, reuse, and stormwater. The City does not have a wastewater treatment plant. The City manages a wastewater collection system that pumps directly into the Broward County North Regional Wastewater Treatment Plant (WWTP). The City's drinking water and reuse system are owned and operated by the City.

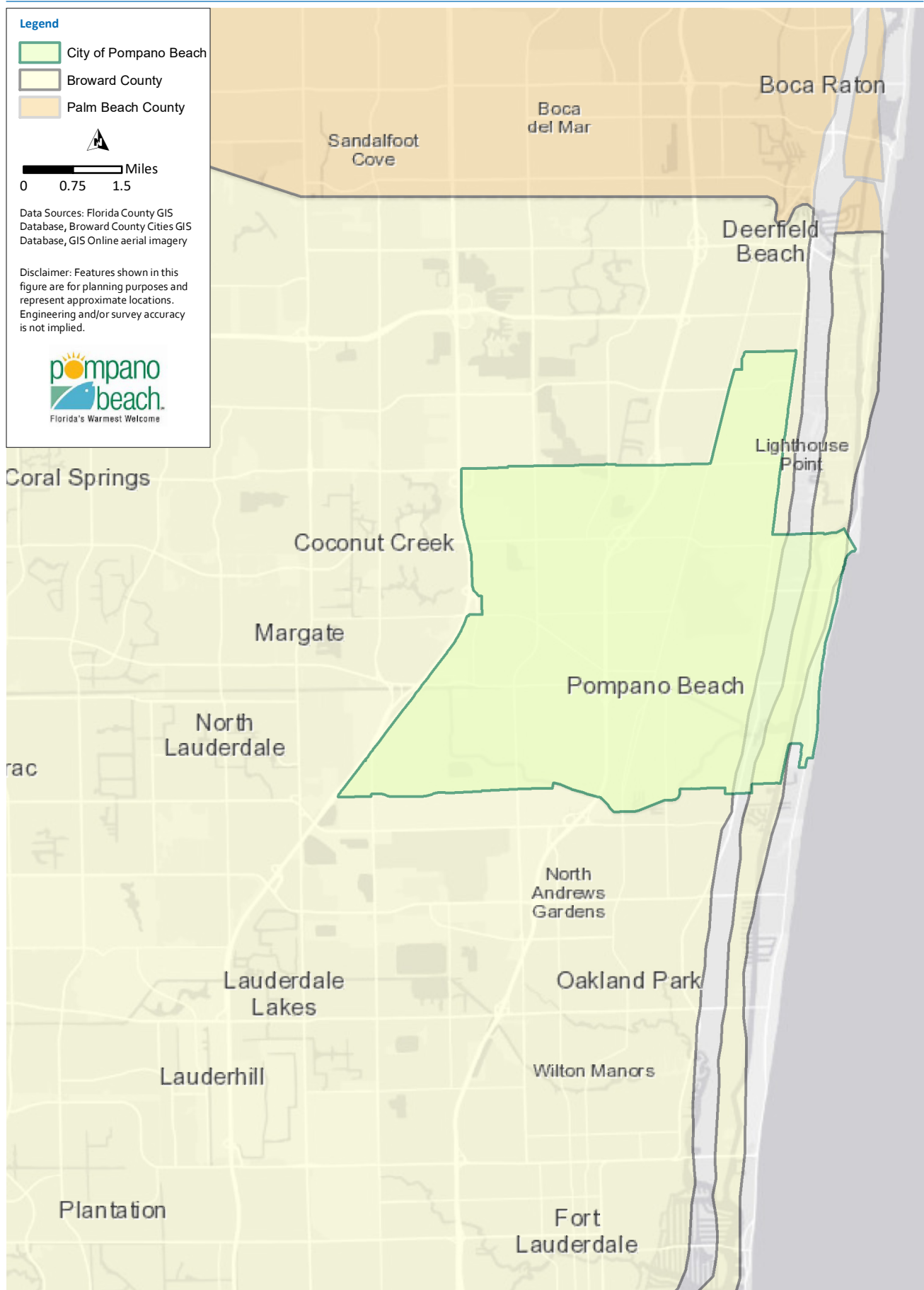
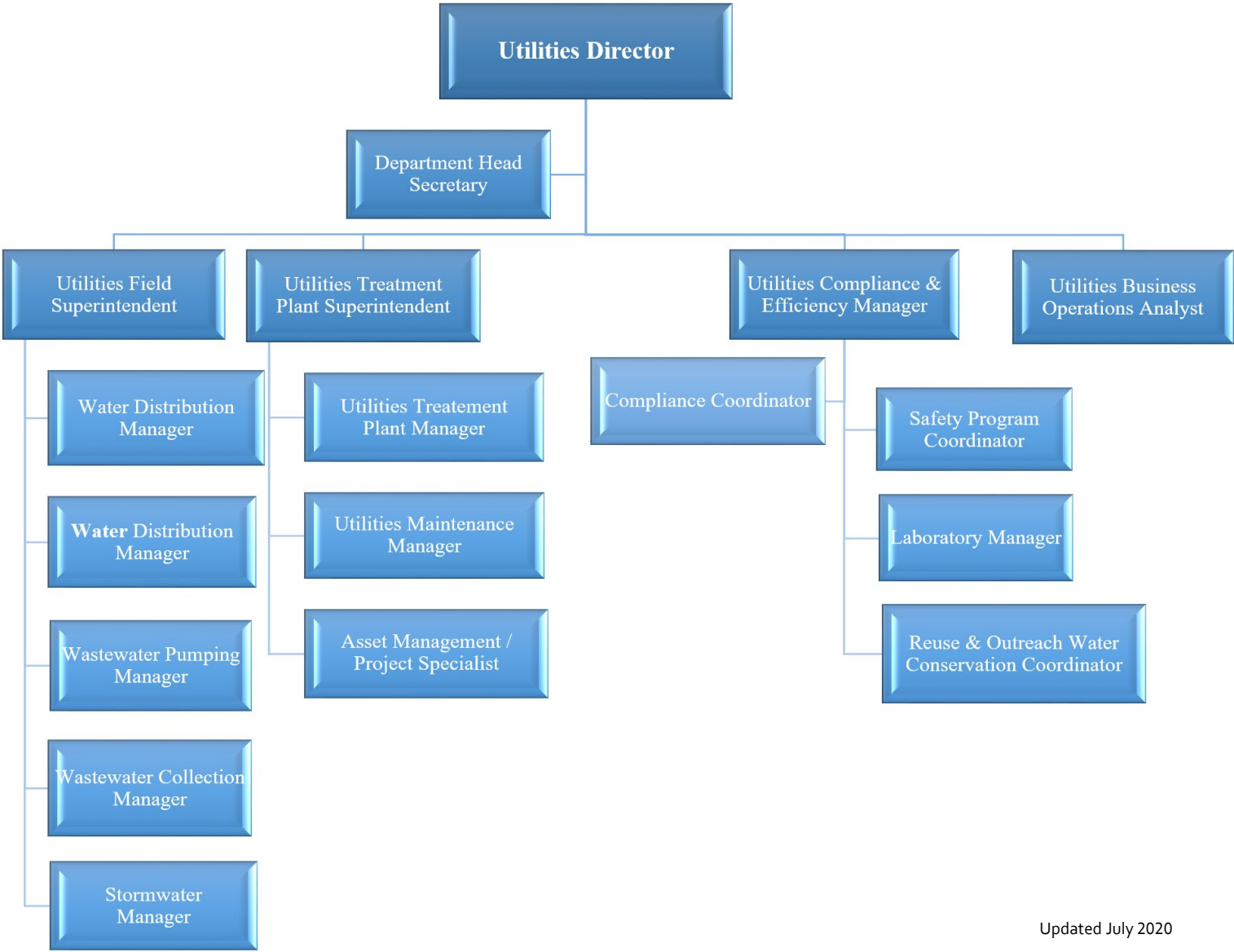


Figure 1.1 City of Pompano Beach Location and Boundary



Updated July 2020

Figure 1.2 City's Organizational Chart

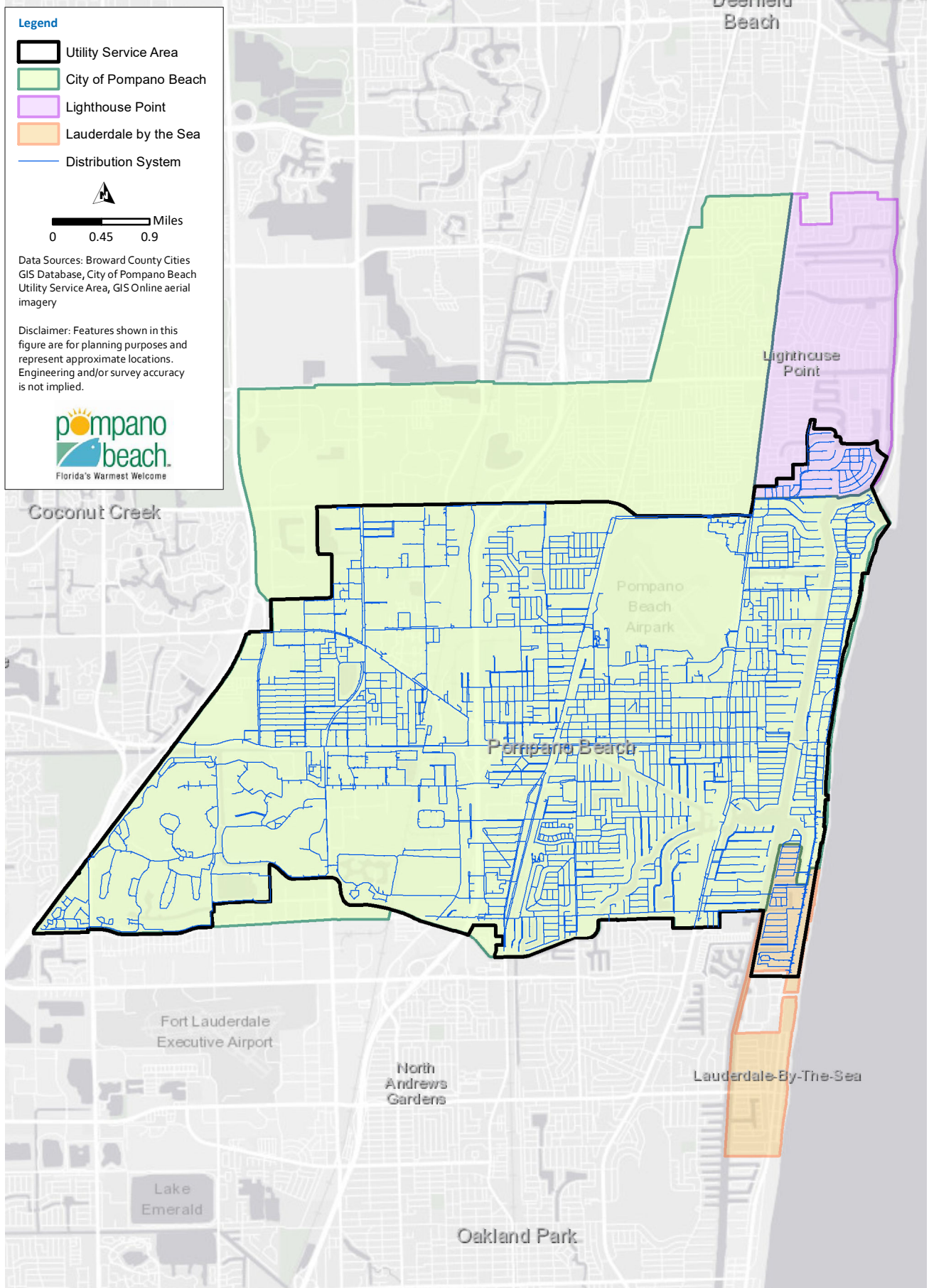


Figure 1.3 City of Pompano Beach Utility Service Area

1.3.1 Relevant Regional Issues

The City is actively addressing the regional issues identified in the 2018 LEC Plan Update in their planning and upcoming capital improvement program. The major initiatives outlined below incorporate the City's commitment to sustainable water supplies and regional partnership with its neighbors in Broward County:

1. Fresh surface water and groundwater are limited; further withdrawals could have impacts on the regional system, wetlands, existing legal uses, and saltwater intrusion. As a result, additional alternative water supplies need to be developed.
2. Construction of additional storage systems (e.g., reservoirs, aquifer storage and recovery systems) to capture wet season flow volumes will be necessary to increase water availability during dry conditions and attenuate damaging peak flow events from Lake Okeechobee.
3. Expanded use of reclaimed water is necessary to meet future water supply demands and the Ocean Outfall Legislation (OOL).
4. Expanded use of brackish groundwater from the Floridan Aquifer System (FAS) requires careful planning and wellfield management to prevent undesirable changes in water quality.
5. Integrating climate impacts and water resources planning.

1.3.2 Surficial Aquifer System and Limited Water Availability

The Surficial Aquifer System (SAS) in the southeastern Florida peninsula is the primary source of freshwater to residents of Broward County, Miami-Dade County, and southeastern Palm Beach County. Withdrawals from the SAS are managed by the SFWMD through the issuance of Consumptive/Water Use Permits (WUP). In order to secure and maintain a WUP, applicants, consisting of water utilities, developers, agricultural operations, and water control districts, must meet the permitting criteria of: 1) exercise reasonable and beneficial use of the resource; 2) demonstrate no adverse impact to other existing legal uses of water; and 3) assure that the use of the requested quantity of water is necessary for economic and efficient use, and is both reasonable and consistent with the public interest (including preventing harm to the environment, minimizing saltwater intrusion, protecting wetlands, and appropriate management of pollution). All water supply utilities applying for an individual permit are required to develop and implement a water conservation plan.

Water supply granted in WUPs can be used for public supply (drinking water), agricultural and nursery plant irrigation, golf course irrigation, commercial use, dewatering/mining activities, and power. Water uses not covered by these consumptive use permits include domestic uses, home irrigation, and water used for firefighting. These uses must include compliance with the minimum flow and levels (MFLs) established for surface water and groundwater sources, Chapter 373, (F.S.). In the implementation of a recovery strategy for the Everglades and Lake Okeechobee MFLs, the Governing Board of the SFWMD adopted restricted allocation areas in 2007 and 2008. For the 2018 LEC Plan Update planning region, this mandated that new water demands requiring recharge from the Everglades system be met through the development of alternative water supply (AWS).

The following are considered as AWS 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 reused after one or more public water supply, municipal, industrial, commercial, or agricultural uses; the downstream augmentation of water bodies with reuse water; stormwater; and any other water supply source that is designated as nontraditional for a water supply region in the applicable water supply plan. 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 AWS sources. Since this program, funding has been severely limited within the Lower East Coast region and has directly impacted the ability of local water supply entities to advance the development of AWS projects through their own individual efforts.

In response to this, the City is actively exploring alternative water supplies, and intends to continue to limit or reduce withdrawals from the Eastern Wellfield. The withdrawals from the Eastern Wellfield have been volume restricted due to the potential for saline water encroachment at the wellfield. The City continues to monitor the saltwater intrusion in their wellfield through the Saline Water Intrusion Monitoring Network (SWIMN). Water levels and conductance profiles are collected from each monitoring well monthly, and provide information that acts as an early warning sign should the saline water intrusion front shift towards the wellfield. With this program, the City has been able to identify the saltwater interface and track its movement for the past 20+ years.

The City is also actively engaged in developing a wellfield plan that will allow the abandonment of older wells and potential construction of newer wells further away from the saltwater interface. The City's new capital projects will incorporate a comprehensive assessment of both wellfields, including evaluations of well production, specific capacity, and mechanical upgrades. The plan will also review existing well rehabilitation and potential relocation and replacement of wells.

1.3.3 Additional Storage Systems

Lake Okeechobee is a major surface water body for storage and supply in the LEC planning area. The lake has multiple inflows from a watershed covering more than 3 million acres, including the Kissimmee River, and several outlets for flood control purposes, including: 1) the C-44 Canal and St. Lucie River to the eastern coast of Florida; 2) the C-43 Canal and Caloosahatchee River to the southwestern coast of Florida; and 3) the EAA canals to the WCAs and southeastern coast of Florida (SFWMD 2011). The amount of stored water is important to the region's natural ecosystems and developed areas. Management of surface water storage capacity involves balancing two opposing conditions: 1) drought conditions that may occur during periods of deficient rainfall; and 2) flooding that may occur due to excessive rainfall, especially during the wet season. As described in the 2018 Lower East Coast Water Supply Plan Update, surface water availability from existing canal and storage networks within Lake Okeechobee Service Area (LOSA) under the 2008 Lake Okeechobee Regulation Schedule (2008 LORS) is not adequate to meet water use demands and environmental needs during a 1-in-10 year drought condition. Past analyses concluded that additional storage would be needed to meet existing legal users and natural system needs.

To counteract the future water supply deficit, Pompano Beach and other LEC area water providers have been collaborating in the development of the C-51 Reservoir project, to serve as a

regional alternative water supply by storing excess wet-season storm water runoff for later distribution and use during the dry season. The environmental benefits of this project include Biscayne Aquifer recharge, reduction of harmful tidal discharges to the Lake Worth Lagoon, and supplemental discharge to the Loxahatchee River. The C-51 Reservoir is an innovative public-private partnership whereby interested LEC utilities and a private company would jointly develop and construct the project, which would then be turned over to the SFWMD for operation. Each utility that invested in a pro rata contribution of capital costs and operating and maintenance costs would receive the respective storage allocation and credits for additional allocations in their consumptive use permit following construction.

The City has gained commission approval to purchase a pro-rata portion of the Phase 1 C-51 Reservoir project, in an amount up to 2.0 mgd. As of 2020, the Palm Beach Aggregates has acknowledged that the City has purchased 2.0 mgd of storage in the reservoir. The project is expected to be completed in 2023, and the subsequent allocation increase should be reflected in the City's next consumptive use permit.

1.3.4 2008 Ocean Outfall Program and Reclaimed Water Options

In 2008, the Florida Legislature enacted an OOL which required the elimination of the use of six ocean outfalls in southeastern Florida as the primary means for disposal of treated domestic wastewater, influencing the Broward County North Regional WWTP facilities which serve the City of Pompano Beach. The objectives of this statute were to reduce nutrient loadings to the environment and to achieve the new use of water for water supply needs in the form of reclaimed water.

This statute requires Broward County North Regional WWTP to reuse at least 60 percent of the historic outfall flows by 2025 and follow the below outfall program:

- Discharge through ocean outfalls must meet either advanced wastewater treatment and management by December 31, 2018, or an equivalent reduction in outfall nutrient loading.
- 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.
- Timely submission of certain progress and planning summary documents.
- Inclusion of projects that promote the elimination of wastewater ocean outfalls in SFMWD's regional water supply plans.
- State or SFWMD funding assistance must give first consideration to water supply development projects that replace existing sources or implement reuse projects to eliminate ocean outfalls.

Important considerations when developing reuse water projects are rising sea levels, and increasing salt concentrations in coastal wastewater collection systems that could impact cost-effective reuse water opportunities. Related infrastructure impacts from sea level rise include accelerated physical degradation of the built environment, increased operations and maintenance (O&M), and engineering design costs to support long-term public water and wastewater capital projects. In addition, significant and strategic monitoring and financial programming will be needed to support adaptation strategies. These options might include lining the sanitary sewer collection systems, redesigning or relocating collection systems, and building additional water quality treatment capacity such as membrane filtration.

The City of Pompano Beach has been at the forefront of progressive efforts to conserve water through reuse.

The City's reclaimed water system has been in operation for over 20 years, providing beneficial irrigation water using water that would otherwise be discharged from Broward County's ocean outfall. Implementation of the City's reuse water program brings the following benefits:

- Reduces potable water use for irrigation demands through the targeted increase in reuse connections.
- Reduces potable water usage as mandated by the SFWMD LEC Plan Update and the City's WUP.
- Protects wellfields through lower withdrawals of the City's eastern and western potable water supply wellfields.
- Assists BCWWS by reducing the volume of effluent released through Broward County's ocean outfall.

The partnership between the City and Broward County continues today, as both entities work together to continue to expand reclaimed water treatment and distribution facilities to serve neighboring communities. Ongoing and future reclaimed expansions are planned to serve areas such as Highlands and Lighthouse Point, as detailed in the City's Reuse Master Plan. Additional information on the City's reuse is provided in Chapter 4. Information on inter-local agency coordination activities is included in Chapter 6.

1.3.5 Floridan Aquifer System

The FAS is a confined aquifer system separated from the SAS by the lower-permeability sediments of the Intermediate Confining Unit. The FAS typically contains chloride concentrations greater than 1,000 mg/L. Desalination is needed before this water supply is suitable for most uses.

The use of the Upper Floridan Aquifer (UFA) began in the late 1970s, and by 2016, 15 potable water supply (PWS) treatment plants had been constructed, with a combined treatment capacity of 102 million gallons per day (mgd), in Palm Beach, Broward, and Miami-Dade counties. As mentioned in the 2018 LEC Plan Update, from 2006 to 2016, PWS withdrawals from the FAS increased from 14 to 53 mgd and are expected to increase to 104 mgd by 2040. The C-51 Reservoir, Phase 1 will provide approximately 35 mgd in allocation that would offset withdrawals from the FAS. In the LEC planning area, 22 PWS utilities have UFA allocations, totaling 184 mgd.

Several FAS wellfields have experienced some water quality and hydrogeology degradation, but current operations have shown this can be managed by utilities through appropriate wellfield design and operating protocols, including the following activities:

- Increasing well spacing (more than 1,000 feet) to minimize interference effects and to reduce stress on the FAS.
- Rotating the operation of individual wells, thereby reducing overall pumping stress on the well's production zone.
- Plugging and abandoning individual wells experiencing increases in chloride concentration and replacing them with new wells elsewhere within the wellfield area.

- Reducing pumping rates at individual wells to minimize water level declines, which increase the potential for poor-quality water to enter the well's production zone from below.
- Installing monitor wells to provide early warning of the need for changes.

Due to the limiting supply and significant cost of developing a Floridan Aquifer water supply and treatment system, the City intends to prioritize the development of other alternative water supplies over the use of the Floridan Aquifer. As mentioned previously, the City is actively invested in the reuse water program and the C-51 reservoir, which provide more direct offsets to traditional water supplies.

1.3.6 Climate Impacts

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 the loss of coastal wellfield capacity due to saltwater contamination. Key considerations for communities within the Southeast Florida planning areas include sea level rise, which can increase saltwater intrusion to drinking water aquifers.

The rise in sea level will alter the location and shape of the saltwater interface potentially generating or increasing intrusion into coastal aquifers. Analysis is needed to determine the potential impacts of sea level rise on utility wellfields. Continued monitoring is needed to accurately characterize and measure aquifer conditions, saltwater movement, and sea level rise. The City currently monitors a range of parameters at its wellfields in accordance to this measure.

The City is also an active participant in the South Florida Regional Climate Change Compact to support initiatives focused on adapting to rising sea levels. The City has enacted several recommendations in by the Compact in disciplines such as agriculture, energy and fuel, natural systems, public outreach and policy, risk reduction and emergency management, sustainability, and transportation. The City's implementation of the Compact's recommendations for water supplies are summarized as follows:

- WS-01 Fostering innovative water management.
- WS-03 Planning for future water supply.
- WS-04 Coordinating saltwater intrusion mapping.
- WS-05 Inventory of water and wastewater infrastructure.
- WS-10 Integration of surface and groundwater impacts in planning.
- WS-12 Integration of hydrologic and hydraulic models.
- WS-15 Fostering water management research.
- WS-16 Expanding partnerships and resources for innovation.
- WS-17 Advancing capital projects.
- WS-20 Supporting the Comprehensive Everglades Restoration Plan.
- WS-21 Expanding surface water storage.

Chapter 2

WATER SERVICE AREA

The City of Pompano Beach jurisdictional boundaries differ from the utility service area boundaries, as mentioned in Chapter 1. The City's water service area, which includes customers outside of the City limits, is served by a network of transmission and distribution piping within 19 square miles. The City supplies a portion of the area within its political boundary as well as portions of adjacent municipalities such as the northern portion of Lauderdale-by-the-Sea and the southern tip of the Town of Lighthouse Point. The general area extends from the Atlantic Ocean to Florida's Turnpike and from Copans Road to McNab Road. The remainder of the City outside of the service area receives potable water from BCWWS Districts 1 and 2. Figure 1.3 delineates the boundaries of the City's Service Area.

This WSFWP addresses the following service areas:

1. Areas served by City facilities within the City limits.
2. Areas served by City facilities that are outside of the City limits (i.e., portions of the City of Lighthouse Point and the Town of Lauderdale-by-the-Sea).
3. Areas within the City limits served by BCWWS (using information contained in the 2020 BC WSFWP).

The City does not plan to expand its water service area. Although the wellfield and water treatment facility for the Town of Hillsboro Beach are located in the City, they do not serve areas within the City limits. Therefore, the Town of Hillsboro Beach 10-Year Water Supply Facilities Work Plan is not discussed or referenced in this report.

2.1 Service to Other Local Government Jurisdictions

The City is responsible for planning, financing, constructing, operating and maintaining the utilities and public water supply systems for the southern part of the City of Lighthouse Point and the northern part of the Town of Lauderdale-by-the-Sea, as depicted in Figure 1.3. The City directly supplies water to these customers through its distribution system network.

2.2 BCWWS District 1 and 2 Service Areas

BCWWS District 1 and 2 supply potable water to portions of the City that are not within the utility service area. These areas can be categorized into as follows:

1. Northern Residential and Industrial Zone: The majority of this zone is bounded by the City boundary to the north, Copans Road to the south, Federal Highway to the east, and the City boundary to the west. Broward County Department of Transportation, Blount Road Utility System, and the Alpha 250 System industries are also part of this zone. In addition, a small area delimited by Copans Road to the north, 21st Street to the south, Dixie Highway to the east, and North Cypress Road to the west, is part of this zone. This zone is served by BCWWS District 2.

2. Southern Zone: This zone is bordered in the north-south direction by the C-14 Canal and West McNab Road, Dixie Highway to the east, and southwest 36th Avenue to the west. This zone is served by BCWWS District 1.

The City residents served by BCWWS are direct customers of BCWWS. A large portion of BCWWS water service area in the City was annexed to the City during the last 20 years; however, future annexations are not anticipated.

In addition, it should be noted that BCWWS does not plan to expand water service to other areas within the City.

BCWWS is responsible for the planning, financing, construction, maintenance, and operation of the water supply facilities within their water service areas. Although the City is ultimately responsible for the water supply within its area of jurisdiction, the water supply plan for the areas within the City limits served by BCWWS is already incorporated in the 2020 BC WSFWP. The 2020 BC Work Plan accounts for the water demand for the areas served by BCWWS within the City. In addition, the City has been coordinating with BCWWS during the development of its own work plan. Therefore, only a brief description of the 2020 BC Work Plan for the areas served by BCWWS in the City is provided under this WSFWP.

See Appendix A for the 2020 BC WSFWP.

2.3 Private Suppliers

Private suppliers are those within the City's service area for which all or a portion of their demand is supplied by non-municipal water. These service suppliers hold Water Use Irrigation Permits, Major General Water Use Irrigation Permits, Individual permits, or Major WUPs granted by SFWMD. Permits are issued to allow users to withdraw a specified amount of water, either from the ground, canals, lakes, or rivers. This water is typically used to irrigate golf courses, crops, nurseries, residential landscaping, or for industrial uses. There are no self-supply users withdrawing water from the Biscayne Aquifer for domestic/potable consumption use. Individual users withdrawing within the City and their specific permitted use, are identified in the map and the table of Appendix B. There is no anticipated future water demand from current self-supply systems (private wells) identified within the City's water service area that would be served in the future by the Pompano Beach potable distribution system. The City does not have any involvement in the planning, financing, construction, or operation of the facilities of self-supplied users except for the City-owned community parks and green space. The City Parks and Recreation Department is responsible for obtaining the WUP for pool and maintenance uses within its community parks.

Chapter 3

EXISTING WATER SUPPLY SYSTEM

3.1 Water Supply Facilities

The potable water supplied to customers within the City's service area originates from the Biscayne Aquifer. The Biscayne Aquifer occurs near the land surface in most of the City, and is the principal water-bearing unit of the SAS in the region (Causaras, 1987). Groundwater from the Biscayne Aquifer is used by the City and BCWWS at the water treatment plants (WTPs).

3.1.1 City Wellfields

The City utilizes the Biscayne Aquifer system for public water supply use under consumptive water use permit (WUP) No. 06-00070-W. The WUP was revised on June 24, 2015, recently received a letter modification from the SFWMD on April 14, 2020, and will expire on September 14, 2025. WUP documents are included in Appendix C. The WUP provides raw water supplies to the City's WTP, via 25 wells, with an annual allocation not to exceed 6,478 MG and a maximum month allocation not to exceed 610 MG.

The 25 wells are distributed in two Biscayne Aquifer wellfields, the Eastern Wellfield (also known as the Airport Wellfield) and the Western Wellfield (also known as the Palm Aire Wellfield). The Eastern Wellfield is located near the City's municipal airport and WTP, and the Western Wellfield is located around the Palm-Aire development, as shown in Figure 3.1. The original wellfields have a rated capacity of approximately 44,700 gallons per minute (gpm), equivalent to approximately 64.37 mgd. The wellfields current active capacity is 40,800 gpm, or 58.75 mgd. A summary of well capacities and status is provided in Table 3.1.

The City's raw water transmission system capacity was evaluated using hydraulic modeling in 2006. The model results indicated that the raw water transmission system is sufficient for operation of the existing well facilities, and the wells can supply the raw water flow for the treatment plant's current maximum permitted capacity (50 mgd).

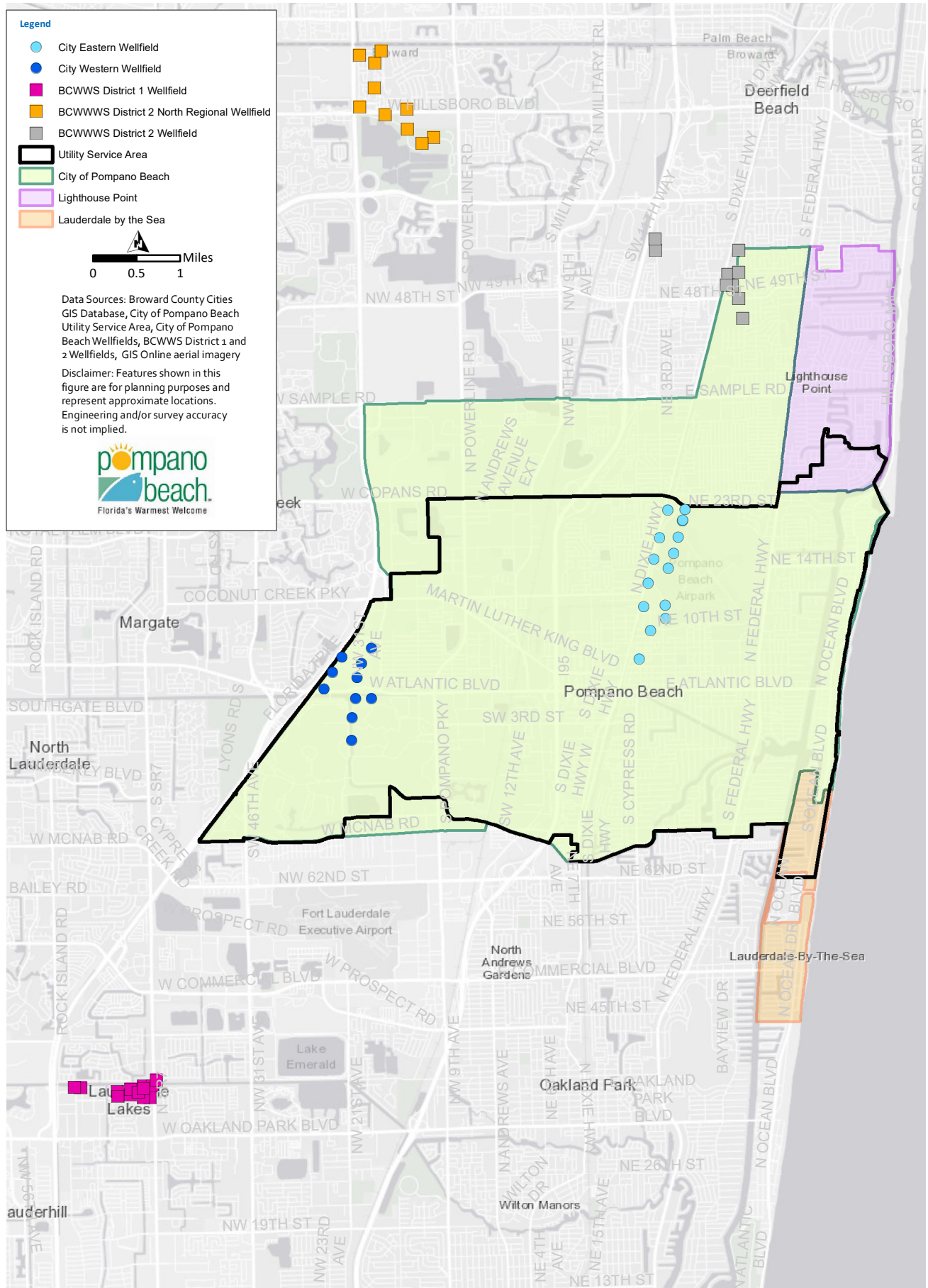


Figure 3.1 City of Pompano Beach and BCWWS District 1 and 2 Wellfields

Table 3.1 Well Capacity Summary Table

	Well No.	Year Constructed	Design Capacity (gpm)	Casing Diameter (inch)	Cased Depth (feet)	Total Depth (feet)
Eastern Wellfield	2	1952	1,500	16	ND	136
	3 ⁽¹⁾	1950	1,500	16	ND	107
	3R ⁽²⁾	-	1,500	16	87	107
	4	1955	1,800	16	ND	140
	5	1958	1,500	16	ND	108
	6	1958	2,200	14	100	156
	7	1960	1,500	16	90	90
	8 ⁽³⁾	1961	1,500	16	90	90
	9	1963	1,500	16	97	131
	10	1961	1,800	16	93	113
	11	1964	1,500	16	88	127
	12	1967	1,500	16	90	123
	13	1968	1,800	16	115	115
	14	1969	1,500	16	114	114
	15	1972	2,000	18	115	140
	16	1972	2,000	18	113	130
	Subtotal	(gpm) (mgd)	25,100 36.14			
	Subtotal Current Active	(gpm) (mgd)	23,600 33.98			
Western Wellfield	17 ⁽³⁾	1981	2,400	16	76	150
	18	1981	2,400	16	72	130
	19	1981	2,100	16	78	158
	20	1981	2,100	16	80	154
	21	1981	1,600	16	80	153
	22	1981	2,100	16	79	153
	23	2002	2,100	16	80	153
	24	2002	2,100	16	80	153
	25	2002	2,100	16	80	153
	26	2002	2,100	16	80	153
	Subtotal	(gpm) (mgd)	21,100 30.38			
	Subtotal Current Active	(gpm) (mgd)	18,700 26.93			

	Well No.	Year Constructed	Design Capacity (gpm)	Casing Diameter (inch)	Cased Depth (feet)	Total Depth (feet)
System Total	(gpm) (mgd)	46,200 66.5				System Total
System Current Active	(gpm) (mgd)	42,300 60.91				System Active

Notes:

- (1) Well is abandoned.
- (2) Proposed well to replace Well 3; all permit conditions remain the same.
- (3) Well is out of service.

Updated July 2020

3.1.1.1 Eastern Wellfield

The Eastern Wellfield is bounded by Dixie Highway, the City's Airport, Copans Road, and Atlantic Boulevard. The wells in the Eastern Wellfield were constructed between 1950 and 1972. There are 15 wells (Nos. 2 through 16) with an initial total design capacity of approximately 36.14 mgd. Well No. 3 has been abandoned and Well No. 8 is currently inactive, decreasing the total design capacity to 33.98 mgd. Well No. 3 has recently been abandoned due to the proximity to the new injection well. The City plans to replace Well No. 3, with proposed Well No. 3R.

The withdrawals from the Eastern Wellfield have been volume restricted due to the potential for saline water encroachment at the wellfield. The Eastern Wellfield has a Saline Water Intrusion Monitoring Network (SWIMN) constructed in 1996/1997 and is comprised of eight wells screened from just below ground level to approximately 180 feet below land surface along with two inactive production wells. Water levels and conductance profiles are collected from each well monthly. Records from the SWIMN act as an early warning sign should the saline water intrusion front shift towards the wellfield. Quarterly reports are submitted by the City to the SFWMD summarizing individual well pumpage and saline water intrusion data as required by Limiting Condition 27 of the City's SFWMD WUP. The water quality and water levels are monitored through monthly sampling. With this program, the City has been able to identify the saltwater interface and track its movement for the past 20+ years.

According to the 2010 WUP Report, the saline intrusion interface seems to occur within the aquifer in the vicinity of US Highway 1. The interface appears to be positioned eastward of earlier estimations based on saline water interface data. The eastward shift is probably a result of beneficial recharge efforts such as increased reuse water irrigation use in the area and the effects of reduction of the City's Eastern Wellfield pumpage.

3.1.1.2 Western Wellfield

The Western Wellfield is located just east of Florida's Turnpike with wells located north and south of Atlantic Boulevard. The ten wells (Nos. 17 through 26) found in this wellfield account for a total capacity of 30.38 mgd. The firm capacity is estimated to be 26.93 mgd (with the largest well unit, Well No. 17, out of service). The wells on the north side of Atlantic Boulevard were constructed in 1981, and the wells on the south side were constructed in 2002. These wells feed the nanofiltration membrane softening system at the WTP.

3.1.2 City Consumptive Use Permit Conditions

The City is currently operating under WUP No. 06-00070-W, renewed on September 14, 2005 and revised on June 24, 2015, and April 14, 2020. The WUP expires on September 14, 2025. The updated WUP has an annual allocation of 6,478 MG (17.75 mgd) with a maximum month allocation of 610 MG (maximum month average day of 20.33 mgd) after August 10, 2010. The SFWMD WUP further restricts the City's Eastern Wellfield to a maximum monthly allocation of 186 MG (maximum month average day of 6.2 mgd) in the dry season, defined as between November 1 and May 31; and 279 MG (maximum month average day 9.30 mgd) in the wet season, defined as June 1 to October 31. The maximum permitted withdrawal limits, as established by SFWMD, are approximately 33 percent of the wellfield capacity. A copy of the WUP and its latest modification are included in Appendix C.

In late 2019, the City commission approved the participation of the utility in the C-51 Reservoir AWS Phase I Project, for a total 2.00 mgd of capacity. Palm Beach Aggregates has acknowledged the City's participation at such capacity. As a result, procedures will be started in the current year 2020 to update the City WUP to incorporate the additional water supply from the C-51.

3.1.3 BCWWS Districts 1 and 2 Wellfields

The existing BCWWS Districts 1 and 2 water supply system is comprised of three SAS wellfields, District 1 Wellfield, District 2 Wellfield, and North Regional Wellfield. District 1 Wellfield is located near the District 1 WTP in Lauderdale Lakes; District 2 North Regional Wellfield is located in Deerfield Beach; and District 2 (2A) Wellfield is located in Pompano Beach. Figure 3.1 shows the BCWWS Districts 1 and 2 Wellfields. The BCWWS wellfields have a total rated capacity of approximately 70 MGD, as shown in Table 3.3; however, their permitted withdrawal limits, as established by SFWMD, are much lower.

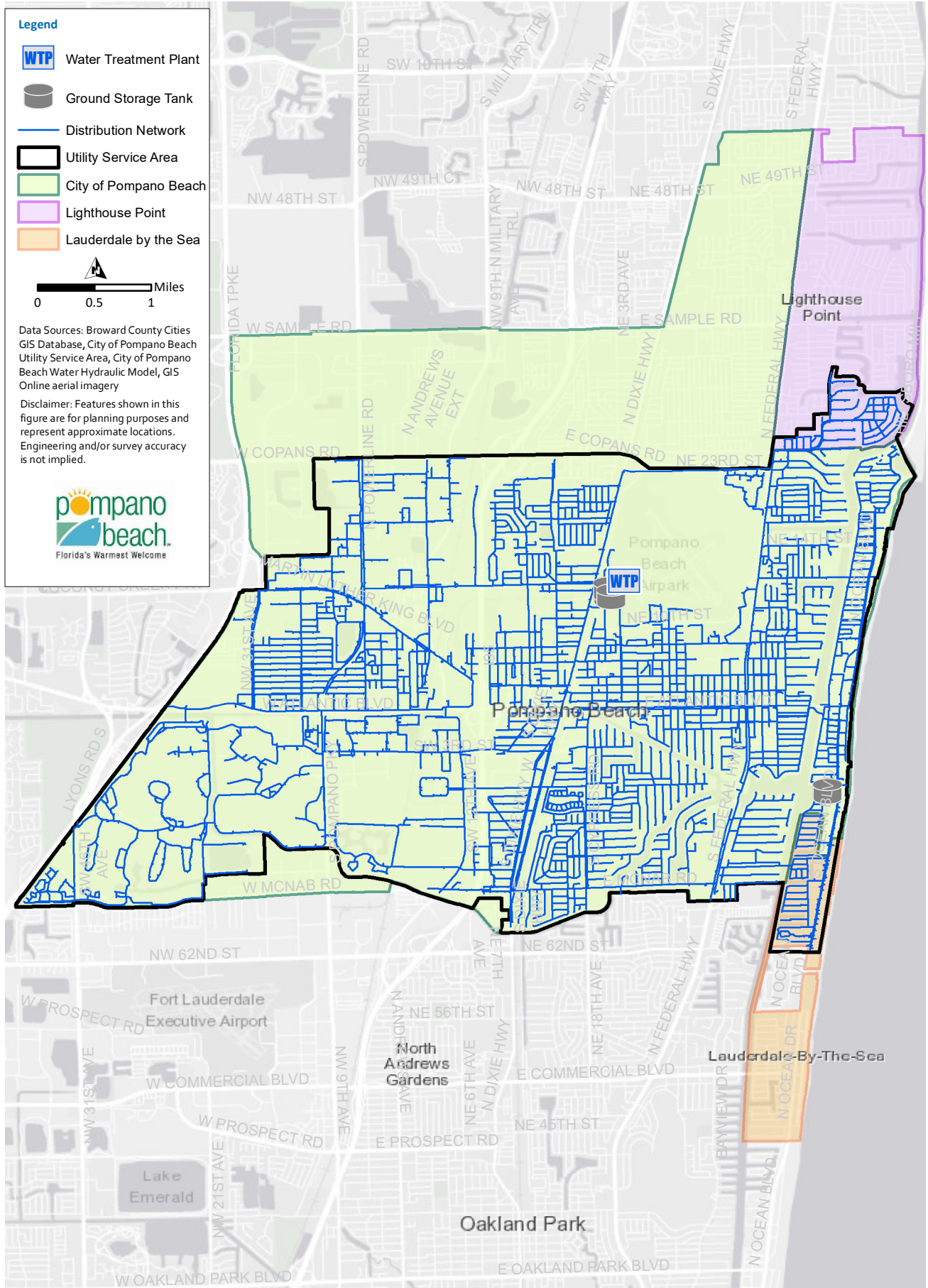
Two upper FAS test wells have been constructed near District 1 to develop the raw water treatment method appropriate for the FAS water quality. Use of the FAS has not yet been evaluated for District 2. These FAS wells have been constructed as possible alternative water supply wells in the future.

3.1.4 BCWWS Consumptive Use Permit Conditions

The BCWWS District 1 Wellfield operates under SFWMD WUP No. 06-00146-W, issued April 10, 2008, and which expires on April 10, 2028. The District 1 WUP allows a maximum annual withdrawal of 5,074 MG (13.90 mgd), with a maximum month allocation of 461 MG from the Biscayne Aquifer and Upper FAS. The modified annual allocation from the Biscayne Aquifer, as per Permit Application #130403-5, is 3,664 MG (10.0 mgd), with a maximum month allocation of 333 MG until the WUP expires. BCWWS District 2 Wellfield, located in eastern Pompano Beach, operates under SFWMD WUP No. 06-01634-W, issued March 13, 2008 with an expiration date of March 13, 2028. The WUP consists of allocation of raw groundwater from the Water Treatment Plant 2A wellfield and the North Regional Wellfield and allows a maximum annual withdrawal of 8,052 MG (22.06 mgd), with a maximum month allocation of 738 MG from the Biscayne Aquifer and Upper FAS. The annual Biscayne Aquifer allocation is 6,388 MG (17.50 mgd), with a maximum month allocation of 585 MG until the WUP expires.

3.2 Existing Water Treatment, Storage, and Pumping Facilities

The components of the City's water system include water treatment, finished water storage, pumping, and distribution network, as depicted in Figure 3.2.



3.2.1 City Water Treatment Facilities

The City's WTP is located north of NE 12th Street between NE 3rd Avenue and NE 5th Avenue in Pompano Beach. The treatment plant has two parallel treatment processes – conventional lime softening and nanofiltration membrane softening, with a total design capacity of 50 mgd. Figure 3.3 depicts the process flow diagram for the two treatment processes at the existing WTP.

3.2.1.1 Lime Softening Water Treatment Plant

The lime softening WTP receives raw water primarily from the Eastern Wellfield. It has a rated capacity of 40 mgd and is equipped with a single sludge thickener basin for lime sludge thickening and vacuum filters.

The raw water enters one of two solids contact softening clarifiers. The softened water is then sent to the multimedia gravity filters. The filtered water flows to the clearwells for disinfection using chlorine and ammonia. The finished water is either sent to the distribution system or to on-site storage tanks depending on water demand needs. The sludge produced is hauled offsite for disposal. The process uses a conventional lime softening method for high yield water production. This process has approximately a 97 percent efficiency.

3.2.1.2 Nanofiltration Membrane Process

The nanofiltration membrane process receives raw water from the Western Wellfield. It has a rated capacity of 10 mgd and consists of prefilters, membrane units, and degasifier units. It started operation in October 2002. The membrane process is heavily reliant on various chemical processes with a production yield of roughly 80 percent.

The nanofiltration membrane softening facility uses a semi-permeable barrier to separate high quality water (permeate) while rejecting the passage of dissolved and suspended solids (concentrate). This treatment process includes cartridge filtration, nanofiltration, and degasification. As of January 2020, chemical pretreatment with sulfuric acid and anti-scalant is no longer added to the process. The degasified membrane permeate is post-treated with fluoride, chlorine, and ammonia. Caustic is occasionally used if the pH drops low or if the lime plant is offline. The effluent is discharged to the clearwell where the effluent from the membrane is blended with the effluent from the lime softening process. The membrane concentrate (which is a non-hazardous, by-product of the nanofiltration membrane softening treatment process) is disposed of by means of a deep injection well located at the WTP. The concentrate is also permitted for emergency disposal to BC WWTP.

3.2.1.3 Treatment Common to Lime and Membrane Softening Processes

There is one blending clearwell/contact chamber where all disinfection occurs. The blending clearwell provides 4 Log contact time for both treatment plants. The plant facilities include one clearwell (the transfer clearwell and high service pump clearwell) and two 5.0 MG pre-stressed concrete ground storage tanks.

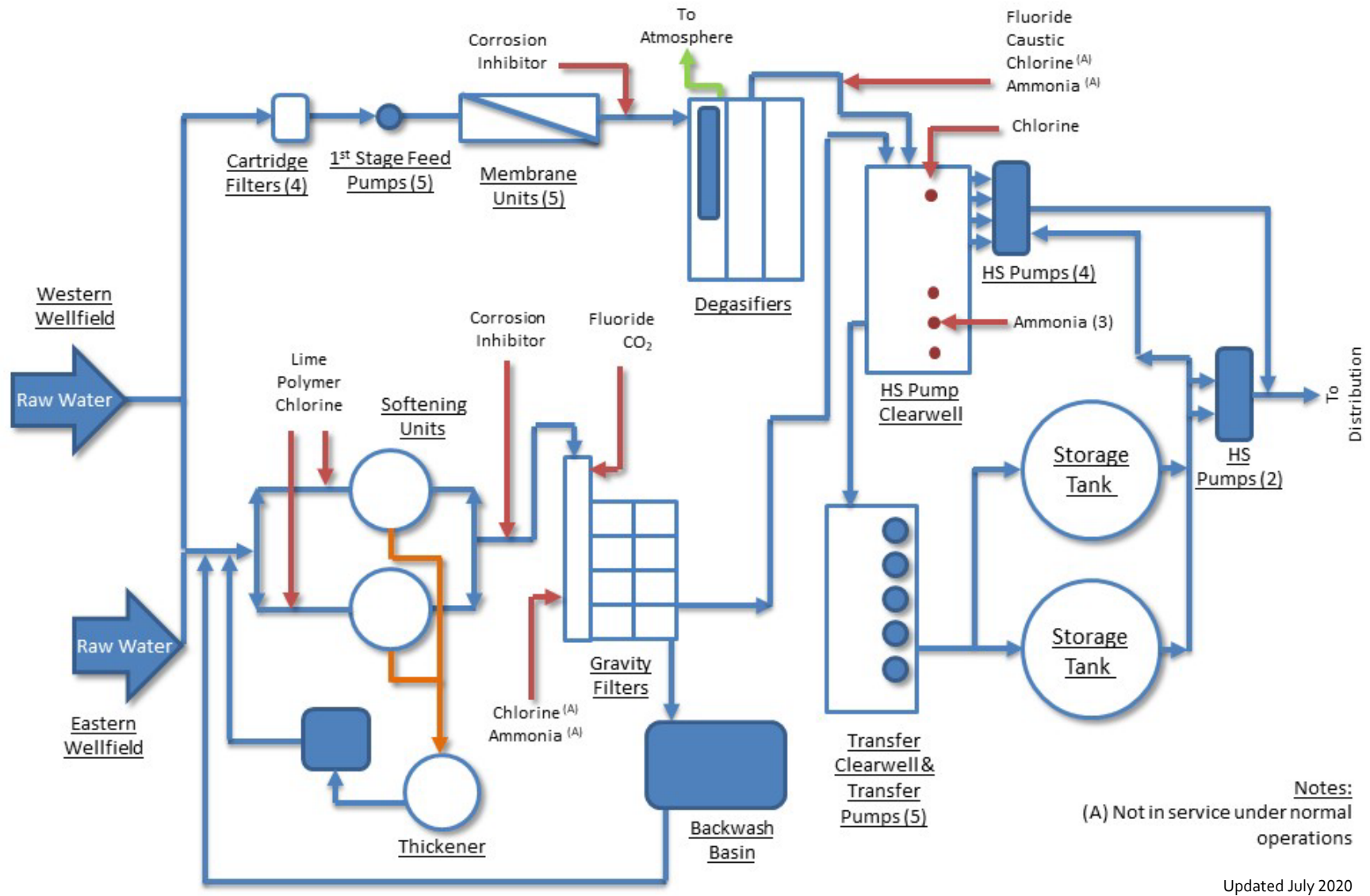


Figure 3.3 Overall WTP Process Flow Diagram

3.2.2 City Water Storage Facilities

There is one blending clearwell/contact chamber where all disinfection occurs. Disinfection occurs before and inside the clearwell after the filters. Water from the nanofiltration membrane WTP is blended with the conventional lime softening WTP into the clearwell. The water treatment plant has two ground water storage tanks designed to buffer the water production process from the water distribution system. In addition to the water treatment plant storage, the City maintains one offsite storage facility in the area by the beach. The offsite facility is comprised of a ground storage tank and high service pumps that assist with meeting peak hourly flow and fire flow requirements. Table 3.2 lists the City's storage capacity.

Table 3.2 Summary of City Finished Water Storage Facilities

Location	Description	Capacity (MG)
Water Treatment Plant	Clearwell	2.0
Water Treatment Plant	Ground Storage Tanks	10
Indian Mound Remote Facility	Ground Storage Tank	1.0
Total		13

Updated July 2020

3.2.3 City Pumping/Booster Stations

The City WTP is equipped with two high service pump (HSP) stations. One houses four HSPs, three of which are equipped with variable frequency drives (HSP 2, HSP 3, and HSP 4). The other pump station houses another two HSPs. There are a total of six HSPs at the City WTP, ranging in size from 150 to 600 horsepower (hp). The high service pumping system has a firm capacity of 37,500 gpm, or 54 mgd.

The City also has a remote storage and pumping facility located at Indian Mound in the southeast portion of the distribution system. The Indian Mound site has a pump station with two pumps. This remote facility is used to maintain level of service during high demands events and under fire flow conditions. Table 3.3 summarizes the pumping capabilities at the City WTP and Indian Mound site.

Table 3.3 Summary of High Service Pumps

HSPS	Quantity	Pump Size	Total Dynamic Head (ft)	Flow (gpm)
WTP	1	150 hp	160	2,500
	2	450 hp	140	7,500
	3	600 hp	150	10,000
	Total Installed Capacity at WTP			47,500
	Total Firm Capacity at WTP			37,500
Indian Mound	2	150	180	2,300
	Total Installed Capacity at Indian Mound			4,600
	Total Firm Capacity at Indian Mound			2,300
Overall Total Installed Capacity in the City				52,100

Updated July 2020

3.2.4 BCWWS Water Treatment Facilities

The BCWWS water utility system is divided into three service areas: Districts 1, 2, and 3, which collectively cover approximately 43 square miles. The three service areas are independently operated but are supported by BCWWS Operations as a single entity. The County has two WTPs, located in District 1 and District 2, with a combined permitted water treatment capacity of 46 mgd.

In District 1, raw water is treated at the District 1 WTP-1A located at 3701 N. State Road 7 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.

In District 2, the raw water is treated at the District 2 WTP located at 1390 N.E. 51st Street 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.

District 3 is divided into two geographically separate sub-districts: District 3A and 3BC. The County purchases bulk treated water primarily from the City of Hollywood interconnect and distributes through the County's distribution system. Sub-District 3A has interconnects with the City of Hollywood, as its primary water supply, and with the Cities of Fort Lauderdale and Dania Beach for emergency water supply. Sub-District 3BC has interconnects with the City of Hollywood, as its primary water supply, and the Cities of Pembroke Pines and Miramar for emergency water supply.

Table 3.4 summarizes BCWWS water system facilities and capacities.

Table 3.4 Summary of BCWWS Water System Facilities and Capabilities

Description	District 1	District 2	District 3	Total
Production Wells	9	7	0	16
Wellfield Design Capacity (mgd)	23.5	27.1	0	50.6
Wellfield Firm Capacity (mgd) ⁽¹⁾	19.6	21.3	0	40.9
Treatment Plants	1	1	0	2
Current Plant Capacity (mgd)	16	30	0	46
Service Area (square miles)	11.9	14.8	14.3	41.0

Notes:

(1) Firm Capacity refers to the available capacity with the largest well in each district out of service.

Source: 2020 Broward County 10-Year Water Supply Facilities Work Plan, April 2020.

Updated July 2020

3.2.5 BCWWS Finished Water Storage Facilities

Finished water storage facilities for BCWWS Districts 1 and 2 water services consist of on-site and remote storage facilities. The total storage capacities for BCWWS facilities is 15.6 MG. District 1 has an additional clearwell volume of 0.65 MG, which can be pumped directly into the distribution system if needed. The BCWWS Districts 1 and 2 storage facilities are summarized in Table 3.5.

Table 3.5 BCWWS Finished Water Storage Facilities

District	Description	Capacity (MG)
District 1	Two (2) On-site Storage Tank and three (3) Remote Storage Tanks	7.1
District 2	Three (3) On-site Storage Tanks	8.5
Total		15.6

Updated July 2020

3.3 Water Transmission/Distribution Facilities

3.3.1 City Water Distribution System

The City's potable water distribution system is comprised of approximately 275 miles of pipe varying in size from 2 to 36 inches in diameter, with the most common pipe size being 6-inch diameter. A few hundred feet of 42-inch and 12-inch pipes connect the ground storage tanks with the HSP stations. Figure 3.2 shows the City owned water transmission and distribution system.

Roughly 22 percent of the transmission and distribution network is polyvinyl chloride (PVC) pipe. A small percentage of the pipes in the system are asbestos cement, commonly known as Transite (after the brand that started manufacturing the pipes in North America in the 1920s). A large proportion of pipes have an assumed material make up of either cast iron, ductile or universal metal pipe material. Efforts as part of the City's 2020 Water Master Plan focused on records review, including but not limited to as-built construction drawings, GIS data, and first construction date by parcel (from tax rolls), to assign material and age to most system pipes, with the aim of assessing the system for the need of pipe replacement. The City obtained recommendations to perform localized condition assessment followed by potential replacement of pipes within a 5-year planning period, and for the 6 to 20-year planning horizon.

3.3.2 BCWWS Water Distribution System

BCWWS Districts 1 and 2 distribute water to their customers through a high pressure piping system comprised of approximately 248 and 253 miles of water distribution and transmission mains, respectively. BCWWS District 1 maintains water system interconnections with the City of Fort Lauderdale, City of Tamarac, the City of Plantation, and the City of Lauderdale to provide for emergency water supply. 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 for emergency supply.

3.4 Potable Water Level of Service Standards

The potable water level of service was calculated for the City of Pompano Beach as part of the 2020 City of Pompano Beach Water Master Plan Update (WMPU) and the 2020 BC WSWFP. The level of service standard for the utility service area served by the City is 161 gallons per capita per day (gpcd). For more detail on how the level of service was determined, refer to Section 5.5. The level of service for BCWWS Districts 1 and 2 are 96 and 112 gpcd, respectively. These values are summarized in Table 3.6.

Table 3.6 Broward County Districts 1 and 2 Standard Level of Service

Utility	Finished Water Level of Service (gpcd)
City of Pompano Beach	161
BCWWS District 1	96
BCWWS District 2	112

Updated July 2020

Chapter 4

RECLAIMED WATER SYSTEM

4.1 Reclaimed Water Treatment Facilities

There are two reuse water systems within the City limits, one operated by the City and the other operated by the BCWWS North Regional WWTP, located at 2401 North Powerline Road in Pompano Beach. Both facilities treat effluent from the BCWWS North Regional WWTP.

The City's reuse water treatment facility (RWTF) is located at 1799 North Federal Highway in Pompano Beach. The City's RWTF started production in 1989 with a capacity of 2.5 mgd. The system is nicknamed OASIS, which stands for "Our Alternative Supply Irrigation System". In 2002, the RWTF was expanded from 2.5 mgd to 7.5 mgd, and there is a future plan to expand the facility to an ultimate capacity of 12.5 mgd.

The City's RWTF currently obtains its influent from a 54-inch diameter ocean outfall line from the Broward County North Regional WWTP, which is located near the intersection of Powerline Road and Copans Road. The City currently has an agreement with BCWWS for withdrawal allocations from their 54-inch ocean outfall pipeline up to a maximum of 5 mgd annual average daily flow (AADF) with the option to increase the volume at the City's discretion. The facility operates under the Florida Department of Environmental Protection (FDEP) Permit No. FLA013581.

The secondary-treated effluent is filtered via deep bed sand filters and receives high level chlorine disinfection to meet public access reuse standards. The treated reuse water is stored in two ground storage tanks before being pumped to the City's adjacent golf course and other City customers and residential properties. Figure 4.1 shows the location of the facility, with the major facilities and pipelines denoted.

4.1.1 Reclaimed Treatment Facilities Expansion

The City's RWTF is permitted for future expansion to 12.5 mgd. There are two additional storage tanks anticipated – one in the BCWWS system and one in the City's system. Based on the 2020 Reuse Water System Master Plan Update Draft Report (currently under development), BCWWS plans to install a 1 MG storage tank in their system, which would be located north of the City's system. The City is planning to install an 8 MG tank in their system, potentially adjacent to the plant, based on recommendations in the City's 2014 Reuse Water Master Plan. The City is currently reevaluating locations for this reuse water storage tank in order to meet the projected conditions. Analysis done in the development of the 2019/2020 Reuse Water System Master Plan Update shows that the size of the tank to be installed in the City's system can be reduced to 6 MG as needed to support the build-out maximum day demands.

Figure 4.1 Location of City Reuse Facility and Re

4.2 Reclaimed Water Storage

The City has two reuse water on-site storage tanks with a total storage capacity of 5.5 MG. The City's current average daily demand for a recent 12-month period (August 2018 – July 2019) was calculated at approximately 2.7 mgd, for which the existing storage volume is sufficient. Although the City has significant reserve treatment capacity, the overall reuse demands are highly peaked at night when the vast majority of customers are irrigating.

4.3 Reclaimed Transmission and Distribution Facilities

The existing reuse water distribution system consists of high pressure pipelines for the City Municipal Golf Course and low pressure pipelines for the other portions of the reuse distribution system. The City's reuse distribution system is comprised of approximately 32 miles of pipe ranging from 2-inch to 30-inch in diameter. The active users are comprised of a variety of land uses including residential, commercial, institutional, City medians, parks, etc. The City plans to expand the reuse water distribution system to other areas as shown on Figure 4.2.

The 2019/2020 Reuse Water System Master Plan Update Draft Report states that there are 1,238 reuse connections as of 2019, of which 995 are residential and 243 are multi-family and commercial. This is a substantial increase over the last five years, as the number of active user connections was reported as 820 active connections in the 2014 Master Plan. To date, the City's largest reuse use customers are the City's Municipal Golf Course, Pompano Community Park, landscaping along Federal Highway and Copans Road, City medians, and residential areas east of Dixie Highway.

4.3.1 Reclaimed Use and Restrictions

The City regulates reuse water through the Code of Ordinances, Chapter 54, "Reuse Water and Cross-Connection Control." Chapter 54.04 of the City Code of Ordinances requires connection to the reuse system for public, commercial, office, industrial, warehousing, or multi-family use, when reclaimed water becomes available in that area. Newly constructed single-family developments are required to construct reclaimed water distribution mains and are required to connect to the system when reclaimed water service becomes available. Connection to the system is currently voluntary for single family properties and mandatory for multi-family and commercial within the City; however, a monthly availability charge is assessed where reclaimed water service becomes available. Connection is mandatory for all types of properties within the Lighthouse Point serviced area. Usage of reuse water is restricted between the hours of 10 a.m. to 4 p.m. according to the Broward County Code of Ordinances, Chapter 36 "Water Resources and Management", Article II "Water Emergencies."

4.3.2 Reuse Agreements

The City has a large user agreement with the City of Lighthouse Point to supply the southern portion with reuse water. The reuse agreement between the City of Lighthouse Point and the City is included in Appendix D. The City has actively expanded the system in this area over the last few years and is scheduled to complete the expansion by 2022. The City also provides reuse water to the City of Lighthouse Point for irrigation of medians along Federal Highway.

The City also has an agreement with BCWWS to provide reuse water through a master meter to customers of Pompano Highlands, which is located in BCWWS service area. According to the Agreement, the City shall furnish reclaimed water services to BCWWS limited to an average rate of 1 mgd. This will be provided through the 20-inch reuse water line leaving the City's reuse water treatment facility and flowing northwest to the BCWWS 8-inch meter location. The reuse agreement between the City and BCWWS is included in Appendix E.

4.3.3 Reclaimed Transmission and Distribution Network Expansion

The City plans to install additional piping within the network to account for anticipated new customers and increased demands. Table 4.1 summarizes the anticipated additional piping to be installed throughout the planning years.

Table 4.1 Summary of Additional Piping to be added to the Network by Planning Year

Diameter	2025 (LF)	2030 (LF)	2040 (LF)	Build-out (LF)
4	14,054	12,969	20,106	36,019
6	1,180	-	2,191	695
8	-	315	4,309	1,963
10	-	347	905	3,534
12	-	7,233	-	11,311
16	3,409	-	3,524	5,865
24	-	-	-	1,504
Total	18,642	20,864	31,035	60,892

Updated July 2020

4.4 BCWWS District 2 Reuse Water Facilities

The BCWWS North Regional WWTP has a permitted treatment capacity of 95 mgd and provides wastewater treatment to several large utilities in the area. The plant includes water reclamation facilities to produce up to 10 mgd of highly treated water for industrial and landscape irrigation purposes. Currently, reuse water is used for irrigation, industrial process water at the North Resource Recovery Plant (a solid waste incinerator), and at the North Regional WWTP complex.

In 2008, the Florida Legislature enacted an OOL to eliminate the use of ocean outfalls as the primary means for disposal of treated wastewater. The law required wastewater utilities with an ocean outfall to increase reuse treatment capacity to at least 60 percent of the historic outfall flows by the year 2025. The objectives of this statute are to reduce nutrient loadings to the environment and to achieve the more efficient use of water for water supply needs. Because the Broward County North Regional WWTP has an ocean outfall, BCWWS is required to implement plans to meet this requirement. BCWWS 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.

The total amount of reuse required for the North Regional WWTP is 21.45 mgd, of which the County has developed an Interlocal Agreement with Palm Beach County to beneficially reuse up to 15 mgd of reclaimed water. BCWWS is proceeding with extending a 42-inch diameter reclaimed pipeline to serve beneficial reuse users in both Broward and Palm Beach Counties. 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.

A 16 mgd reclaimed water filter capacity expansion with high-level disinfection and pumping facilities commenced in 2019 and is expected to be completed within the next five years. Most of the proposed 16 mgd will be transmitted to and used in Palm Beach County.

The County has initiated several reclaimed pipeline projects over the past few years. BCWWS has installed reclaimed water pipelines in the Pompano Highlands neighborhood 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 RWTF. The City of Coconut Creek entered into an interlocal agreement with BCWWS in April 2016 to initially receive up to 1.4 mgd of reclaimed water with a long-term expectation of 3 mgd. Two connections were established to serve Coconut Creek. The County has also enacted Ordinance No. 2017-05, which calls for mandatory reuse under Chapter 34, Article XI, Reclaimed Water, in the Broward County Code of Ordinances.

Chapter 5

DATA AND ANALYSIS

5.1 Planning Time Frames

This chapter evaluates the historical and future population projections for the City's Water Utility Service Area (utility service area). Projected raw and finished water demands are presented for the existing condition, a 5-year planning period (2025), a 10-year planning period (2030), and a 20-year planning period (2040). This chapter also includes the City's current water conservation and reuse practices.

5.2 Historical Population

The population projections in the 2014 WSFWP for the utility service area were analyzed for years 2010 to 2018. This data was compared against the City's historical populations recorded for the years 2010 and 2017 by the City's Planning Department. The populations projected in the 2014 WSFWP showed a much slower rate of growth within the utility service area versus the overall City's historical population growth. Due to the difference in growth rates, historical billing data for the utility service area was analyzed to confirm a growth trend. The results from the billing data showed a growth rate similar to the City's historical population growth. Per direction of the City of Pompano Beach Development Services Department, a base population of 109,441 was used for the 2017 City population. The City's 2015 population was adjusted by interpolating between the City's historical populations recorded for 2010 and 2017.

5.3 Population Projections

The Broward County and Municipal Population Forecast and Allocation Model (PFAM) 2017 Report, developed by the Broward County Planning and Development Management Division; the Pompano Beach Population Projections by Census Tract 2018 Report, prepared by the Bureau of Economic and Business Research (BEBR) as part of the University of Florida; and the 2014 Water Supply Facilities Work Plan for the City of Pompano Beach, were used by the City and Carollo Engineers, Inc. as reference materials in developing the current population projections for the City's water service area. This methodology and the resulting population projections were also used in the City's 2020 Water Master Plan Update.

The Broward County Planning and Development Management Division is the governmental agency with the responsibility of maintaining the population forecasting model. The PFAM is updated regularly using projections from the University of Florida BEBR. The Broward County provides population information based on TAZs. The City's tract-level projections are based on BEBR's standard Small-Area Population Forecasting Model. Both the PFAM 2017 Report and the City's Population Projections by Census Tract 2018 Report use the information provided by BEBR but use different methodologies to determine population projections. The PFAM 2017 Report and City's Population Projections by Census Tract 2018 Report were used to analyze and forecast the City population projections for 2015 to 2040.

5.3.1 Discrepancies between BEBR and City's Projections

The population projections from the PFAM 2017 Report, City's Population Projections by Census Tract 2018 Report, and the 2014 Water Supply Facilities Work Plan for the City were analyzed and compared against each other. The PFAM and Census Tract reports were based on projections using BEBR but used different forecasting methods to project annual populations. The population projections from the 2014 WSFWP were based on various, non-uniform sources across the projection horizon. The results for the aforementioned reports showed varying growth trends. The 2017 City population used as the base population was 109,441 as per the Census Tract 2018 Report. This 2017 City base population of 109,441 is roughly 7.7 percent higher than the 2017 City base population of 101,530 calculated in the 2014 WSFWP for the City. The 2020 projections in the Census Tract 2018 Report were about 6.0 percent higher than the projections in the PFAM 2017 Report and about 13 percent higher than the projections in the 2014 WSFWP. The future population projections for 2025 through 2040 determined in the PFAM 2017 Report were higher than both the Census Tract 2018 Report and the 2014 WSFWP. Table 5.1 summarizes the forecasted populations per report.

Table 5.1 Summary of Population Projections from Past Reports

Report	2010	2015	2017	2018	2020	2025	2030	2035	2040
PFAM 2017 - Entire City ⁽¹⁾	100,089	105,720	N/A	N/A	109,020	124,466	131,192	134,912	137,449
Census Tract 2018 - Entire City ⁽²⁾	N/A	N/A	109,441	N/A	115,472	123,077	128,976	133,360	135,553
2014 WSFWP - Entire City ⁽³⁾	99,845	100,926	101,530	101,833	102,437	104,816	N/A	N/A	N/A
2014 WSFWP - City Water Service Area Only ⁽⁴⁾	79,917	81,841	82,611	82,995	83,765	85,689	N/A	N/A	N/A

Notes:

- (1) Broward County and Municipal Population Forecast and Allocation Model (PFAM) 2017 Report – City Population.
- (2) Pompano Beach Population Projections by Census Tract 2018 Report – City Population.
- (3) 2014 Water Supply Facilities Work Plan for the City of Pompano Beach – City Population.
- (4) 2014 Water Supply Facilities Work Plan for the City of Pompano Beach – City Water Service Area Population.

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5.3.2 City Population

Revised population projections for the City (governmental territory) were calculated using the City boundary and Broward County TAZ population projections within the boundary. Calculations were done for the planning periods through 2040. Population projections for 2020 and 2025 were linearly interpolated between years 2017 and 2030 as per City's request. Table 5.2 shows the revised historical and projected population for the City that were calculated as part of this 2020 WSFWP Update.

Table 5.2 City Population Projections

Location	Historical Population		Projected Population				
	2010	2015	2020	2025	2030	2035	2040
City of Pompano Beach	95,822	105,550	111,414	114,701	117,989	121,190	123,480

Updated July 2020

5.3.3 City Water Service Area Population

Population projections for the City's utility service area (which differs from the governmental territory) were calculated using the service area boundary, the population within this boundary based on TAZ, and adjustments per the City Development Services Department's request. The City's jurisdictional boundary is different from the utility service area, as shown in Figure 1.3; therefore, the population projections provided were revised to include the population solely within the utility service area. Such revision included the calculation of a water service area to City area ratio of 85 percent that was derived using geographic information systems (GIS). This was performed by calculating the area-based percentage of each TAZ polygon located within the service area and multiplying that percentage by the population in each TAZ. The remainder of the City's population not included in the City's utility service area is served by BCWWS as part of the District 1 and District 2 service area. More information on the City's population served by BCWWS is located in Section B – BCWWS of the Data and Analysis chapter in the 2020 BC WSWFP in Appendix A.

The area comprised by each TAZ is shown in Figure 5.1. Figure 5.2 shows the projected growth distribution trajectory by TAZ. This was completed for planning years 2020, 2025, 2030, 2035, and 2040. The populations for years 2020 to 2030 were linearly interpolated as per City's request.

Table 5.3 shows the historical and projected permanent population used to develop the water planning framework. Appendix F shows the historical and projected annual population for the City and utility service area for years 2010 through 2040.

Table 5.3 Water Service Area Population Projections Summary

Areas Served	Historical Population		Projected Population				
	2010	2015	2020	2025	2030	2035	2040
City of Pompano Beach	78,073	86,144	91,210	94,589	97,941	100,926	103,193
Lighthouse Point	1,305	1,301	1,296	1,292	1,291	1,286	1,280
Lauderdale-by-the-Sea	2,512	2,759	3,006	2,2936	2,890	2,848	2,824
Total Service Area	81,890	90,204	95,512	98,817	102,122	105,060	107,300

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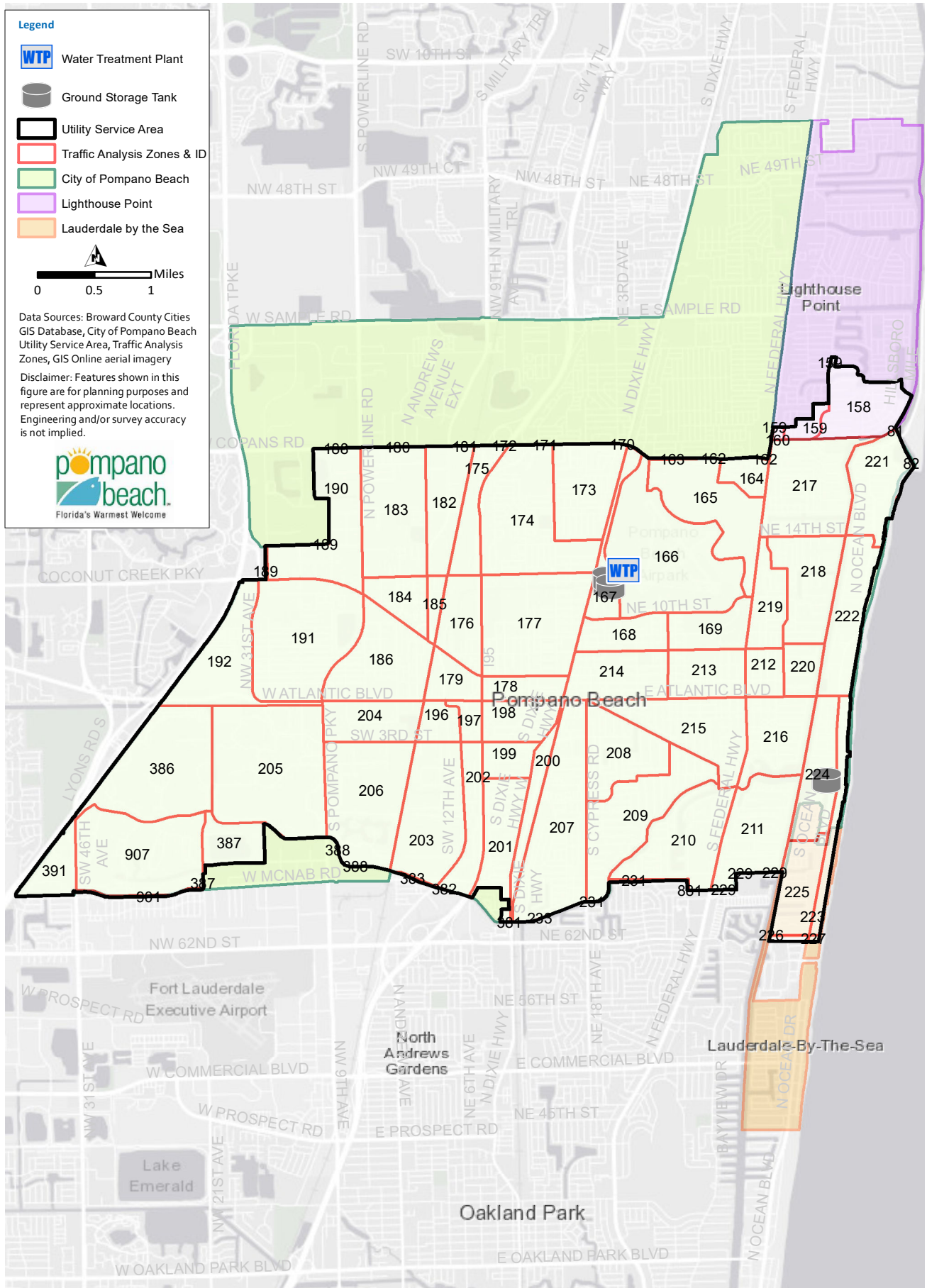
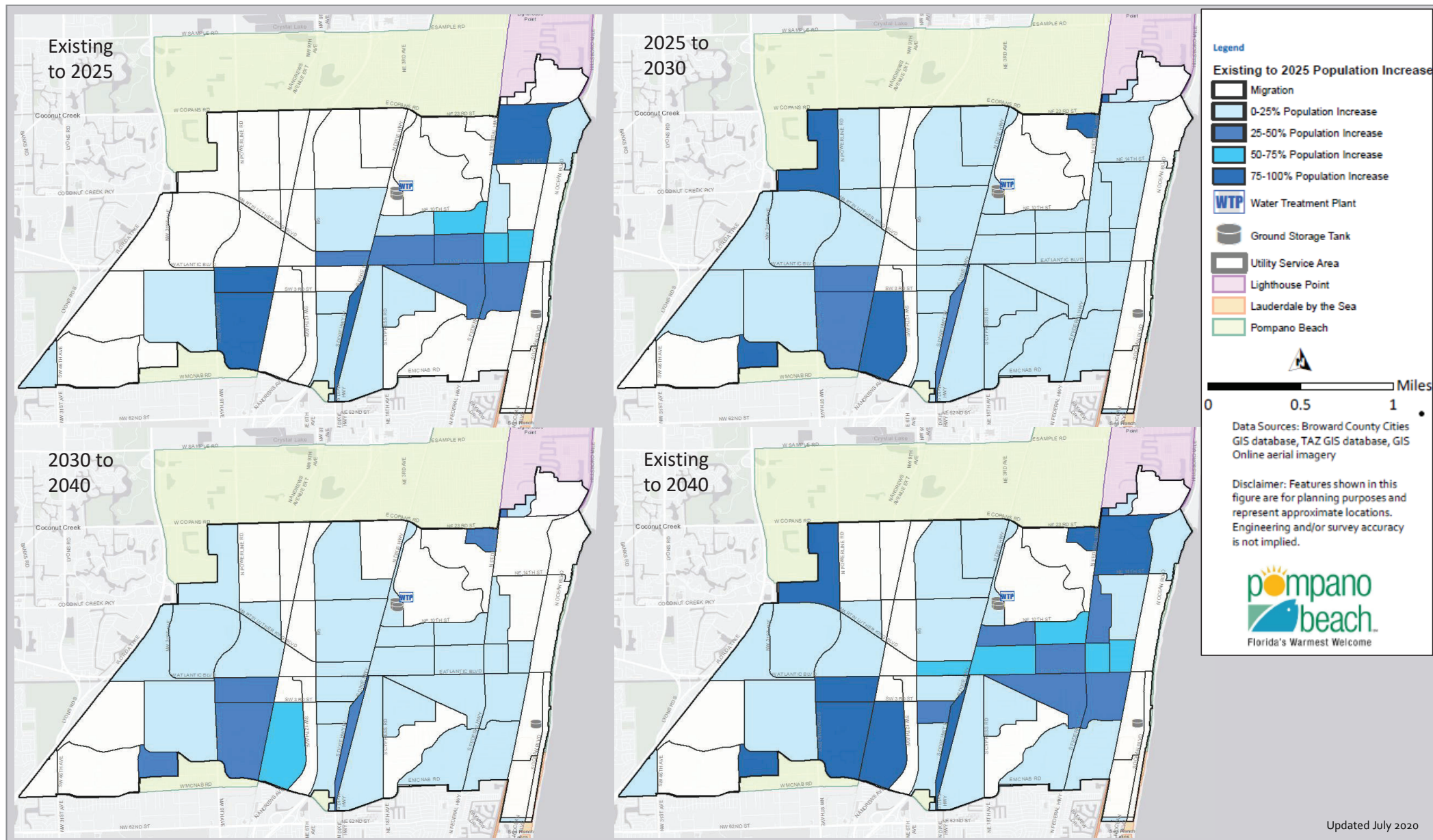


Figure 5.1 Water Utility Service Area and Related TAZs



Updated July 2020

Figure 5.2 Population Growth Distribution

Several considerations and assumptions for Table 5.3 include:

- The growth trend of the historical number of accounts in the billing database was used as the basis for adjusting the historical population (before 2015) in the City and water service area.
- A utility service area to City ratio of 85 percent was applied to calculate the City population for 2010 through 2015.
- Actual population numbers provided by the City for 2017 were used per City's direction as a basis for projecting the 2020 population.
- Population per TAZ within the water service area was used for 2030 through 2040. Populations for 2020 and 2025 were later adjusted using interpolation to account for the actual calculated growth between 2017 and 2030.
- Growth and redistribution of population due to redevelopment were accounted for in this report for each planning year.
- The large users of the City are a mix of commercial, institutional, and industrial establishments. As such, their water demands are not considered population-dependent. Demands for those users are treated separately, and therefore are additional to the demands that result from the population projections shown in Table 5.3.
- The Isles Casino Pompano Park expansion is anticipated to include 4,100 residential units, a casino, theatre, large office complex, and other commercial businesses totaling 1.5 mgd of additional water that must be provided by 2030. The casino expansion is considered to be a large user and allocated demands are treated separately. Therefore, this is additional to the demands that result from the population projections shown in Table 5.3.

5.4 Historical Water Use

The following sections summarize and provide analysis of the City's historical water usage data. Historical per capita demand factors were calculated and presented to the City. Due to a replacement of finished water meters at the WTP in 2018, only recent water production data and resulting per capita calculation was used for purposes of calculating future water demand projections.

Historical WTP monthly operating reports (MORs) from the WTP were reviewed and analyzed to determine the water production trends from 2008 through 2018. Based on an analysis of the data, the City produced an annual average of approximately 15.2 mgd of potable water in 2018. Figure 5.3 shows the historical trend for finished water produced. Confidence in records before 2018 is low due to suspected meter inaccuracies, which was addressed in 2018.

From historical data, the annual average, average month, maximum month, maximum day, and peak hour peaking factors were calculated. Peak hour factors were selected from data collected by supervisory control and data acquisition (SCADA) after the WTP finished water meter replacement in 2018.

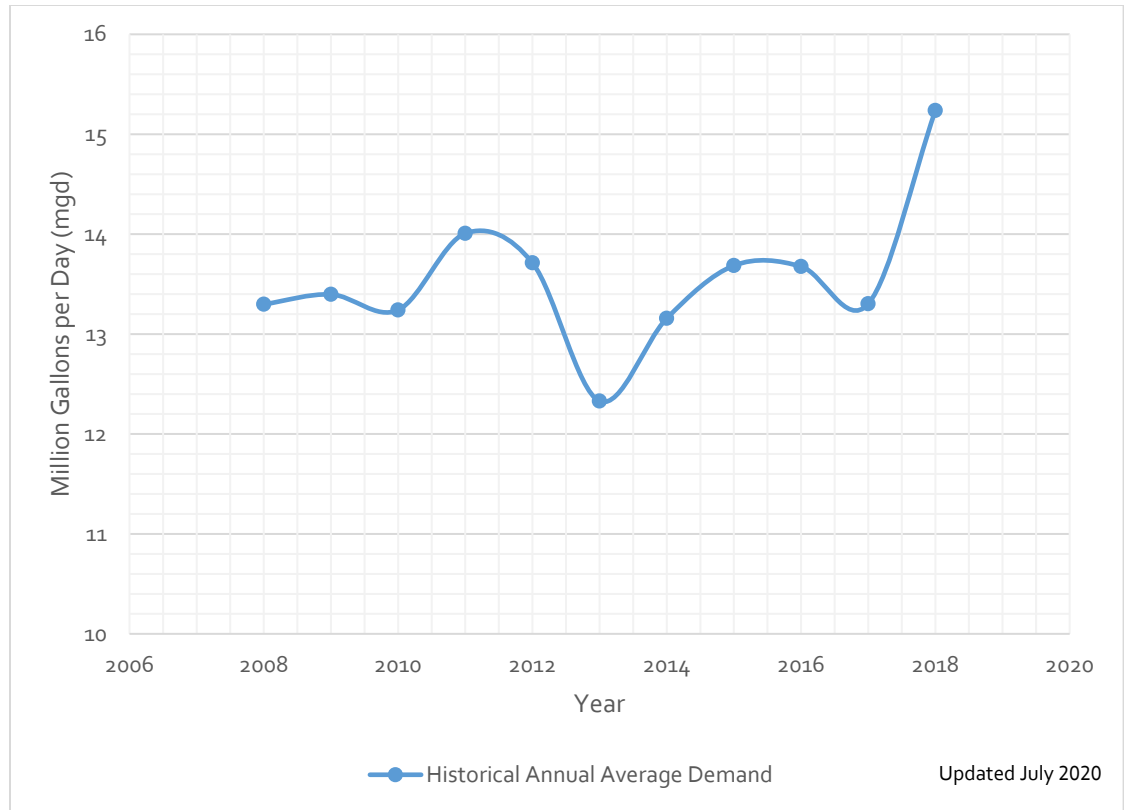


Figure 5.3 Annual Average Finished Water Demand 2008-2018

5.4.1 Large User Demands

The City currently serves water to nine customers that are considered large users. Water demand from these nine users is nearly constant in time according to billing data and is independent of population. Table 5.4 lists these large users and their demands throughout the planning period.

Table 5.4 Large User Demands

User	Demand (gpm)			
	2020	2025	2030	2040
Florida Textile Service, LLC	123.3	123.3	123.3	123.3
Broward County Detention Center	110.9	110.9	110.9	110.9
Pompano Business Park Owners Association	76.1	76.1	76.1	76.1
Broward Sheriff's Office	56.5	56.5	56.5	56.5
Palm Aire Resort Association	32.9	32.9	32.9	32.9
Universal Brand	16.4	16.4	16.4	16.4
Associated Grocers of Florida	14.6	14.6	14.6	14.6
Pompano Marketplace Owners	13.5	13.5	13.5	13.5
PPI, Inc. (Isles Casino and Racing at Pompano Park) ⁽¹⁾	45.3	0.0	0.0	0.0
PPI, Inc. Expansion (Isles Casino and Racing at Pompano Park) ⁽²⁾	0.0	328.8	1,052	1,052

User	Demand (gpm)			
	2020	2025	2030	2040
Total (gpm)	489.5	773.0	1,496	1,496
Total (mgd)	0.709	1.110	2.154	2.154

Notes:

(1) Demand to be potentially replaced by redevelopment by 2025.

(2) Isles Casino Expansion by 2025.

Updated July 2020

Served areas of Lauderdale-by-the-Sea and Lighthouse Point are not considered large users for planning framework purposes given that they are directly connected to the distribution mains and are not served by an interconnect. Also, it is assumed that demand growth in these two areas will always be population-dependent, and therefore have a share in the per capita demand factor.

5.4.1.1 Isles Casino Pompano Park Expansion

The City plans to expand the Isles Casino Pompano Park development by up to 1.51 mgd by 2030. The expansion includes removal of the existing racetrack and therefore its associated demand, which currently represents a large user (PPI, Inc. in Table 5.4 above). The City stated that construction for the redevelopment is to commence in 2021.

As stated under the population projection assumptions in the previous section, the Isles Casino Pompano Park redevelopment is treated as a large user for the purpose of projecting future demands. Projected demands have been updated to account for an additional 1.51 mgd needed for the Isles Casino Expansion/Development, anticipated to be completed by 2030. The development will be located in TAZ 206 and will include 4,100 residential units, a large office complex, a theatre, casino, and other commercial businesses. It is assumed that the commercial areas will be completed by 2025, along with approximately 50 percent of the commercial recreation area, totaling 111 gpm. The race track and demand of 45.0 gpm were removed and replaced with the 111 gpm. By 2030, the remainder of the commercial recreational complex is assumed to be completed, along with the office and residential units, for a total demand of 1.51 mgd. The large user demand for the Isles Casino Pompano Park Expansion throughout the planning years is included in Table 5.4.

The map in Figure 5.4 illustrates the various large user entities within the service area and the locations of associated meters.

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Figure 5.4 Location:

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5.5 Level of Service, Per Capita Water Demand Factor

The historical water use described in Section 5.4 and graphed in Figure 5.3, along with the adjusted historical population shown in Table 5.3, were used to determine a range of historical per capita finished water demand factors. This range was composed of a value for each of the years between 2010 and 2018. The values varied from 142 to 168 gallons per capita per day (gpcd), with an average of 154 gpcd. When discounting the large users (not population-dependent), the factor varied from 134 to 159 gpcd. Calculations for the per capita finished water demand factor, also referred to as the level of service, are included in Table 5.5.

A per capita demand factor of 161 gpcd was selected by the City for planning purposes, which corresponds to the 2018 value, including large users. The City prefers the per capita demand factor of 161 gpcd be used over the historical average because the WTP meters were replaced throughout 2018, and therefore there is a higher level of confidence on this number in comparison with past values.

Use of this level of service value for the calculation of future population-based demand projections is also considered appropriate because a low level of uncertainty exists in both the metered water use for 2018 and the population in 2018 (which was an actual value provided by the Planning and Zoning Department).

Finished water demand projections were calculated by multiplying the population projections listed in Table 5.3 by the 161 gpcd factor, plus the addition of large user demands. Finished water demand projections are presented in Table 5.6.

Table 5.5 Per Capita Finished Water Demand Factor Selection

Parameter	Year								
	2010	2011	2012	2013	2014	2015	2016	2017	2018
Population Served ⁽¹⁾	81,890	83,553	85,215	86,878	88,541	90,204	91,866	93,529	93,973
Avg. Daily Finished Water (mgd)	13.24	14.01	13.71	12.33	13.22	13.69	13.68	13.30	15.24
Avg. to Supplement Reclaimed Tank (mgd) ⁽²⁾	-	-	-	-	-	-	-	-	0.15
Avg. Daily Demand Excluding Supplement to Reclaimed Tank (mgd)	13.24	14.01	13.71	12.33	13.22	13.69	13.68	13.30	15.09
Per Capita Demand Factor (gpcd)	162	168	161	142	149	152	149	142	161
Average Historic gpcd	154								
Per Capita Demand Factor Discounting Large Users (gpcd)	153	159	153	134	141	144	141	135	153
Average gpcd Discounting Large Users	146								
Average gpcd, Selected for Projections⁽³⁾	161								

Notes:

- (1) Population calculated using a City of Pompano Beach to Service Area ratio of 0.85 or 85%. Service area includes area within Pompano Beach and portions of Lighthouse Point and Lauderdale-by-the-Sea.
- (2) Amount needed to supplement the reclaimed water tank.
- (3) Per capita from 2018 used as requested by the City.

Updated July 2020

Table 5.6 Finished Water Demand Projections

Year	Projected Service Area Population	Annual Average ⁽¹⁾	Annual Average with Large Users ⁽²⁾	Max Month	Max Day	Peak Hour ⁽³⁾
		Peaking Factors				
		1	-	1.15	1.41	1.97
		Projected Water Demands (mgd)				
2017	93,529	12.6	13.3	14.3 ⁽⁴⁾	16.8 ⁽⁴⁾	26.3
2018	93,973	14.4	15.2	16.2 ⁽⁴⁾	20.1 ⁽⁴⁾	30.1
2020	95,512	15.4	16.1	18.5	22.7	31.7
2025	98,817	15.9	17.0	19.6	24.0	33.5
2030	102,122	16.4	18.6	21.4	26.2	36.6
2035	105,060	16.9	19.1	21.9	26.9	37.6
2040	107,300	17.3	19.4	22.3	27.4	38.3

Notes:

- (1) Per capita demand factor of 161 gallons per person per day (gpcd) applied; 2017 & 2018 from historic data.
 (2) Includes "Large Users" demands as summarized in Table 3.3.
 (3) Calculated using hourly SCADA data multiplied by maximum day peaking factor.
 (4) Based on historical MOR data for specified year.

Updated July 2020

5.6 Finished Water Demand Projections

Annual average, maximum month, and maximum day finished water demand projections were developed for 2020, 2025, 2030, and 2040, which correspond to existing conditions, 5-year, 10-year, and 20-year planning periods. The following sections identify demand projection results.

The finished water demand projections for the City's population served by BCWWS have been calculated and may be found in Section D – Water Supply Provided by Local Governments, in the Data and Analysis chapter of the 2020 BC WSWFP in Appendix A. BCWWS has sufficient water supply to provide to their customers and the City will not be required to service District 1 and District 2.

5.6.1 Average Annual Demand Projections

Average annual demand projections determine the future demand on an annual average basis. The average annual projected demand is calculated using the population projections and a level of service standard, a per capita demand factor, of 161 gpcd, plus large user demands. Based on the analysis, the average daily water demand for 2018 was 15.2 mgd and can be expected to increase to 18.0 mgd by 2040 if continuing service to the current customer base only. When accounting for the Isles Casino expansion project, the average annual daily demand is expected to be 19.43 mgd. Projected average annual demand projections are provided in Table 5.6.

5.6.2 Maximum Month Demand Projections

Maximum month demand is defined as the average demand during the highest demand month throughout a year. Finished water demand from the past 10 years was used to determine the monthly peaking factors. A maximum month peaking factor of 1.15 was applied to the average annual demand projections to determine the maximum month water demands. Based on the analysis, the maximum month demand for 2018 was 16.2 mgd, and can be expected to increase to 22.3 mgd by 2040, with the addition of the Isles Casino expansion. Resulting maximum month demand projections are listed in Table 5.6.

5.6.3 Maximum Day Demand Projections

Maximum day demands are used for sizing treatment facilities, fire flow availability determination, and evaluation of storage capacity. Historical daily finished water production data from 2008 to 2018 was evaluated to determine the overall maximum day peaking factor. A maximum day peaking factor of 1.41 was applied to the average annual demand projections to determine the maximum day water demands. Based on the analysis, the maximum day demand for 2018 was 20.1 mgd and can be expected to increase to 27.4 mgd by 2040 based on the selected peaking factor. The resulting maximum day demand projections are listed in Table 5.6.

5.6.4 Peak Hour Demand Projections

Peak hour demand projections are used for sizing the distribution pump stations and storage facilities. The peak hour demand factor is calculated by applying the maximum diurnal peaking factor of 1.40 to the maximum day peaking factor of 1.41, for a total peak hour factor of 1.97. This demand factor was applied to the annual average demand projections to determine peak hour demands. Based on the analysis, the peak hour demand for 2018 was 30.1 mgd, using the

selected peaking factor, and can be expected to increase to 38.3 mgd in 2040. Table 5.6 includes a summary of peak hour demand projections.

5.6.5 Summary of Finished Water Demand Projections

Table 5.6 summarizes the finished water demand projections that the City plans to use for the upcoming 20-year planning horizon. These water demand projections are also used in the City's 2020 WMPU.

Figure 5.5 is a graphical representation of the historical water production and projected water demands (in Table 5.6). As shown, there is a sharp actual increase between 2017 and 2018. As previously noted, the meters at the WTP were replaced in 2018, which is most likely the reason for the notable spike in water production records. The projected water demands are anticipated to increase linearly and at a steady incremental growth throughout the planning years. The annual average demand is projected to increase roughly 2.0 mgd within the 20-year planning period, at an approximately constant rate.

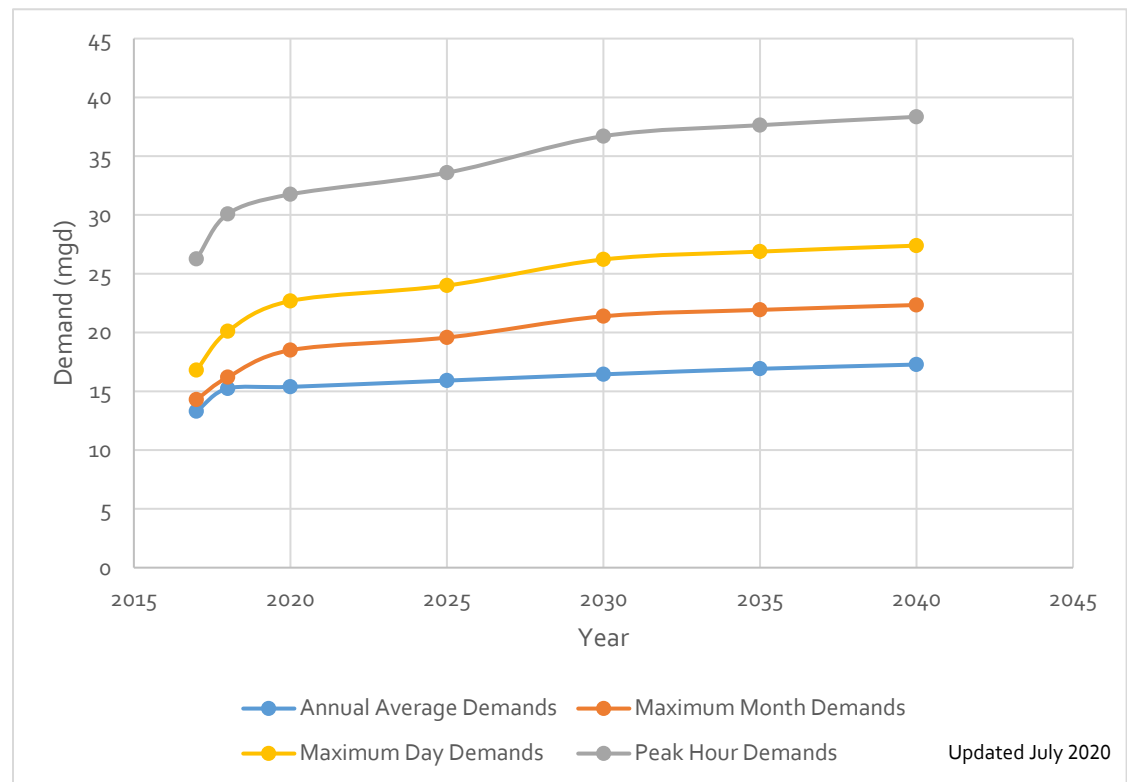


Figure 5.5 Historical WTP Water Production and Projected Water Demands

5.7 Raw Water Demand Projections

Annual raw and finished water data from historical WTP MOR data were collected for 2008 to 2018. Raw to finished water ratios were determined annually for the 10-year period. An average ratio of raw to finished water was calculated to be 1.07 and used for raw water demand projections through 2040. The projected annual average raw water demands are expected to increase from 16.3 mgd in 2018 to 20.8 mgd in 2040. The projected maximum day raw water demands are expected to increase from 21.5 mgd in 2018 to 29.3 mgd in 2040.

Currently, the capacity of the City WTP is at 30 mgd with 4-log removal. The WTP should be able to treat the 2040 projected raw water demands under both annual average and maximum day conditions.

Table 5.7 summarizes the raw water demand projections under annual average and maximum day conditions.

Table 5.7 Raw Water Demand Projections

Year	Annual Average Demand	Maximum Day Demand
2018	16.3	21.5
2020	17.2	24.3
2025	18.2	25.7
2030	19.9	28.0
2040	20.8	29.3

Updated July 2020

5.8 Reclaimed Water Use Demands Projections

The City's reuse water demand projections are being updated as part of the 2020 Reuse Water System Master Plan Update. The update delineates reuse zones based on geographical significance. The existing and future reuse zone notation are shown in Figure 4.2. The projections were based on three distinct types of users, including: (1) inactive accounts; (2) proposed residential customers (single family residential); and (3) future large users (multi-family residential, commercial, etc.). To estimate the future demands, the estimated number of users for each service type within each reuse zone was determined. The projected reuse water demand was calculated for each area based on the City's reuse water level of service standard, shown in Table 5.8 below.

Table 5.8 Summary of City of Pompano Beach Reuse Water Standard Level of Service

Criteria	2019 Level of Service ⁽¹⁾
Single Family Use	412 gpd
Multi-Family Use	85 gpd/unit
Parks	0.07 gpd/square foot
Commercial	0.01 gpd/square foot

Notes:

(1) LOS values adjusted by 6.9% water loss factor to account for non-revenue water.

Updated July 2020

Table 5.9 presents the projected average day reuse demands for fiscal year (FY) 2019, and approximately 2025, 2030, 2040, and build-out planning periods based on the Draft 2020 Reuse Water Master Plan.

Table 5.9 Projected Average Day Reuse Demands for the 20-year Planning Period

Reuse Zone (Figure 4.2)	FY 2019 (mgd)	2025 (mgd)	2030 (mgd)	2040 (mgd)	Build-Out (mgd)
1&2	0.82	0.94	0.98	1.04	1.57
3	0.25	0.25	0.25	0.25	0.25
4	0.13	0.14	0.22	0.52	0.80
5	0.04	0.04	0.04	0.04	0.60
5E	0.02	0.30	0.30	0.30	0.30
5E-1	-	1.00	1.00	1.00	1.00
6	-	-	-	-	0.70
7	-	-	-	-	0.59
9	-	-	-	-	0.93
Golf Course	1.31	1.31	1.31	1.31	1.31
Total excluding Golf Course	1.26	2.67	2.78	3.15	6.73
Total with Golf Course	2.58	3.98	4.10	4.46	8.04

Notes:

Source: Draft 2020 Reuse Water Master Plan, Tetra Tech, currently under development.

Updated July 2020

5.9 Water Conservation

The City's water conservation program encourages both conservation of water and use of alternative water supplies, such as reuse water for irrigation produced at the City's RWTF, nicknamed OASIS (Our Alternative Supply Irrigation System). The City's current conservation program elements are described below.

5.9.1 OASIS Infrastructure and Program

This program provides and promotes the use of reuse water as a viable water supply alternative for irrigation purposes within the City's service area. The City's Ordinance for Aquifer Protection, prohibits the installation of new groundwater wells for irrigation in areas with access to water reuse systems. Since landscape irrigation can make up to 50 percent of the potable water demand, OASIS lessens the stress on the Biscayne Aquifer as it does not rely on drinking water supplies or additional extraction from natural water sources.

To date, the City has designed and installed approximately 32 miles of reuse water main. The City currently installs approximately 10,000 linear feet of reuse mains per year (equivalent to approximately 180 eligible connections). When a new reuse main is installed, the surrounding properties are provided a service connection. Connection to the reuse system is required by City ordinance for new and existing multi-family and commercial properties within the City of Pompano Beach, but it is not mandatory for single-family properties. Connection to the reuse system is required for any type of property in the served portion of Lighthouse Point. The City has a progressive campaign to encourage single-family connections to the reuse system.

Under this program, the City intends to expand the reuse water service area to the complete Zones 1 and 5E, and connect customers in Areas 1, 2, and 4. The City nursery uses OASIS for irrigation as does the Broward Beautiful Program plantings to the north of the Water Plant, the Sample-McDougald House, the City of LHP medians, and the Air Park.

5.9.2 "I Can Water Campaign"

The campaign, which is part of OASIS, was put in place as an innovative public education program and connects single family homes to the reuse water system. Since 2011, there have been over 900 new connections and projected potable water savings of 36 million gallons per year. The program has allowed for a greater appreciation of water resources, management, and conservation. The success of this program is largely due to marketing and outreach efforts put in place for the campaign. The City Reuse & Outreach Water Conservation Coordinator has managed this program.

The educational campaign consists of the following elements: dedicated website; promotional videos; magazine articles; telephone hotline; and distribution of letters, door hangers, flyers, and customer satisfaction survey cards. The educational campaign has received several awards for its efforts, which include the 2018 Outstanding Website Award from the Florida Water and Pollution Control Operators Association, 2016 Hermes Award for Communications and Marketing, 2014 Florida Water Environment Association – Public Education Award, the 2013 1,000 Friends of Florida's Community Steward Award, the 2012 Broward League of Cities - Cities of Excellence Green Leaf Award, and the 2012 National WaterReuse Association Public Education Program of the Year Award.

As part of this campaign, non-testable City owned dual check backflow devices are installed or replaced in an effort to deter cross connection. Additionally, tours of the reuse facility are offered to the Broward County Water & Climate Academy and City officials.

5.9.3 Public Information Program

This program provides water conservation information and practices to the City's residents and customers through the City's webpage, television channel, the annual Water Quality Report, and the City's Publication "Tradewinds". The City speaks to schools and community groups on water issues as well as participates in "green" events at local schools and health fairs. The City airs videos on reuse as well as water issues. The City also uses advisory signage at all public locations where reuse water is used. The City Utilities Department promotes area student participation in the FSAWWA Drop Savers Water Conservation Poster Contest and Water Tower Model Competition. The City staff partners with STEM schools to promote specific water conservation and science programs. The City also participated in the Plants and People Day outreach at the Sample-McDougald House and City staff attended the 2019 SFWMD Water Conservation Exposition. Throughout the years, the City has increased its public education and outreach to provide information about annual water conservation to the residents.

5.9.4 Dropcountr Application

Dropcountr is a mobile and online application designed to help residents monitor water consumption. The application can be used to track real-time water use, avoid leaks and water damage, compare water usage to others in the area, connect with utility alerts, and receive direct customer support. It is free and available to all City residential water customers.

Residents are able to set up a Dropcountr account by downloading the application on their mobile device in the Apple or Android App store or by signing up online. Resident name and account number as it appears on the utility bill are required for registration. On average, application users may reduce water consumption by 7-9 percent, leading to significant water and cost savings.

5.9.5 Leak Prevention and Detection Program (LP/DP)

This is a proactive approach to system maintenance in an effort to achieve the goal of preventing real or apparent water losses due to malfunctioning meters, distribution system leaks, and pipe failures. The City has several components to reduce breaks and leaks, such as an active main replacement program, and a meter replacement program. In order to obtain accurate water audit information, the City plans to double the previous amount of leak detection surveying, and issue a contract for large meter testing and calibration.

The program uses water metered leaving the WTP and water billing records to track water losses in the distribution system which are targeted to less than 10 percent per year. Annual leak scans are provided by an authorized contractor. The City also offers free toilet leak detection tablets as part of the Water Conservation Program. In 2018, 8.2 miles of water mains and appurtenances were surveyed. In 2019, 37.9 miles were surveyed. The City expects to continue this program in subsequent years.

5.9.6 System Maintenance

System complaints concerning pressure and higher than normal water usage are investigated to determine if meter replacement is required. System pressures monitored via the City's SCADA system, historical maintenance records, and hydraulic modeling help the City engineers identify, monitor, and plan for system pipe replacements.

5.9.7 Automatic Flushers

The City actively flushes the distribution lines to maintain water quality. The City has designed, manufactured, and installed automatic flushers at select locations in order to reduce the amount of water used for manual hydrant flushing. The City estimates automatic flushing installations have saved approximately 250,000 gallons annually over standard hydrant flushing procedures at each flusher. This project was partially funded by the SFWMD SIPs program.

5.9.8 Broward County Mobile Irrigation Lab (BC MIL)

The Mobile Irrigation Lab is a collaborative effort between the District, the U.S. Department of Agriculture-Natural Resources Conservation Service (USDA-NRCS) and the agricultural community. The BC MIL seeks to provide practical advice on how to irrigate efficiently and conserve water based upon results of landscape and irrigation system performance evaluations. The City provides partnership funding for the BC MIL and looks for opportunities to engage the BC MIL in the community to promote conservation practices. The City uses the billing records to identify high users for further inspection or referral to the Mobile Irrigation Lab. The City staff assists in scheduling Broward County Mobile irrigation audit sites.

5.9.9 Residential Irrigation Rebate Program

The Residential Irrigation Rebate Program is an optional program through which BCWWS facilitates rebates to residents within the participating NatureScape Irrigation Service Partners' water service area. The program also provides irrigation system efficiency inspections and education on water conservation to residents.

The program offers rebates to offset initial costs incurred in upgrading specified water-efficient irrigation system components. Rebates are offered to residents that purchase and install specified water-saving measures including adjustment of irrigation timing, zoning, head type and/or placement, and upgrades to system components such as valves, heads, times, and sensing devices.

5.9.10 Conservation Rate Structures

The City uses a tiered rate structure for portable and reuse water to encourage conservation. Potable water users are assessed a surcharge for high usage during water shortages. Reuse ordinance requires residents to pay an availability fee.

5.9.11 Metering and Water Efficiency Tracking

The City requires metering of all sources in order to accurately account for water use and determine water loss amounts. The City identifies high water users through the billing system for possible reuse hookup, mobile irrigation lab assessment, or other water savings options. The City is now a member of the Alliance for Water Efficiency, which will allow standard tracking of water conservation savings.

5.9.12 Retrofit Program

The City implements a home plumbing fixture retrofit program. As part of this program, the City distributes showerhead, bath, and kitchen aerators during community events or upon request. From 2015 through 2018, the City has conserved approximately 27.6 million gallons of water through the distribution of the plumbing retrofits. In FY 2019, the City distributed almost 1,000 water saving devices. The City has also provided and installed spray valves to over 100 restaurants served by the City Utilities. The City continues to distribute plumbing retrofits to its customers all year round. This project was partially funded by the SFWMD SIPs program.

5.9.13 In Plant Initiatives

The City's conservation practices extend to the City's Utilities Department in water plant usage as well. Three radiators were installed on the water treatment plant emergency generator systems to reduce the in plant water consumption.

5.9.14 City Staff Education and Activities

City participation on the topic of sustainable water resources is shown by participation at the highest levels of City government. The City Utility Director is a member of the National Reuse Foundation and the former President of WaterReuse Florida. The City utility is a partner with Environmental Protection Agency (EPA) on the WaterSense program, an interactive internet web application that teaches homeowners about good conservation practices. The City Mayor, City Commissioners, and staff served as members on the Broward League of Cities Water Conservation Subcommittee. In 2018, the City won the Resilient Utility of the Year award from the Resilient Utility Coalition for demonstrated leadership in the development and implementation of infrastructure resilience throughout the United States. And in 2019, the utility was recognized as a "Utility of the Future Now" by a group of national organizations. The recognition shows the utility is using forward thinking operations to move into the future.

5.9.15 Year-Round Landscape Irrigation Conservation Measures (YRR)

The City is planning to update its ordinance to include the Mandatory Year-Round Landscape Irrigation Conservation Measures (YRR), as detailed in Chapter 40E-24, Florida Administrative Code (F.A.C.), by the end of year 2020. To encourage more responsible use of water resources throughout South Florida, the District's Governing Board adopted the Year-Round Irrigation Rule in 2010. The Rule restricts the times and number of days that landscape irrigation is allowed within the District's jurisdiction and follows scientifically-sound recommendations for lawn irrigation. The District is requesting local governments to review their existing irrigation ordinances and codes for consistency with the District's Year-Round Landscape Irrigation Conservation Measures Rule, Chapter 40E-24, F.A.C., and update their ordinances as appropriate.

5.9.16 Conservation as Regulatory Objective

The City's emphasis on conservation can be directly observed by taking note of the conservation ordinance development, which is part of the City's overall Conservation Program as required by Limiting Condition 24 of the WUP. The enacted conservation ordinances and regulations are summarized in Table 5.10. Reuse ordinances require commercial properties and high density residential units to connect to the reuse system for irrigation uses where reuse water is made available. Other ordinances restrict irrigation, require the installation of rain sensor devices, promote Florida-Friendly Landscaping, require the use of ultra-low volume plumbing fixtures and regulate the use of fertilizers.

Table 5.10 City of Pompano Beach Reuse and Conservation Regulations

City Code of Ordinances	Title	Description
50.03	Water Conservation Rate Structure	Ordinance sets a tiered rate structure that promotes conservation and assesses a surcharge for high usage during water shortages.
50.05	Water Conservation	Ordinance limits lawn and ornamental irrigation hours, requires conservation plans from developers that show, water savings, and provides for drought restriction rates to encourage conservation.
50.05	Ultra Low Volume Plumbing Standards	Ordinance incorporates by reference Florida Building Code flow restriction requirements.
155.127	Florida-Friendly Landscaping	Ordinance incorporates by reference SFWMD's Florida-Friendly Landscaping. Plant It Smart brochure. Ordinance also requires that landscaped areas include placement of native vegetation and substantial conformity with the Florida-Friendly Landscaping Principles referenced in the SFWMD Florida-Friendly Landscaping Plant Guide and outlined in the City Landscape Manual.
155.127	Rain Sensor Device	Ordinance requires rain sensor over-ride for new irrigation system installation.
155.5205	Florida Friendly Fertilizer Use	Ordinance regulates the use of fertilizers by: requiring proper training of Commercial and Institutional Fertilizer Applicators, establishing

City Code of Ordinances	Title	Description
		training and licensing requirements, establishing a Prohibited Application Period and allowable fertilizer application rates and methods, identifying fertilizer-free zones, low maintenance zones, and exemptions.
54.04	Reuse Connection Required	Ordinance requires residents to pay an availability fee and requires commercial properties and high density residential units to connect to the reuse system for irrigation uses where reuse water is made available.
54.05	Reuse Connection Charges and Rates	Ordinance requires metered reuse accounts to be established
54.21	Aquifer Protection	New groundwater irrigation wells are prohibited in areas where reuse water is available.

Updated July 2020

5.10 Water Loss Monitoring

The City monitors water loss by comparing treated water volumes metered leaving the WTP to billed water, and annually reports this comparison to the SFWMD as unaccounted-for-water losses. Monthly unaccounted-for-water losses sometimes fluctuate due to the attempt to compare date-specific treated water volumes to rolling meter reading dates for the billed water. The calculated percent loss is influenced by the reported fluctuating volumes during different months of the year. The City installed Automatic Meter Infrastructure (AMI) in 2011, which helps gather the meter reading data automatically, leading to less accounting errors.

The calculated average in 2018 was 13.63 percent of which the treatment losses decreased from the previous year due to the improved accuracy of the new plant flow meters that were replaced in late 2018. With more accurate metering information, the City plans to double the previous amount of leak detection surveying, and issue a contract for large meter testing. Additionally, the City plans to install hydrant meters for recording accurate flushing volumes and will adjust the flushing program accordingly.

5.11 Supply and Demand Data Analysis Summary

After analyzing historical billing data and observing a distinguishable growth trend similar to the population projections presented in the Census Tract 2018 Report, a 2017 City population of 109,441 was used as the base City-wide population. Future City projections were based on the TAZ population information, service area boundary, and interpolation for interim planning periods as requested by the City Planning and Zoning Department. A utility service area to City ratio of 85 percent was used to determine the population within the utility service area, which includes portions of the City, the City of Lighthouse Point and the Town of Lauderdale-by-the-Sea. A potable water level of service standard of 161 gpcd was selected to calculate demand projections for the planning years. Large users, which are independent of population, were also included as a constant when determining demand projections. Large users include demands for multiple institutional, commercial, and general facilities, along with the expansion of the Isles Casino.

The capacity of the City WTP is 30 mgd with 4-log removal. The water supply based on the WUP is allocated for roughly 17.75 mgd. The WUP plus the reuse water credit is calculated at 18.6 mgd. A 2020 Reuse Master Plan Update is in progress, which is expected to reflect refined values. In late 2019, the City commission approved the participation of the utility in the C-51 Reservoir AWS Phase I Project, for a total 2.00 mgd of capacity. The water supply for future years would increase to 20.6 mgd including the WUP, calculated reuse water credits, and supply from the C-51 Reservoir Phase I Project.

Figure 5.6 summarizes the calculated demand and supply projections for the years 2017 through 2040. The reuse water credit calculation may need to be amended after the release of the 2020 Reuse Master Plan Update.

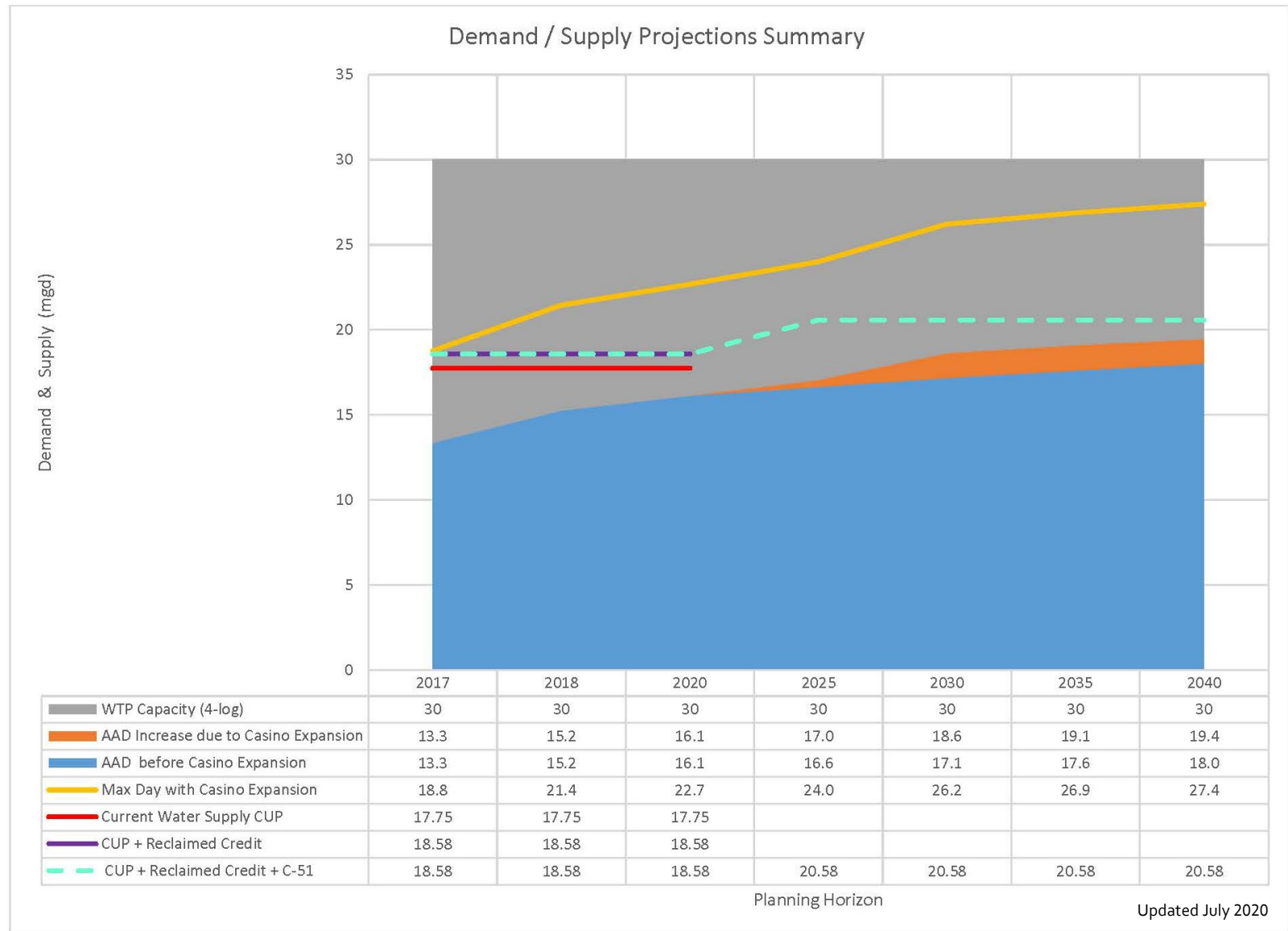


Figure 5.6 Demand and Supply Projections Summary

Chapter 6

INTERGOVERNMENTAL COORDINATION ACTIVITIES

The City of Pompano Beach coordinates with the SFWMD, BCWWS, the City of Lighthouse Point, the Town of Lauderdale-by-the-Sea, to ensure water services are planned for, adequately available, and provided to the water customers of the City. This section describes on-going activities with each agency or partner.

6.1 Coordination with the SFWMD Regional Water Supply Plan

The City has reviewed the SFWMD 2013 and 2018 LEC Plan Updates and identified projects located within the City's utility service area. In response to both documents, a letter has been drafted to the SFWMD that summarizes the identified projects and their current status. The letter is located in Appendix G.

6.2 2020 Broward County 10-Year Water Supplies Facilities Work Plan and Inter-Agency Coordination Activities

The City has reviewed the 2020 BC WSWFP, and identified projects located within the City's utility service area. The document used has been included as part of Appendix A.

Among the on-going coordination activities with Broward County Water & Wastewater Services (BCWWS), the following are included:

- Contracted to withdraw treatment plant effluent to use as reuse plant influent. This agreement, which is imperative in the City's sustained conservation efforts to reduce future potable water demands, is included in Appendix E.
- Collaborate in utility organizations such as South East Florida Utility Council (SEFLUC), Florida American Water Works Association (FSAWWA), Florida Water Environment Association (FWEA) to address regional issues encountered by Utilities and our customers.

Continued communication on regionalizing the City's reuse services and opportunities to ensure adequate water supplies for both municipalities service areas is among the crucial needs identified.

6.3 Local Service Agreements and Coordination

The City of Pompano Beach initiated service to distribute water to portions of the City of Lighthouse Point (LHP) and the Town of Lauderdale-by-the-Sea (LBTS) in the 1980's. It also provides reclaimed water services to LHP. Recent reuse agreements are included in Appendices D and E. On-going coordination activities are as follows:

- The City provides Conservation programs and information to LHP and LBTS through the City's partnership with Broward County. The City offers plumbing retrofits, moisture

meters, and leak detection tablets for customers as part of our ongoing effort to conserve our limited potable water.

- As part of the annual rate structure review, LHP and LBTS are informed of any public meetings on rate increases. LHP and LBTS Administrators and Management are cognizant that the City conducts annual rate structure reviews and are notified of rate increases along with the associated public meetings. Customers are also notified of public meetings for rate increases and are encouraged to participate.
- The City ensures LHP and LBTS are part of the planning team where there is a service issue or project in their area. Specifically for reuse expansion projects, LHP officials are included in planning efforts to offset potable water demands. The Cities collaborate on the design, permitting, and construction phases. Progress meetings and site visits are scheduled at various frequency for effective partnership. Once construction concludes, the City provides monthly status updates on the reuse connection program to LHP officials.
- LHP and LBTS inform the City of projects occurring in our service area and provides progress updates.
- Precautionary boil water notices, repairs, and other activities resulting in a disruption to customers are conveyed prior to their initiation if possible. Additionally, our CodeRed system transmits emergency notifications to customers of both cities.
- Most areas in LHP and LBTS are built out. However, for effective planning and to ensure adequate water supply, the City is notified of projects requiring additional water supply for formal review and approval.
- The annual water quality Consumer Confidence Report (CCR) is shared with LHP and LBTS Administrators and customers.
- The City of Pompano Beach participates in LHP's Commission meetings when applicable.

Chapter 7

WATER SUPPLY FACILITIES WORK PLAN

This section incorporates information pertaining to the City's Capital Improvements Program (CIP) and details the existing and future plans to meet the City's future water service area demands. The planning horizon for this WSFWP CIP is 2020 to 2030, per SFWMD guidelines. During this period, the City will be required to renew their 20-year consumptive use permit, and implement alternative water supplies in order to meet the projected future demands.

The population projections and water demands presented in Chapter 5 were used as the basis to develop the City's 2020 WMPU, and are incorporated herein to the projects that are described in this section. In addition, this section discusses BCWWS proposed projects to meet the water demand of Districts 1 and 2, which serve areas within the City limits. Figure 1.3 displays the City limits and the water service areas for both BCWWS and the City.

7.1 Traditional Water Supply Projects

7.1.1 Wellfield Capacity and Projects

The City's water treatment plant exclusively uses Biscayne Aquifer groundwater for the City's water supply. The City WTP utilizes water from two wellfields, referred to as the Eastern and Western Wellfields. The Eastern Wellfield incorporates 15 wells that are near the municipal airport and close to the WTP just east of Dixie Highway between Atlantic Boulevard and Copans Road. The Western Wellfield incorporates 10 wells near the Palm Aire development near the Florida Turnpike. The Eastern Wellfield supplies water solely to the lime softening process, while the Western Wellfield can supply water to the lime softening or nanofiltration treatment process.

The City's existing permitted Biscayne Aquifer wells have a total rated capacity of approximately 66 mgd and a firm permitted treatment capacity of 44.5 mgd. The 2005 consumptive water use permit limits the annual average day withdrawals for the City's WTP to approximately 17.75 mgd, and the City's maximum month permitted withdrawals are limited to approximately 20.33 mgd of the wellfield capacity. The City's rated wellfield capacity is sufficient for the future demands during the 10-year planning period, and the City is not required to construct additional wells. However, the City is actively engaged in developing a wellfield plan that will allow the abandonment of older wells and potential construction of newer wells further away from the saltwater interface. The City's new capital projects will incorporate a comprehensive assessment of both wellfields, including evaluations of well production, specific capacity, and mechanical upgrades. The plan will also review existing well rehabilitation and potential relocation and replacement of wells.

The City's consumptive use permit expires in 2025, and will need to be renewed during the current planning period. At this time, it is expected that the City will seek to retain the existing groundwater allocations and obtain allocation credits (or conservation) through additional alternative water supplies to meet future demands as detailed in the following sections.

7.1.2 Water Treatment Plant Capacity and Projects

The WTP has a rated treatment capacity of 50 mgd, which consists of a 40 mgd lime softening treatment process and a 10 mgd nanofiltration (NF) treatment process. In general, the City does not require an expansion of the treatment process strictly due to projected demand increases. However, the City does have several capital improvement projects to address future reliability, water quality, and to refurbish or replace aging systems at the WTP. These projects are detailed in the following CIP section of this chapter.

7.2 City Alternative Water Supply Projects

The City's commitment to the development of alternative water supply sources through the reduction of potable water used for irrigation and conservation of water have been demonstrated for decades. The City has expanded the reuse system to serve hundreds of customers in lieu of residences since the last plan update and continues to actively expand the reuse distribution system every year. These reuse efforts combined with community outreach and ordinances have led to a substantial decrease in per-capita water usage. Overall, the City's efforts have reduced the per-capita usage (level of service standard) from a high of approximately 200 gpcd in the 1990's to the rate of 161 gpcd for the year 2018. Although the City will continue to invest in reuse and conservation programs, the level of conservation is facing diminishing returns, and therefore the City is planning to implement alternative water supplies to meet future demands. Table 7.1 details the proposed alternative water supply projects by which the City intends to meet future demands sources through 2030.

Table 7.1 Proposed Alternative Water Supply Projects

Implementation	Quantity	Water Supply Project	Type	Notes
2020	0.83 mgd ⁽¹⁾	Reuse Expansion Credits	Reuse	The City has installed reuse water connections to existing permitted groundwater users, which allows a credit to the City's groundwater allocations.
2019-2029	1.52 mgd	Conservation through Reuse Expansion	Reuse	The City also plans to expand the reuse system over the next 10 years to serve new properties, resulting in the conservation of approximately 1.52 mgd ⁽¹⁾ of potable water supply.
2020-2023	2 mgd	C-51 Reservoir	Stormwater (Groundwater Replenishment)	Recapture of stormwater for use in replenishing the canals/groundwater during the dry season. The City has approved funds for participation with up to 2 mgd of pro-rata capacity in the project.

Implementation	Quantity	Water Supply Project	Type	Notes
2025-2030	0.75-1.0 mgd	Concentrate Recovery	Conservation	The City anticipates to construct a concentrate recovery system if future expansion of the nanofiltration system becomes necessary.

Notes:

(1) Quantity may be amended upon release of the ongoing 2020 Reuse Water Master Plan Update.

Updated July 2020

These projects, in addition to the City's base WUP allocations, are expected to provide at least 20.6 to 21.6 mgd of raw water supply to meet the projected future demand conditions. The following sections present more information about each of these projects.

7.2.1 Reuse Distribution System Expansion and Offset Credits

The City has plans to continue expanding its water reuse program through build-out, which is expected to be beyond 2040. Part of the program will be to replace current potable water used for irrigation with reuse water as a means of conserving potable water supplies. The City plans to construct approximately 7.5 miles of reuse water mains ranging from 4- to 12-inch diameter. The expected amount of reuse water that could be utilized through this expansion is 1.52 mgd according to calculations included in the Draft 2020 Reuse Water Master Plan. This amount of water is anticipated to be directly conserved from potable water supplies, which could help delay in the investment in additional alternative water supplies.

The City also appears to qualify for additional Biscayne Aquifer withdrawals by serving areas with reuse water that previously had groundwater use permits. The SFWMD views the replacement of Biscayne Aquifer withdrawal with an alternative water supply source as an "offset." The City plans to transfer the Biscayne Aquifer base condition water use pumpage or the permitted allocation of the irrigation wells, whichever is less, to the City's water use permit, as reuse water replaces irrigation water. As previously estimated in the 2009 Water System Master Plan Update (CDM), the total estimated pumpage "offset" re-allocation from private irrigation wells to City reclaimed water would be a credit of up to 0.83 mgd. If the offset is added to the same base allocations the City currently has, the total allocations on a daily basis should increase to 18.58 mgd.

More, updated information, including a table that presents a summary of the irrigation well users in the proposed reuse water land application areas, will be made available for future updates of the WSFWP after the release of the ongoing 2020 Reuse Water Master Plan.

7.2.2 C-51 Reservoir Project

Although the City remains committed to expanding the reuse water program, it is not anticipated that the expansion and conservation efforts will be sufficient for future growth. Therefore, the City is prepared to implement additional alternative water supply projects as needed to meet the projected water demands.

In response to the water availability rule and the growing need for alternative water supplies, Pompano Beach and other LEC area water providers have been collaborating in the development of the Phase 1 of the C-51 Reservoir, to serve as a regional alternative water supply by storing excess wet-season storm water runoff for later distribution and use during the dry season. The environmental benefits of this project include Biscayne Aquifer recharge, reduction of harmful tidal discharges to the Lake Worth Lagoon, and supplemental discharge to the Loxahatchee River. The C-51 Reservoir is an innovative public-private partnership whereby interested LEC utilities and a private company would jointly develop and construct the project, which would then be turned over to the SFWMD for operation. Each utility that invested in a pro-rata contribution of capital costs and operating and maintenance costs would receive the respective storage allocation and credits for additional allocations in their consumptive use permit following construction.

The C-51 Reservoir project is proposed to be constructed in two phases. Phase 1 of the C-51 Reservoir will consist of a reservoir with 14,000 acre-feet of storage capacity and appurtenant facilities, which would equate to an additional 35 mgd of allocations. The Second Phase, if developed, will consist of an anticipated additional 46,000 acre-feet of reservoir storage capacity and appurtenant facilities. As the Second Phase is still in a planning phase, there is no timeframe or definite plan to construct.

Many utilities in the LEC area, including Pompano Beach, have significant interest in participating in this project. The primary interest in the project stems from the difficulty in providing and/or operating a system that meets the alternative water supply criteria. Some utilities are not positioned to provide reuse water, and treating alternatives supplies, like the Floridan Aquifer, can be cost prohibitive. The City has gained commission approval to purchase a pro-rata portion of the Phase 1 C-51 Reservoir project, in an amount up to 2.0 mgd. As of 2020, the Palm Beach Aggregates has acknowledged that the City has purchased 2.0 mgd of storage in the reservoir. The project is expected to be completed in 2023, and the subsequent allocation increase should be reflected in the City's next consumptive use permit.

7.2.3 Concentrate Recovery and Potential Other AWS Projects

If the City determines that more Western Wellfield water must be used in the future, and that nanofiltration treatment should be expanded, constructing a new concentrate recovery membrane system would help increase potable water production without increasing additional surficial groundwater supply. At nanofiltration treatment flows of 10 mgd, it would be expected that the concentrate generated would be approximately 1.5 to 2.0 mgd, based on the typical 80-85 percent recovery of the nanofiltration system. It is expected that a concentrate recovery system could have a design recovery of around 50 percent, which could save approximately 0.75 to 1 mgd of raw water allocations under this scenario. The City has available space inside the process and electrical rooms for a concentrate recovery system, and the potential to tie into the existing concentrate and permeate piping. The City intends to review the feasibility of this project, and may implement the project after determining the new groundwater allocations for the WUP renewal.

7.3 BCWWS Alternative Water Supply Projects

According to the 2020 BC WSWP, in addition to the continued use of traditional sources, conservation efforts, and the utility's reuse water facility, BCWWS has identified the utilization of the Floridan Aquifer as an alternative water source, and utilization of aquifer storage and recovery (ASR) system. In addition, BCWWS has an agreement in place to purchase capacity from the C-51 Reservoir project. Although these projects are not directly needed for future water supplies in the City of Pompano Beach (i.e. Districts 1 and 2), they are reviewed herein as an overview of the potential plans for the regional water supply.

7.3.1 BCWWS District 1

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 has a current capacity of 16.0 mgd to treat Biscayne Aquifer raw water using lime softening treatment. The District 1 wellfield is located in the area surrounding the WTP and is comprised of nine Biscayne Aquifer wells, with a total design capacity of approximately 23.5 mgd. Two Floridan Aquifer test wells were completed in 2014; one well is located on the WTP site and one is located in an easement northeast of the WTP.

BCWWS was issued a SFWMD WUP for District 1 in April 2008 for a 20-year permit duration to withdraw water from the Biscayne Aquifer and Floridan Aquifer. The permit allocates an annual withdrawal from the Biscayne Aquifer of 3,664 million gallons (10.03 mgd) with a maximum month of 333 million gallons (11.1 mgd) and an annual withdrawal from the Floridan Aquifer of 1,410 MG (3.86 mgd) with a maximum month of 128 MG (4.27 mgd).

Based on the water use projections presented in the 2019 BCWWS WSWP Update, District 1 is projected to have an average day finished water demand of 8.58 mgd in the year 2030 and an average day finished water demand of 9.14 mgd in the year 2040. Given that the treatment recovery is projected to be approximately 95 percent, this means that approximately 9.04 mgd and 9.63 mgd of raw water will be needed for 2030 and 2040 respectively. It appears that the BCWWS does have sufficient allocations to meet the future demands in District 1. The water quality test results from these Floridan wells indicated that the water produced from the wells 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, however the BCWWS plans to utilize the Floridan Well system as a contingency plan. BCWWS will evaluate the project annually for future funding based on projected water demands.

7.3.2 BCWWS District 2

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 plant has a current capacity of 30.0 mgd to treat Biscayne Aquifer raw water using lime softening treatment. The District 2 WTP treats raw water supplied by the District 2 and the North Regional Wellfields, where the District 2 wellfield has seven wells with a total design capacity of 27.1 mgd and the North Regional wellfield has ten wells with a total design capacity of 20.2 mgd. Each wellfield provides approximately half of the total raw water to the treatment plant.

BCWWS was issued a SFWMD WUP for District 2 in March 2008 for a 20-year permit duration to withdraw water from the Biscayne Aquifer and Floridan Aquifer. The permit allocates an annual withdrawal from the Biscayne Aquifer of 6,388 million gallons (17.5 mgd) with a maximum month of 585 million gallons (19.5 mgd) and an annual withdrawal from the Floridan Aquifer of 1,664 MG (4.56 mgd) with a maximum month of 152 MG (5.07 mgd). While Floridan Aquifer production wells were planned as part of the original permit to provide a future alternative water supply, no Floridan wells have been constructed to date.

Based on the water use projections presented in the 2020 BC WSWFP, District 2 is projected to have an average day finished water demand of 13.38 mgd in the year 2030 and an average day finished water demand of 13.76 mgd in the year 2040. Given that the treatment recovery is projected to be approximately 96 percent, this means that approximately 14.10 mgd and 14.51 mgd of raw water will be needed for 2030 and 2040 respectively. It appears that BCWWS does have sufficient allocations to meet the future demands in District 2. Currently, BCWWS has no plans to construct Floridan wells or a RO WTP at the District 2 site, however BCWWS maintains the Floridan allocations as a contingency plan. Similarly, BCWWS will evaluate the project annually for future funding based on projected water demands.

7.3.3 BCWWS Alternative Water Supply Projects

7.3.3.1 Reuse

As mentioned in Section 4, BCWWS operates the Broward County North Regional WWTP located in the City of Pompano Beach. 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 BCWWS's intent to produce an additional 21.45 mgd of reclaimed water. Of the total 21.45 mgd reclaimed water production in Broward County, 19.7 mgd will be produced at the North Regional WWTP, and the remaining reclaimed water will be produced through the Pompano Beach Reuse facility. A brief overview of the BCWWS reclaimed system projects are presented in Table 7.2.

Table 7.2 BCWWS Proposed Reclaimed Projects

Project	Description	Estimated Cost	Timeframe
NRWWTP Capacity Improvements	Includes 16 MG reclaimed water filter capacity expansion with high level disinfection and associated pumping facilities	\$59 Million	Completion 2021
NRWWTP Reclaimed Transmission Improvements	Includes construction of transmission and treatment facilities to provide approximately 10.5 MGD of reclaimed water to Palm Beach County and 3 MGD to North Springs Improvement District	\$33 million	Completion 2021
NRWWTP Reclaimed Transmission Expansion	Includes construction of 4 miles of transmission main to Coconut Creek, and to connect with existing reclaimed piping in Hillsboro Pines	\$12 Million	Completion 2021

Updated July 2020

7.3.3.2 C-51 Reservoir

BCWWS has also invested in the C-51 reservoir alternative water supply project detailed above. BCWWS has associated 3 mgd of their total 6 mgd purchase with their South Regional Wellfield consumptive use permit to offset demands for raw water from their 3A/3BC service area. There are no specific allocations associated with the BCWWS District 1 or District 2 at this time; however, BCWWS may modify the existing WUP to add 3 mgd of C-51 Reservoir offset water to create more operational flexibility between the District 2A and North Regional Wellfields in the future.

7.3.3.3 Floridan Aquifer Projects

BCWWS has also investigated the expanded use of the Floridan Aquifer system with respect to its long-term viability as a water supply resource through additional modeling and studies. BCWWS has, in cooperation with USGS, completed Phase 1 Feasibility Study of the Upper Floridan Aquifer in March 2014. The study compiled all available well information and commissioned a new well (G-2984) to be drilled, cored, and logged. The results from the well studies provided 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 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. Currently, BCWWS has two constructed Floridan Wells, but have not yet implemented plans to utilize or treat water from these wells for potable water supply. BCWWS intends to keep monitoring the water demands to determine if project funding is feasible in the future.

7.3.3.4 Hillsboro Aquifer Storage and Recovery

The Hillsboro ASR system was built to capture excess surface water from the Hillsboro Canal, store it in the Upper Floridan Aquifer, and recover stored water back into the Hillsboro Canal when surface water levels are low. The ASR well was constructed in 2000 and consisted of a 24-inch diameter casing completed to a depth of 1,015 feet below land surface in the Upper Floridan Aquifer. The surface facilities were constructed between 2006 and 2007 and consisted of an intake/discharge structure, screen filters, UltraViolet (UV) disinfection units, pumps, piping, valves, electrical controls, and meters. The well was designed to recharge and recover approximately 5 mgd of surface water. The most recent cycle testing was completed in 2017 and the recovery efficiency was noted to be approximately 60 percent, and arsenic concentrations were below the regulated limits within three weeks. The SFWMD approached BCWWS following the completion of Cycle 4 to suggest a limited operation of the well facilities to support urban water supply demands, but BCWWS declined the offer of limited operation.

7.3.3.5 Secondary Canal Integration

Secondary canal integration remains as an urban water management strategy that BCWWS intends to pursue. Although the Northern Broward County Recharge System is not yet complete, there are three main projects identified that will be needed to complete the system.

- The C-1/C-2 Interconnect near Sample Road and the CSX Railroad. The project has been designed and construction funding is being sought.
- The study of a potential C-4 Interconnect between north and south Tradewinds Park was completed and it was determined that the environmentally friendly directional drilling project is not financially feasible at the present time.
- The C-7 Interconnect just north of Sample Road in the Coconut Creek Main Street Project will coincide with development of the area. The basin divide control structure is being constructed with the development of the parcel just to the north of Sample Road. The interconnect will be complete when the final canal segment is built with the development of the remaining farm land.

Depending upon the final routing of water deliveries associated with development of the C-51 Reservoir project, additional construction may be required in the central and southern parts of Broward County to further integrate the system.

7.3.3.6 Conservation

BCWWS has implemented several conservation initiatives to extend BCWWS's current water supplies. These measures have been identified under the "Water Matters" campaign. These programs, targeted at various users, include: NatureScape Broward, Know the Flow, Water Matters Day, Conservation Pays, NIS, and the NatureScape Broward School Board Environmental Partnership Agreement. The overall goal of the Water Matters program is to reach a sustained minimum 10 percent reduction in water use Countywide over 20 years. These are in addition to the changes in the building code and irrigation restrictions.

Table 7.3 presents the water conservation projects that BCWWS has listed in the SFWMD LEC 2018 Water Supply Plan Update.

Table 7.3 BCWWS Water Conservation Project Summary

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
NatureScape Irrigation Services Smart Irrigation Tech. Retrofit Program	Broward Water Partnership	Irrigation	2015 - 2017	66.8

Updated July 2020

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 Integrated Water Resources Plan update.

7.4 10-year Work Plan and Capital Improvement Plan

7.4.1 City's 10-year Work Plan and Capital Improvement Plan

As demonstrated in the previous sections, the AWS plan proposed by the City should meet the increased water demands through 2030. The City is committed to fund the initial projects for the 10-Year Water Supply Facilities Work Plan. The City's 5-Year (2020-2024) Schedule of Capital Improvement Expenditures Plan is summarized in

Table 7.4. The 5-Year Schedule of Capital Improvements presents the budgeted expenditures for the proposed AWS projects. The funds will be allocated to the projects through the City's water revenues and grants.

7.4.2 BCWWS 10-year Work Plan and Capital Improvement Plan

As demonstrated in the previous sections, the BCWWS District 1 and District 2 facilities appear to have sufficient water supplies to meet the increased water demands through 2030. As such, BCWWS has not committed funding to specific projects related to the Floridan aquifer or ASR well. However, the City has committed to the C-51 canal project, and is expanding the reclaimed system for both the NRWTP and the City's Reuse WTP. A summary of BCWWS's CIP is presented in Table 7.5 for the next five years (2019-2023).

7.5 Summary

The City plans to meet future water demands by expanding the existing reuse system to different areas of the City and increasing the number of reuse water users. This program, along with the City's conservation program, is estimated to reduce historical per capita water demands. The City has also received commission approval to buy up to 2 mgd of capacity in Phase 1 of the C-51 Reservoir project. The City is also planning to investigate the use of concentrate reduction if needed to meet a portion of the future water demands.

Table 7.6 summarizes the City's water facilities capacity and the anticipated future permitted amount.

BCWWS Districts 1 and 2 will serve the Pompano Beach area not served by the City's Utilities Department. BCWWS Districts 1 and 2 appear to have enough treatment capacity and Biscayne groundwater allocations to the projected future water demands. BCWWS also has the potential to utilize the Floridan aquifer via the construction of new Floridan wells and treatment facilities if needed. Two alternative water supply upper Floridan aquifer wells were constructed and could provide raw brackish water for future membrane treatment. Additionally, BCWWS could utilize a portion of their C-51 reservoir offsets for the District 2/ North Regional Wellfield in the future.

Table 7.4 City of Pompano Beach Alternative Water Supply Capital Improvement Program Summary

Project Name	CIP Budgeted Expenditure					Five Year Total
	FY 2020	FY 2021	FY 2022	FY2023	FY2024	
Reuse Distribution System Expansion (Fund 420)	\$306,000	\$306,000	\$306,000	\$306,000	\$306,000	\$1,530,000
Reuse Connection Services (Fund 420)	\$100,000	\$120,000	\$120,000	\$120,000	\$120,000	\$580,000
Water Conservation Program (Fund 420)		\$100,000				\$100,000
C-51 Reservoir Pro Rata Share (TBD) ⁽¹⁾						

Note:

(1) Final funding to be determined based on C-51 construction costs.

Updated July 2020

Table 7.5 Broward County Alternative Water Supply Capital Improvement Program Summary

Project Name	CIP Budgeted Expenditure					Five Year Total
	FY 2019	FY 2020	FY 2021	FY2022	FY2023	
NRWWTP Capacity Improvements (Includes Part of Reclaimed Treatment Expansion) ⁽¹⁾	\$183,400					\$183,400
Reclaimed Water Transmission System Expansion ⁽¹⁾	\$1,000,010					\$1,000,010
NRWWTP Reclaimed Transmission System	\$6,000,000					\$6,000,000
NRWWTP Facilities Improvements (Includes Part of Reclaimed Treatment Expansion)	\$53,687,000					\$53,687,000
NRWWTP Secondary Effluent Pump Station ⁽²⁾		\$800,000		\$18,054,000		\$18,854,000
C-51 Reservoir Pro Rata Share (TBD) ⁽³⁾						

Notes:

(1) Primary funding occurred in previous years.

(2) Funding is provided to design and construct a secondary effluent pump station to provide water to the City of Pompano Beach Reuse Facility.

(3) Final funding to be determined based on C-51 construction costs.

Updated July 2020

Table 7.6 City of Pompano Beach Projected Water Demands and Supply Summary

Year	2018	2020	2025	2030
City's Water Service Area Population	93,973	95,512	98,817	102,122
Average Annual Daily Raw Water Demand (mgd)	16.3	17.2	18.2	19.9
Average Annual Finished Water Demand (mgd) ⁽¹⁾	15.2	16.1	17.0	18.6
Per Capita Usage (gpcd)	153	161	161	161
Available Treatment Surplus (mgd) ⁽²⁾	33.7	32.8	31.8	30.1
Proposed Alternative Water Supplies (mgd) ⁽³⁾	-	-	2.83	2.83
Permitted Biscayne Aquifer Withdrawals (mgd) ⁽⁴⁾ (Projected after 2025 with renewal of WUP)	17.8	17.8	20.6	20.6
Anticipated Raw Water Reserve Surplus (mgd) ⁽⁵⁾	1.50	0.60	2.40	0.70

Notes:

- (1) Includes large user demands.
- (2) Calculated by subtracting the average annual raw daily demand from the treatment plant capacity (50 MGD).
- (3) Projected based on the expected reuse credits and C-51 Reservoir credits detailed previously. Additional alternative water supplies such as conservation and concentrate recovery may also be realized in the future.
- (4) Projected based on the existing allocations (17.75 mgd) plus the expected reuse credits and C-51 Reservoir credits detailed previously starting in 2025.
- (5) Calculated by subtracting the average annual daily raw water demand from the permitted (and projected) Biscayne Aquifer withdrawals.

Updated July 2020

Chapter 8

COMPREHENSIVE PLAN

8.1 Goals, Objectives, and Policies

The City's Comprehensive Plan will support this WSFWP by updating the Goals, Objectives, and Policies of the Potable Water and Conservation Elements, and are included in the following sections.

8.1.1 Potable Water Element Component

The Potable Water Element discusses methods on how the City will be providing safe, reliable drinking water and reuse services to the public. Updates to this component are related to the results of population projections, data, and analysis of trends in water production and consumption, updated reference documents such as the latest Master Plans for Water and Reuse, LEC Plan Update, and the Concurrency Design Table.

The full list of existing and proposed goals, objectives, and policies for the Potable Water Element component are part of Appendix H.

8.1.2 Conservation Element Component

The Conservation Element discusses efforts to protect and effectively manage natural resources in the City. Updates to this component are related to ground water quality and ways to utilize it in a more efficient and innovative manner.

The full list of existing and proposed goals, objectives, and policies for the Conservation Element component are part of Appendix I.

8.2 Related Amendments

8.2.1 Water Element Component

Updates to the Potable Water Element component that are directly related to this WSFWP update include the following:

- The level of service standards have been modified from 191 gpcd to 161 gpcd. Historical consumption data and results obtained after the WTP meter replacement efforts were analyzed to determine the level of service standards. Further detail on how the updated level of service was determined is discussed in Section 5.5 of this WSFWP.
- The WTP increased production from a recorded 12.4 mgd in 2014 to a confirmed (using new flow meters) 15.2 mgd in 2018.
- The City's maximum allowable water usage factors for the various establishments has been updated in a concurrency design table for use. The concurrency design table is included in this report as part of Appendix J.

Necessary amendments to the Potable Water Element of the Comprehensive Plan have been identified and listed in Table 8.1. These amendments are being incorporated and adopted into the Element. Other content was amended as part of the Comprehensive Plan Update that was performed by the City concurrently with this Work Plan, and may be reviewed in Appendix H.

8.2.2 Conservation Element Component

Necessary amendments to the Conservation Element of the Comprehensive Plan that are directly related to this WSWP update have been identified and listed in Table 8.2. These amendments are being incorporated and adopted into the Comprehensive Plan. Other content was amended as part of the Comprehensive Plan Update that was performed by the City concurrently with this Work Plan, and may be reviewed in Appendix I.

Table 8.1 Potable Water Element Amendments Directly Related to this WSWFP Update

Location within Previous Potable Water Element Document	Previous Content	Amended Content
Goal 1	Goal 1: Provide safe, reliable, cost effective potable water to all residents and business within the City's water utility service areas and make capital improvements necessary to maintain or improve potable water services.	Goal 7A: Provide safe, reliable, sustainable , cost effective potable water to all residents and businesses within the City's water utility service areas and make capital improvements necessary to maintain or improve potable water services.
Goal 1, Objective 1	The City shall ensure the provision of a safe and sanitary supply of potable water to customers in its service area through good operating practices.	Objective 07A.01.00 The City shall ensure the provision of a safe and reliable supply of potable water to customers in its service area and the entire City through regulatory compliance and best operating and management practices.
Goal 1, Objective 1, Policy 6	Potable water service providers should notify customers of supply interruptions as soon as possible and as clearly as possible.	Policy 07A.01.06 Potable water service providers should explicitly notify customers of supply interruptions as soon as possible.
Goal 1, Objective 1, Policy 7	Minimize the interruption of potable water service to customers and wasted water by responding quickly to breaks in water mains.	Policy 07A.01.06 Minimize the interruption of potable water service to customers and conserve water by responding quickly to breaks in water mains.
Goal 1, Objective 2	The City of Pompano Beach shall maintain the level of service standards at 191 or lower gallons per capita per day.	Objective 07A.02.00 The City of Pompano Beach shall maintain the level of service standards at 161 or less gallons per capita per day; the BCWWS District 1 LOS is 112 gpcd and the BCWWS District 2 is 96 gpcd.
Goal 1, Objective 2, Policy 1	Capital improvement projects undertaken to maintain the established levels of service will be implemented in accordance with the schedule provided in the Capital Improvement Element of the Comprehensive Plan.	Policy 07A.02.01 Capital improvement projects undertaken to maintain the established levels of service shall be included in the Capital Improvement Element of the Comprehensive Plan and implemented through the 5-Year Capital Improvements Plan (CIP) which is updated annually. The 5-Year CIP shall reference BCWWS water supply facility improvements being implemented by BCWWS if those improvements impact the City.
Goal 1, Objective 2, Policy 2	The projected levels of service shall be the minimum levels of service maintained during the ten (10) year review period of the Consumptive Use Permit and ten (10) year Water Supply Plan planning periods.	Policy 07A.02.02 The projected levels of service shall be the minimum levels of service maintained during the ten (10) year review period of the Consumptive Use Permit and ten (10) year Water Supply Plan planning periods during the planning horizon covered by this Comprehensive Plan which is the 5-year 2020-2025 and 15-year time frame of 2026-2040.

Location within Previous Potable Water Element Document	Previous Content	Amended Content
Goal 1, Objective 2, Policy 3	The City shall annually evaluate the levels of services standards in order to ascertain continued applicability.	Policy 07A.02.03: The City shall evaluate the levels of services standards <u>every five years</u> in order to <u>determine</u> continued applicability.
Goal 1, Objective 2, Policy 4	<p>The design capacities and current (2007) demands for the Pompano Beach Water Facility and the Broward County Water Facilities 1A and 2A are as follows:</p> <p>Pompano Beach Water</p> <p>Lime Softening Plant 40.00 million gallons per day in Design Capacity</p> <p>Membrane Plant 10.00 million gallons per day in Design Capacity</p> <p>Total 50.00 million gallons per day in Design Capacity</p> <p>12.42 million gallons per day in Current Demand</p> <p>Broward County</p> <p>2A Plant 30.00 million gallons per day in Design Capacity</p> <p>12.32 million gallons per day in Current Demand</p> <p>Broward County</p> <p>1A Plant 10.67 million gallons per day in Design Capacity</p> <p>7.14 million gallons per day in Current Demand</p> <p>Note: All demand figures are for 2013</p>	<p>Policy 07A.02.0 The design capacities and current <u>(2019)</u> demands for the Pompano Beach Water Facility and the Broward County Water Facilities 1A and 2A are as follows:</p> <p>Pompano Beach <u>Water Treatment Capacity</u></p> <p>Lime Softening Plant 40.00 million gallons per day in Design Capacity</p> <p>Membrane Plant 10.00 million gallons per day <u>demand in 2019</u></p> <p>Total 50.00 million gallons per day in Design Capacity</p> <p><u>15.41</u> million gallons per day in <u>2019</u> Demand</p> <p>Broward County <u>Water Treatment Capacity</u></p> <p>2A Plant</p> <p><u>40.00</u> million gallons per day in Design Capacity</p> <p><u>12.9</u> million gallons per day in <u>2019</u> Demand</p> <p><u>112 gpcd generation rate (2019)</u></p> <p>1A Plant</p> <p><u>16.0</u> million gallons per day in Design Capacity</p> <p><u>7.45</u> million gallons per day in <u>2019</u> Demand</p> <p><u>96 gpcd generation rate (2019)</u></p>
Goal 1, Objective 3	The City shall through the use of Interlocal Agreements provide potable water service to customers outside the City limits, cooperate with Broward County Utilities which serves customers inside the City limits and maintain interconnections to the potable water systems.	<u>Through the use of Interlocal Agreements, provide potable water service to Lighthouse Point and Lauderdale By The Sea; will work with Broward County Utilities which serves customers inside of City limits; and maintain interconnections to these potable water systems.</u>
Goal 1, Objective 3, Policy 2	Negotiate an Interlocal Agreement or memorandum of understanding with the Town of Lauderdale by the Sea for the continued provision of safe and reliable potable water services.	<u>Maintain</u> an Interlocal Agreement or memorandum of understanding with the Town of Lauderdale by the Sea for the continued provision of safe and reliable potable water services.

Location within Previous Potable Water Element Document	Previous Content	Amended Content
Goal 1, Objective 4, Policy 10 ⁽¹⁾	-	<u>Policy 07A.04.10: Where new potable water service is required, it shall be the responsibility of the developer to adhere to the City approved Concurrency Design Table, which states the maximum allowable water usage factors for various establishments.</u>
Goal 1, Objective 5, Policy 3	Continue to construct distribution lines for the Water Reuse plant, which will enable residents, businesses and city properties to utilize reuse water for outside irrigation functions at the minimum rate of \$300,000 per year.	Policy 07A.05.03: Continue to <u>invest a minimum of \$400,000 per year in the</u> construction of <u>reuse</u> distribution lines for the Water Reuse plant <u>to</u> enable residents, businesses and city properties to utilize reuse water for outdoor irrigation.
Goal 1, Objective 5, Policy 4	Evaluate the need to update Water Reuse Master Plan every five years.	Policy 07A.05.04: <u>Update the</u> Water Reuse Master Plan every five years.
Goal 1, Objective 5, Policy 6	Encourage hook-ups to water reuse distribution system, especially large users, to decrease potable water usage for irrigation.	Policy 07A.05.06: <u>To</u> decrease potable water usage for irrigation <u>and reduce treated wastewater disposal demand, consider enacting a mandatory reuse connection for all residential properties like the one that exists for multifamily, commercial, and Lighthouse Point customers.</u>
Goal 1, Objective 5, Policy 7	Install reuse distribution lines at a rate to meet Lower East Coast Water Supply Plan requirements for 2030.	Policy 07A.05.07: Install reuse distribution lines at a rate to meet <u>the needs identified in the</u> Lower East Coast Water Supply <u>Facilities Work</u> Plan for <u>2040</u> .
Goal 1, Objective 5, Policy 8	Upgrade Water Reuse Facility to include advanced treatment in order to meet future water quality regulatory requirements for projects such as wellfield recharge.	Policy 07A.05.08: Upgrade Water Reuse Facility to include advanced treatment in order to meet future water quality regulatory requirements.
Goal 1, Objective 6, Policy 2	Develop Alternative Water Supplies, such as Reuse or Floridan aquifer wells, to satisfy projected water demands, which cannot be met through increased allocations in the Consumptive Use Permit.	Policy 07A.06.02: Develop Alternative Water Supplies, such as Reuse, Floridan aquifer wells, <u>or C-51 Reservoir capacity</u> , to satisfy projected water demands, which cannot be <u>directly</u> met through increased allocations in the Consumptive Use Permit.
Goal 1, Objective 6, Policy 4	Continue exploring the water storage capabilities of the C-51 storage facility.	Policy 07A.06.04: <u>Participate on the C-51 Reservoir Alternative Water Supply (AWS) Project Phase I by whatever means appropriate and approved by City Commission.</u>
Goal 1, Objective 7, Policy 4	Encourage the planting of "Florida Friendly" plants and support "Florida Friendly Best Management Practices for Protection of Water Resources by Green Industries, 2008".	Policy 07A.07.04: Encourage the planting of "Florida Friendly" plants and support "Florida Friendly Best Management Practices for Protection of Water Resources by Green Industries, <u>2015</u> ".

Location within Previous Potable Water Element Document	Previous Content	Amended Content
Goal 1, Objective 7, Policy 5	Continue the public education program to encourage water conservation.	Policy 07A.07.05: Continue the public education program to encourage water conservation <u>and to provide technology upgrades, like the free Dropcountr App, to provide the most recent tools for water use monitoring and conservation.</u>
Goal 1, Objective 7, Policy 10	Adopt and enforce a year –round irrigation rule as referenced in the City of Pompano Beach 10 year Water Supply Plan.	Policy 07A.07.10: <u>Comply with Broward County's</u> year –round irrigation rule as referenced in the City of Pompano Beach 10 year Water Supply <u>Facilities Work</u> Plan.
Goal 1, Objective 8, Policy 5	Continue to monitor saltwater intrusion near eastern wells so that wells remain usable and that timely action to save the wells can be taken.	Policy 07A.08.05: Continue to monitor saltwater intrusion so that timely action can be taken to protect the eastern wells to the maximum extent possible and to determine when they must be removed from use.
Goal 1, Objective 8, Policy 6	Prevent saltwater intrusion into eastern wellfield site by adding reuse water to percent western movement of the saltwater intrusion line wellfield.	<u>Removed Goal 1, Objective 8, Policy 6 and renumbered Policy numbers accordingly.</u>
Goal 1, Objective 8, Policy 7	Follow recommended practices and make improvements to the wells in the eastern and western wellfields as recommended in the Water Master Plan as necessary to maintain capacity and water quality.	Policy 07A.08.06: Follow recommended practices and make improvements to the wells in the eastern and western wellfields as recommended in the Water Master Plan as necessary to maintain capacity and water quality. <u>Lock in and protect the eight future western well sites in Palm Aire.</u>
Goal 1, Objective 10, Policy 1	Average of plant inspections result in 90% rating or better.	Plant inspection <u>results should average</u> a 90% rating or better.

Location within Previous Potable Water Element Document	Previous Content	Amended Content
Goal 1, Objective 10, Policy 5 ⁽¹⁾		Policy 07A.10.05: <u>To ensure coordination of the Comprehensive Plan with the Lower East Coast Water Supply Plan (LECWSP) Updates, continue to adopt the necessary updates to the Water Supply Facilities Work Plan (Work Plan) within 18 months of any adopted update to the LECSWP. The City hereby adopts by reference the 2020 Water Supply Facilities Work Plan which covers a planning period of not less than 10-years and addresses issues that pertain to water supply facilities and requirements needed to serve current and future development within the City. The City shall review the plan every 5-years within 18 months after the governing board of the SFWMD approves any updates to the LECSWP. Any changes affecting the Work Plan shall be included in the Capital Improvements Plan to ensure consistency between the Potable Water Sub-Element and the Capital Improvements Element.</u>
Goal 1, Objective 10, Policy 6	To ensure coordination of the Comprehensive Plan with the Lower East Coast Water Supply Plan Update, approved by the South Florida Water Management District on September 12, 2013, and prepare updates to Water Supply Plan within 18 months of any future updates to the LEC as approved by the South Florida Water Management District.	Policy 07A.10.07: To ensure coordination of the Comprehensive Plan with the Lower East Coast Water Supply Plan Update, approved by the South Florida Water Management District <u>in November 2018</u> , and prepare updates to Water Supply Plan within 18 months of any future updates to the LEC as approved by the South Florida Water Management District.
Goal 2, Objective 2, Policy 3	Protect existing wellfields, surface 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 plan for infrastructure replacement and relocation as needed.	Protect existing wellfields, surface storage facilities, control structures, water and <u>reuse</u> treatment plants and transmission infrastructure from increased coastal flooding, sea level rise, saltwater intrusion, and other potential future climate change impacts, and plan for infrastructure replacement and relocation as needed.
Goal 2, Objective 2, Policy 7 ⁽¹⁾		Policy 07B.02.07: <u>Complete securing of future sited wellfield locations in Palm Aire to ensure sustainability of water supply.</u>
Note: (1) New Policy added.		

Table 8.2 Conservation Element Amendments directly Related to this WSFWP Update

Location within Previous Conservation Element Document	Current Content	Amended Content
Goal 1, Objective 1, Policy 09.01.02	The City shall implement a Climate Change Program that supports mitigation and sensitivity to the impacts of climate change in coordination with other municipalities, Broward County, private businesses, other governmental agencies and the State of Florida. This program will focus on mitigating the causes and consequences of greenhouse gas emissions in a cost-effective and efficient manner that preserves the City's overall values and quality of life.	Policy 10.01.02: The City shall <u>continue developing their</u> Climate Change <u>Mitigation and Adaptation</u> Program that supports mitigation and sensitivity to the impacts of climate change in coordination with other municipalities, Broward County, private businesses, other governmental agencies and the State of Florida. This program will focus on mitigating the causes and consequences of greenhouse gas emissions in a cost-effective and efficient manner that preserves the City's overall values and quality of life.
Goal 1, Objective 2, Policy 09.02.05	The City shall keep any ocean sewage outfall at least one mile from the off short coral reef tract.	<u>Removed Goal 1, Objective 2, Policy 09.02.05 and renumbered Policy numbers accordingly.</u>
Goal 1, Objective 3, Policy 09.03.02	The western wellfield production quantity and quality shall be monitored particularly because of the increasing reliance on that wellfield.	The <u>eastern and</u> western wellfield production quantity and quality shall be monitored <u>for the protection of the groundwater supply.</u>
Goal 1, Objective 3, Policy 09.03.03	City policies shall promote water conservation and, wherever possible, promote and continue the re-use water where the quality requirements permit.	Policy 10.03.03 City policies shall promote water conservation and, wherever possible, promote and continue the <u>use the</u> re-use water <u>for irrigation by whatever means are appropriate and approved by City Commission.</u>
Goal 1, Objective 3, Policy 09.03.04	The City shall keep the emergency water conservation plan.	Policy 10.03.04 The City shall keep the emergency water conservation plan <u>current including the conservation measures and how it will be implemented.</u>
Goal 1, Objective 3, Policy 09.03.06	The City shall explore the possibility of providing alternative sources of water.	Policy 10.03.06 The City shall <u>continue to participate in Alternative Water Supply projects included in the 10-Year Water Supply Plan such as reuse, the C-51 Reservoir, concentrate recovery and other potential AWS projects.</u>
Goal 1, Objective 3, Policy 09.03.07	The City shall, within its jurisdiction, enforce the graduated detailed and specific water reductions set forth by the South Florida Water Management District during times of water shortage.	Policy 10.03.07 The City shall, within its jurisdiction, enforce the graduated detailed and specific water reductions set forth by the South Florida Water Management District during times of water shortage <u>as well as the established year-round water-use restrictions.</u>
Goal 1, Objective 3, Policy 09.03.08	The City shall continue its water reuse program to combat saltwater intrusion.	Policy 10.03.08 The City shall continue its water reuse program to combat saltwater intrusion <u>and extend water resources.</u>

Updated October 2020

Chapter 9

SUMMARY AND CONCLUSIONS

Local governments are mandated by Florida Legislature to submit a WSFWP to ensure linkage between the Regional Water Supply Plan and their individual comprehensive plans. The WSFWP is to address infrastructure and conservation requirements, needed capital improvements, and inter-governmental and water supplier coordination. It is required that the WSFWP shall be updated every five years, or within 18 months after the Governing Board adoption of an updated Regional Water Supply Plan so that the local plan reflects the changes of the regional plan.

This WSFWP has been prepared for the City of Pompano Beach. The purpose of this WSFWP is to assess the City's current water sources and existing facilities and evaluate their adequacy to meet the projected future raw and treated water demands. The WSFWP development will facilitate the required coordination efforts for water supply and land use planning between the City's Planning and Zoning Department and Utilities Department, the SFWMD, BCWWS, and each of the water-receiving local governments, which include the City of Lighthouse Point and Town of Lauderdale-by-the-Sea.

9.1 City Service Area

The City covers the area extending from the Atlantic Ocean to Florida's Turnpike and from Sample Road to McNab Road in northeast Broward County. The City has a total area of 25 square miles with an estimated current population of 109,441. The City's utility service area, including water, wastewater, and reuse, varies from the jurisdictional area. The water utility service area serves 19 square miles consisting of a large portion of the City, along with neighboring municipalities – City of Lighthouse Point and Town of Lauderdale-by-the-Sea. The remainder of the City is served by BCWWS or private suppliers.

BCWWS Districts 1 and 2 supply potable water to portions of the City that are not served internally. As such, the City residents served by BCWWS are direct customers of BCWWS. Private suppliers receive a portion, if not all, of their water supply from non-municipal water, mostly for irrigational use for landscaping or golf courses.

9.2 Existing Potable Water Facilities

City Owned: The City's source of potable water originates from the Biscayne Aquifer. The City utilizes the Biscayne Aquifer system for public water supply use under WUP No. 06-00070-W. The WUP provides raw water supplies to the City's WTP, via 25 wells, with an annual allocation not to exceed 6,478 MG and a maximum month allocation not to exceed 610 MG. The 25 wells are divided into two wellfields, the Eastern Wellfield (Airport Wellfield) and the Western Wellfield (Palm-Aire Wellfield). Currently, Well Nos. 8 and 17 are inactive and Well No. 3 has been abandoned. The City plans to relocate Well No. 3 with proposed Well No. 3R in the near future. The most recent permit modification letter, dated April 14, 2020 and included in Appendix C, reflects the modification.

BCWWS Owned: The BCWWS District 1 and 2 water supply system is comprised of three SAS wellfields – District 1, District 2 North Regional, and the District 2 (2A) Wellfields. They are located near the District 1 WTP in Lauderdale Lakes, Deerfield Beach and Pompano Beach, respectively. The District 1 wellfield operates under SFWMD WUP No. 06-00146-W. The District 2 wellfield operates under SFWMD WUP No. 06-01634-W. The BCWWS wellfields have a total rated capacity of approximately 70 MGD, but their permitted withdrawal limits are much lower.

Table 9.1 summarizes allocation based on wellfield and permit.

Table 9.1 Wellfield Permit Allocation

Wellfield	Owner	Location	Source	Permit No.	Maximum Annual (MG)	Maximum Month (MG)
Eastern and Western	Pompano Beach	Pompano Beach	Biscayne Aquifer	WUP No. 06-00070-W	6,478	610
District 1	Broward County	Lauderdale Lakes	Biscayne and Floridan Aquifers	SFWMD WUP No. 06-00146-W	5,074 ⁽¹⁾	461
District 2 – North Regional & 2A	Broward County	Deerfield Beach & Pompano Beach	Biscayne and Floridan Aquifers	SFWMD WUP No. 06-00146-W	8,052 ⁽²⁾	738

Notes:

(1) Annual Biscayne Aquifer allocation is 3,664 MG, with max month of 333 MG.

(2) Annual Biscayne Aquifer allocation is 6,388 MG, with max month of 585 MG.

Updated July 2020

Two upper FAS test wells are being installed near District 1 to develop raw water treatment method appropriate for FAS water quality. They are being done as possible alternative water supply wells. Use of FAS has not yet been evaluated for District 2.

The City WTP is located north of 12th Street between Northeast 3rd Avenue and Northeast 5th Avenue in Pompano Beach. The treatment plant has two parallel treatment processes – conventional lime softening and nanofiltration membrane softening – with design capacities of 40 mgd and 10 mgd, respectively, for a total design capacity of 50 mgd.

The lime softening plant receives water primarily from the Eastern Wellfield and comes equipped with a single sludge thickener basin for lime sludge thickening and vacuum filters. The raw water enters the solids contact softening clarifiers where water is softened and then sent to the multimedia gravity filters. The filtered water flows to the clearwell for disinfection using chlorine and ammonia. The finished water is then sent out to the distribution network or to on-site storage tanks depending on water demand needs. Sludge produced is hauled offsite for disposal. The process has a high production yield and is 97 percent efficient.

The nanofiltration membrane process receives raw water from the Western Wellfield and comes equipped with filters, membrane units, and degasifier units. The process is heavily reliant on various chemical processes and has a production yield of roughly 80 percent. Once the raw water passes through the multistep process, the effluent treated water is sent to the clearwell to blend with effluent from the lime softening plant.

The City WTP has one blending clearwell/contact chamber where effluent from both plants blend prior to disinfection. The disinfected water may then enter the distribution system and flow to on-site storage tanks. The treatment plant has two 5 MG ground storage tanks designed to buffer the water production process from the water distribution system. There is also a remote 1 MG ground storage tank located at Indian Mound. It is overturned daily for fire flow emergency and to improve water quality.

Table 9.2 summarizes the water storage facilities.

Table 9.2 Water Storage Facilities

Location	Description	Capacity (MG)	Amount	Total Capacity (MG)
Water Treatment Plant	Clearwell	2.0	1	2.0
Water Treatment Plant	Ground Storage Tank	5.0	2	10
Indian Mound	Ground Storage Tank	1.0	1	1.0
			Total	13

Updated July 2020

The City water distribution system consists of approximately 275 miles of water lines ranging from 2 to 36 inches in diameter. Pipe material varies from cast iron and galvanized iron to ductile iron and PVC, depending on age and location of the pipes.

9.3 Existing Reclaimed Water System

There are two reclaimed water systems within the City limits. One is operated by the City and the other is operated by the BCWWS North Regional WWTP. The City's RWTF is located at 1799 North Federal Highway in Pompano. The reuse facility is located at 2401 North Powerline Road. Both facilities treat effluent from the BCWWS.

The City's reuse facility is also known as OASIS, which stands for "Our Alternative Supply Irrigation System." It has a current rated capacity of 7.5 mgd and there are future plans to expand the facility to an ultimate capacity of 12.5 mgd. The facility operates under the FDEP Permit No. FLA013581.

Effluent from the BCWWS is filtered via deep bed sand filters and receives high level chlorine disinfection to meet public access reuse standards. There are two storage tanks on-site where the treated water is stored prior to being pumped into the reuse distribution system. The total storage capacity provided for reuse is 5.5 MG, and the City's current annual average demand was measured to be approximately 2.7 mgd. Currently, reuse water is used for landscape irrigation purposes.

The City's reuse distribution system is comprised of approximately 32 miles of pipe ranging from 2 to 30 inches in diameter. The active users include 995 residential reuse connections and 243 multifamily and commercial connections, for a total of 1,238 reuse connections as of 2019. Future reuse demands are anticipated to increase by 2040, along with future expansion of the distribution system as per the ongoing 2020 City Reuse Water Master Plan.

The City regulates reuse water through the Code of Ordinances, Chapter 54, "Reuse Water and Cross-Connection Control" and the Broward County Code of Ordinances, Chapter 36, "Water Resources and Management", Article II "Water Emergencies". The City has a large user agreement with the southern portion of the City of Lighthouse Point and with Broward County.

In 2008, the Florida Legislature enacted and OOL to eliminate the use of ocean outfalls as the primary means for disposal of treated wastewater. The law required wastewater utilities with an ocean outfall to increase reuse treatment capacity to at least 60 percent of the historic outfall flow by year 2025. The BCWWS North Regional WWTP has an ocean outfall and is planning to meet the 60 percent reuse requirement by expanding its public access irrigation in northern Broward County and southern Palm Beach County. This expansion also includes reuse systems in Pompano Beach and Coconut Creek.

9.4 Data and Analysis

9.4.1 Population Projections

Population and water demand projections for the City's utility service area were determined for the existing condition, a 5-year planning period (2025), a 10-year planning period (2030), and a 20-year planning period (2040), as part of the City's Water Master Plan 2020 Update. Population projections were based on 2018 billing data, the Broward County and PFAM 2017 Report, the City Population Projections by Census Tract 2018 Report, prepared by BEBR as part of the University of Florida, the 2014 WSWFP, and a City to City utility service area ratio, along with GIS and TAZ data.

Table 9.3 summarizes the population projections for the City's utility service area.

Table 9.3 Water Service Area Population Projections Summary

Areas Served	Historical Population		Projected Population				
	2010	2015	2020	2025	2030	2035	2040
City of Pompano Beach	78,073	86,144	91,210	94,589	97,941	100,926	103,193
Lighthouse Point	1,305	1,301	1,296	1,292	1,291	1,286	1,280
Lauderdale-by-the-Sea	2,512	2,759	3,006	2,2936	2,890	2,848	2,824
Total Service Area	81,890	90,204	95,512	98,817	102,122	105,060	107,300

Updated July 2020

9.4.2 Finished and Raw Water Demand Projections

Level of Service: The finished water level of service standard adopted by the City is 161 gpcd, which is based on water production data and population for 2018, after the meter replacement project took place at the WTP.

Water Demand Projections: The water demand projections for the City's utility service area were determined for the various planning periods using the level of service of 161 gpcd, population projections, the addition of identified "large users" demands, GIS, and TAZ data. Maximum day, maximum month, and peak hour demands were further determined using calculated peaking factors with respect to annual average demands. These factors were calculated using treatment plant SCADA data post meter replacement efforts.

Identified “large users” refer to nine, non-residential users with rather constant demands that are independent of population. The future projections include the Isles Casino Pompano Park proposed expansion.

Table 9.4 summarizes the finished water demand projections.

Table 9.4 Finished Water Demand Projections

Year	Projected Service Area Population	Annual Average ⁽¹⁾	Annual Average with Large Users ⁽²⁾	Max Month	Max Day	Peak Hour ⁽³⁾
		Peaking Factors				
		1		1.15	1.41	1.97
		Projected Water Demands (mgd)				
2017	93,529	12.6	13.3	14.3 ⁽⁴⁾	16.8 ⁽⁴⁾	26.3
2018	93,973	14.4	15.2	16.2 ⁽⁴⁾	20.1 ⁽⁴⁾	30.1
2020	95,512	15.4	16.1	18.5	22.7	31.7
2025	98,817	15.9	17.0	19.6	24.0	33.5
2030	102,122	16.4	18.6	21.4	26.2	36.6
2035	105,060	16.9	19.1	21.9	26.9	37.6
2040	107,300	17.3	19.4	22.3	27.4	38.3

Notes:

- (1) Per capita demand factor of 161 gallons per person per day (gpcd) applied; 2017 & 2018 from historic data.
- (2) Includes “Large Users” demands as summarized in Table 3.3.
- (3) Calculated using hourly SCADA data multiplied by maximum day peaking factor.
- (4) Based on historical MOR data for specified year.

Updated July 2020

The raw water projections for the planning periods were determined using historical data from 2008 to 2018. Raw to finished water ratios were calculated annually during the ten year period. An average raw to finished water ratio of 1.07 was applied to project raw water demands for year 2018 through 2040. This projection assumes that the same efficiency in treatment technologies can be accomplished in the future.

Table 9.5 summarizes the raw water demands under annual average and maximum day conditions.

Table 9.5 Raw Water Demands Projections

Year	Annual Average Demand	Maximum Day Demand
2018	16.3	21.5
2020	17.2	24.3
2025	18.2	25.7
2030	19.9	28.0
2040	20.8	29.3

Updated July 2020

9.4.3 Reclaimed Water Demand Projections

Reclaimed water demand projections and evaluations for the City and County are currently being updated as part of the 2020 Reuse Water Master Plan Update by Tetra Tech. The draft of this report delineates reuse zones based on geographical significance. The future demand projections are being determined using various types of users such as currently inactive accounts, proposed residential customers (single family residential), and future large users (multi-family residential, commercial, etc.) within each reuse zone, along with the City's standard level of service for reuse.

Table 9.6 summarizes the City's reuse water standard level of service.

Table 9.6 Summary of City of Pompano Beach Reuse Water Standard Level of Service

Criteria	2019 Actual Level of Service ⁽¹⁾
Single Family Use	412 gpd
Multi-Family Use	85 gpd / Unit
Parks	0.07 gpd / square foot
Commercial	0.01 gpd / square foot

Notes:

(1) LOS values adjusted by 6.9% water loss factor to account for non-revenue water.

Updated July 2020

Table 9.7 presents the projected average day reuse demands for the 5-year (2025), 10-year (2030), and 20-year (2040) timeframes.

Table 9.7 Projected Average Day Reuse Demands for 20-year Planning Period

Reuse Zone	FY 2019 (mgd)	2025 (mgd)	2030 (mgd)	2040 (mgd)	Build-Out (mgd)
1&2	0.82	0.94	0.98	1.04	1.57
3	0.25	0.25	0.25	0.25	0.25
4	0.13	0.14	0.22	0.52	0.80
5	0.04	0.04	0.04	0.04	0.60
5E	0.02	0.30	0.30	0.30	0.30
5E-1	-	1.00	1.00	1.00	1.00
6	-	-	-	-	0.70
7	-	-	-	-	0.59
9	-	-	-	-	0.93
Golf Course	1.31	1.31	1.31	1.31	1.31
Total excluding Golf Course	1.26	2.67	2.78	3.15	6.73
Total with MU (Golf Course)	2.58	3.98	4.10	4.46	8.04

Updated July 2020

9.4.4 Water Conservation and Water Loss Monitoring

The City's water conservation program encourages both conservation of water and the use of alternative water supplies. The City is proactive in providing public information to residents that aim to educate and bring awareness of the importance of water conservation. The following include the water conservation programs available in the City:

- OASIS reuse water program.
- "I Can Water Campaign".
- Public Information Program.
- LP/DP.
- BCMIL.
- Metering and Water Efficiency Tracking.
- Retrofit Program.
- Dropcountr Application.

The City's emphasis on conservation can be directly observed by taking note of the conservation ordinance development which is part of the City's overall Conservation Program as required by Limiting Condition 24 of the WUP.

The City monitors water loss by comparing treated water volumes metered leaving the WTP to billed water data and reports this comparison to the SFWMD annually as unaccounted-for-water losses. The City installed AMI in 2011, which helps gather the meter reading data automatically, leading to less accounting errors. The calculated average in 2018 was 13.63 percent, of which the treatment losses decreased from the previous year due to the improved accuracy of the new plant flow meters that were replaced in late 2018.

9.5 Intergovernmental Coordination Activities

9.5.1 SFWMD Regional Water Supply Plan

The City has reviewed the SFWMD 2013 and 2018 LEC Plan Update and identified projects located within the City's utility service area. In response to both documents, a letter has been drafted to the SFWMD that summarizes the identified projects and their current status. The letter is part of Appendix G and includes projects for the following programs or systems:

- Ocean Outfall Program.
- Reclaimed Water.
- Water Treatment.
- Water Supply.
- Water Conservation.

9.5.2 2020 Broward County 10-Year Water Supplies Facilities Work Plan

The 2020 BC WSFWP, was adopted on April 21, 2020. It had been reviewed and relevant projects to the City have been reported herein. The 2020 BC WSFWP is included in Appendix A.

9.6 Water Supply Facilities Work Plan

The City's WSFWP contained in Chapter 7 of this report consists of information pertaining to the City's Capital Improvements Program and the City's future water service area demands. The planning horizon for this WSFWP is from 2020 to 2030. During this 10-year period, the City will be required to renew their 20-year consumptive user permit, and implement alternative water supplies in order to meet the projected future water and reclaim demands.

9.7 Comprehensive Plan

The Comprehensive Plan has been updated with information that will support this updated WSFWP. Components included as part of the Comprehensive Plan update include the Potable Water and Conservative Elements. The Goals, Objective, and Policies for each component have been updated and identified to reflect the WSFWP. The full list of existing and proposed goals, objectives, and policies for each component are included as part of Appendices H and I.

9.8 Conclusions

The City does not require an expansion of the treatment processes based on projected demand increases. However, the City does have several capital improvement projects to address reliability, water quality, and to refurbish or replace aging equipment. The proposed projects are included as part of the City CIP projects list.

The City plans to meet future water demands by exploring alternative water supplies, expanding the existing reuse system to different areas of the City, and increasing the number of reuse water users. Some conservation efforts include reducing potable water and increasing reuse water use for irrigation, along with educating users on the conservation of water. The four primary alternative water supply projects expected to meet the City's projected increased water demands in the utility service area include reuse expansion credits, conservation through reuse expansion, concentrate recovery, and participation in the Phase 1 of the C-51 Reservoir project for 2.0 mgd. Details for each alternative water source and proposed project are discussed in Chapter 7.

BCWWS Districts 1 and 2 appear to have enough treatment capacity and Biscayne groundwater allocations to the projected future water demands. BCWWS has been utilizing and assessing alternative water supply sources as well as continuing to focus on conservation efforts. BCWWS has identified the utilization of the Floridian Aquifer and the ASR system as alternative water sources, according to the 2019 update of the BCWWS WSFWP, along with the C-51 Reservoir, the Hillsboro ASR, and secondary canal integration using interconnects. Details for each alternative water source and proposed project are discussed in Chapter 7.

Appendix A

2020 BROWARD COUNTY 10-YEAR WATER SUPPLY FACILITIES WORK PLAN



Water Supply Facilities Work Plan

TABLE OF CONTENTS

LIST OF FIGURES	3
LIST OF TABLES	4
LIST OF ACRONYMS	6
EXECUTIVE SUMMARY	8
INTRODUCTION	12
A. Statutory History	14
B. Statutory Requirements	14
REGIONAL ISSUES	16
A. Climate Impacts and Future Water Supply Conditions	16
Sea Level Rise	18
Saltwater Intrusion	19
Extreme Weather Events	22
Infrastructure Development	22
B. Water Use Limitation	24
C. Alternative Water Supply	26
Reclaimed Water	26
Upper Floridan Aquifer	27
C-51 Reservoir Project	27
D. COMPREHENSIVE EVERGLADES RESTORATION PLAN Implementation	27
BROWARD COUNTY	29
A. Broward County Settings	29
B. Broward County-Wide Integrated Water Resource Plan	34
Water Reuse in Broward	36
C-51 Reservoir Project	37
Floridan Aquifer	39
District 2A Aquifer Storage & Recovery (ASR)	40
Site 1 Hillsboro ASR	42
Secondary Canal Integration	42
Water Use Efficiency/Conservation	43
Technical Water Resources Assessment	44
C. Comprehensive Everglades Restoration Plan	46

Central Everglades Planning Project	46
Water Preserve Areas	47
Secondary Canal Improvement Project	47
DATA AND ANALYSIS	48
A. County-Wide Population Analysis	48
B. Current and Future Served Areas	51
BCWWS	51
City of Fort Lauderdale	55
City of Hollywood	56
C. Potable Water Level of Service Standard	57
BCWWS	57
City of Fort Lauderdale	60
City of Hollywood	60
D. Water Supply Provided by Local Governments	60
BCWWS District 1	60
BCWWS District 2	64
BCWWS District 3A and 3BC:	67
South System Regional Wellfield (SRW):	71
City of Fort Lauderdale	72
E. Conservation	74
Broward County	75
City of Fort Lauderdale	81
F. REUSE	82
Broward County	82
City of Fort Lauderdale	83
City of Hollywood	84
SPECIAL RECOMMENDATIONS AND ACTIONS	86
A. Broward County Water Reuse Projects	86
B. C-51 Reservoir Project	87
C. Technical Water Resources Assessments	87
Upper Floridan Aquifer Geotechnical Study	87
D. Broward County Water Partnership	88
E. NatureScape Irrigation Service	89
BCWWS CAPITAL IMPROVEMENTS	90

A. Work Plan Projects	90
B. Capital Improvements Element (CIE) /Schedule	93
GOALS, OBJECTIVES AND POLICIES	95
REFERENCES	112

LIST OF FIGURES

Figure WS1	Broward County Location	13
Figure WS2	Southeast Florida Regional Climate Change Compact Unified Sea Level Rise Projection	19
Figure WS3	Saltwater Intrusion Line (2014 SFWMD Isochlor Line – 250mg/L) for Broward County	23
Figure WS4	Broward County Municipal Service Areas	49
Figure WS6	BCWWS Retail Water Service Areas	53
Figure WS7	City of Fort Lauderdale Service Area	58
Figure WS8	City of Hollywood Service Area in District 3A, 3B, and 3C	59
Figure WS9	BCWWS District 1 Service Area	62
Figure WS10	BCWWS District 2 Service Area	65
Figure WS11	BCWWS District 3A Service Area	68
Figure WS12	BCWWS District 3BC Service Area	69

LIST OF TABLES

Table WS1	Water Supply Recommendations from the Regional Climate Action Plan 2.0 ¹	30
Table WS2	Lists of Municipalities, Utilities, and Districts in Broward County	34
Table WS3	District 2A ASR Cycle Testing ¹	41
Table WS4	District 2A ASR Cycle Testing Results ¹	41
Table WS5	Broward County Population Projections 2020-2040	50
Table WS6	BCWWS Service Area Population Projections 2015-2040 ¹	54
Table WS7	District 1 - Population Projection by Municipality ¹	54
Table WS8	District 2 - Population Projection by Municipality ¹	54
Table WS9	District 3A - Population Projection by Municipality ¹	55
Table WS10	District 3BC - Population Projection by Municipality ¹	55
Table WS11	City of Fort Lauderdale Utility Service Area Population by Jurisdiction, Actual 2015 and Forecasted 2020 to 2040	56
Table WS12	City of Hollywood Utility Service Area Population Projections 2015-2040	57
Table WS13	BCWWS Retail Potable Water Level of Service Standards ¹	57
Table WS14	District 1 Actual and Projected Finished Water Demands	61
Table WS15	District 1 Actual and Projected Raw Water Demands	63
Table WS16	Projected Average Day Finished Water by Municipality within District 1 in MGD ¹	63
Table WS17	District 2 Actual and Projected Finished Water Demands	66
Table WS18	District 2 Actual and Projected Raw Water Demands	66
Table WS19	Projected Average Day Finished Water by Municipality within District 2 in MGD ¹	67
Table WS20	District 3A and 3BC Actual and Projected Finished Water Demands	70
Table WS21	District 3A and 3BC Actual and Projected Raw Water Demands	70
Table WS22	Projected Average Day Finished Water by Municipality within District 3A in MGD ¹	71
Table WS23	Projected Average Day Finished Water by Municipality within District 3BC in MGD ¹	71

Table WS24	SRW CUP Allocation Summary	72
Table WS25	SRW Raw Water Large User Average Day Projections	72
Table WS26	Fort Lauderdale Water Demand Forecast*	74
Table WS27	Fort Lauderdale Water Demand Forecast by Service Area Municipality	74
Table WS28	Water Savings Realized Through County Water Conservation Programs	77
Table WS29	Participation in County water conservation programs	78
Table WS30	Proposed Potable and Non-Potable Public Water Supply Development Projects Listed in SFWMD 2018 LECWSP Update	92
Table WS31	Water Conservation Projects Listed in SFWMD 2018 LECWSP Update	93

LIST OF ACRONYMS

ASR	Aquifer Storage and Recovery
AWS	Alternative Water Supply
BCWWS	Broward County Water and Wastewater Services
BCPDMD	Broward County Planning and Development Management 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
EPCRD	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
LOSUM	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



BROWARD COUNTY COMPREHENSIVE PLAN

Water Supply Facilities Work Plan

EXECUTIVE SUMMARY

This Broward County Water Supply Facilities Work Plan (2020 Work Plan) addresses traditional and alternative water supply (AWS) source development and management strategies to meet existing and projected water use demand. The 2020 Work Plan primarily focuses on Broward County's Public Works Water and Wastewater Services (BCWWS) service areas and unincorporated Broward County neighborhoods entitled the Broward County Municipal Services Districts (BMSD). It also contains updates about the implementation of the urban water resource management strategies, including water conservation programs, prioritized at the 2019 Broward Countywide Integrated Water Resources Plan (IWRP), coordinated by Broward County Environmental Planning and Community Resilience Division (EPCRD). Overall, approximately 240,000 people receive water and wastewater services in these areas and the population is expected to be 281,000 by 2040. 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 after the South Florida Water Management District (SFWMD) approves a regional water supply plan update. The SFWMD approved the 2018 Lower East Coast Water Supply Plan Update (LECWSP, SFWMD, 2018) on November 8, 2018, with final administrative order on January 11, 2019. The 2020 Work Plan is Broward County's required update based on that plan's adoption. In addition, Broward County integrated its comprehensive plan's water resources elements and the new version is included in the 2020 Work Plan.

Like most Southeast Florida water utilities, BCWWS' primary public water supply source water is the Surficial Aquifer System (SAS) located from ground surface to approximately 240 feet underground. BCWWS' groundwater withdrawal wells range between 75 to 130 feet below ground. Broward County's primary SAS feature is the Biscayne Aquifer and it provides the vast majority of BCWWS and BMSD populations' water supply needs.

However, the Biscayne Aquifer is considered a finite water resource by the SFWMD. In 2007, the SFWMD mandated through a Regional Water Availability Rule that AWS will be used to serve future population growth (SFWMD, 2007). For example, the brackish Upper Floridan Aquifer (approximately to 1000 – 1700 feet underground) can be withdrawn and treated with more complex processes than used for the Biscayne Aquifer water. Other AWS options include, but are not limited to, water conservation, water reuse, and surface water storage development. The 2020 Work Plan outlines future BCWWS AWS projects to serve future populations as well as projects that maintain and optimize BCWWS' current systems. Similar projects are covered for the City of Fort Lauderdale and the City of 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 is planning to use up to six million gallons a day from the C-51 Reservoir project.

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 beneficial water reuse supply to the Southern Palm Beach County region as well as portions of the North Springs Improvement District, Coconut Creek, Deerfield Beach, and Pompano Beach. BCWWS is currently increasing its water reuse production capacity to twenty-six million gallons a day from the current ten million gallons a day to implement this project.

Additional regional drivers for Broward County's water supply include regional climate impacts such as sea level rise, saltwater intrusion, and extreme weather events. Sea level rise threatens future South Florida water conveyance that could negatively impact aquifer recharge and flood control management practices. Due in large part to a porous aquifer, future sea level rise also will increase saltwater intrusion's negative effect on public water supplies. Saltwater intrusion from the ocean will likely move further inward and pose contamination risk for freshwater aquifers. Future extreme weather events may include longer dry weather patterns that could decrease public water supply levels and, may also increase saltwater intrusion's landward extent.

Broward County, together with its municipal and regional partners, supports and facilitates water supply and climate change planning integration and implementation including:

- The Broward County Climate Action Plan's water supply actions (Broward County, 2015) 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, 2017).
- 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 and provide critical natural system water needs as well as maintain public water supply. CERP features within Broward County and in other SFWMD regions 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, the IWRP program developed, and continues to develop, several numerical hydrologic models used in decision making and to assist sustainable investments. Optimizing integrated secondary canal management is one hallmark success for the IWRP modeling. Broward County's Water Reuse Master Plan was developed to facilitate more projects Countywide and its implementation is greatly assisted with the IWRP's AWS grant investments.

Water conservation remains a critical AWS strategy in the 2020 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 that are designed to produce long-term demand reductions along with water quality improvements. These programs, targeted at various user groups, including Broward Water Partnership Conservation Pays, NatureScape Irrigation Services (NIS), NatureScape Broward, Know the Flow, Water Matters Day, and the NatureScape Broward School Board Environmental Partnership Agreement. The current IWRP goal of Broward County's water conservation programs combined is 10 gallons per day per capita reduction in water use Countywide by 2028.

Finally, the 2020 Work Plan data analysis demonstrates BCWWS will continue to meet its "Retail Potable Water Level of Service Standards". Special recommendations and a ten-year work plan outline the major C-51 Reservoir Project (27.6 million dollars) and Palm Beach County Reuse Partnership (104 million dollars) investments and components. In addition, water treatment plant (WTP) upgrades and water conservation projects are described. BCWWS' robust 5-year Capital Improvement Program is scheduled to spend over 123 million dollars on over sixty components to maintain and optimize the current system as well as build new features. All the 2020 Work Plan projects contribute towards BCWWS successfully managing future challenges to provide excellent water and wastewater services for 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, 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 (2020 Work Plan) identifies water supply sources, availability and facilities needed to serve existing and new development within the local government's jurisdiction. Chapter 163, Part II, F.S., requires local governments to prepare and adopt work plans into their comprehensive plans within 18 months after the South Florida Water Management District (SFWMD) approves a regional water supply plan update. The 2018 Lower East Coast Water Supply Plan (LECWSP) Update was adopted by the SFWMD's Governing Board on November 8, 2018. Therefore, local governments within the Lower East Coast (LEC) region are required to amend their comprehensive plans and include an updated Water Supply Facilities Work Plan and related planning elements by May 8, 2020.

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 utilities. BCWWS and both cities are responsible for ensuring enough capacity is available for existing and future customers.

This 2020 Work Plan will reference the initiatives already 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 development for at least a 10-year planning period. The work plan will have a planning time schedule consistent with the comprehensive plan and the 2018 LECWSP update. The Broward County 2020 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

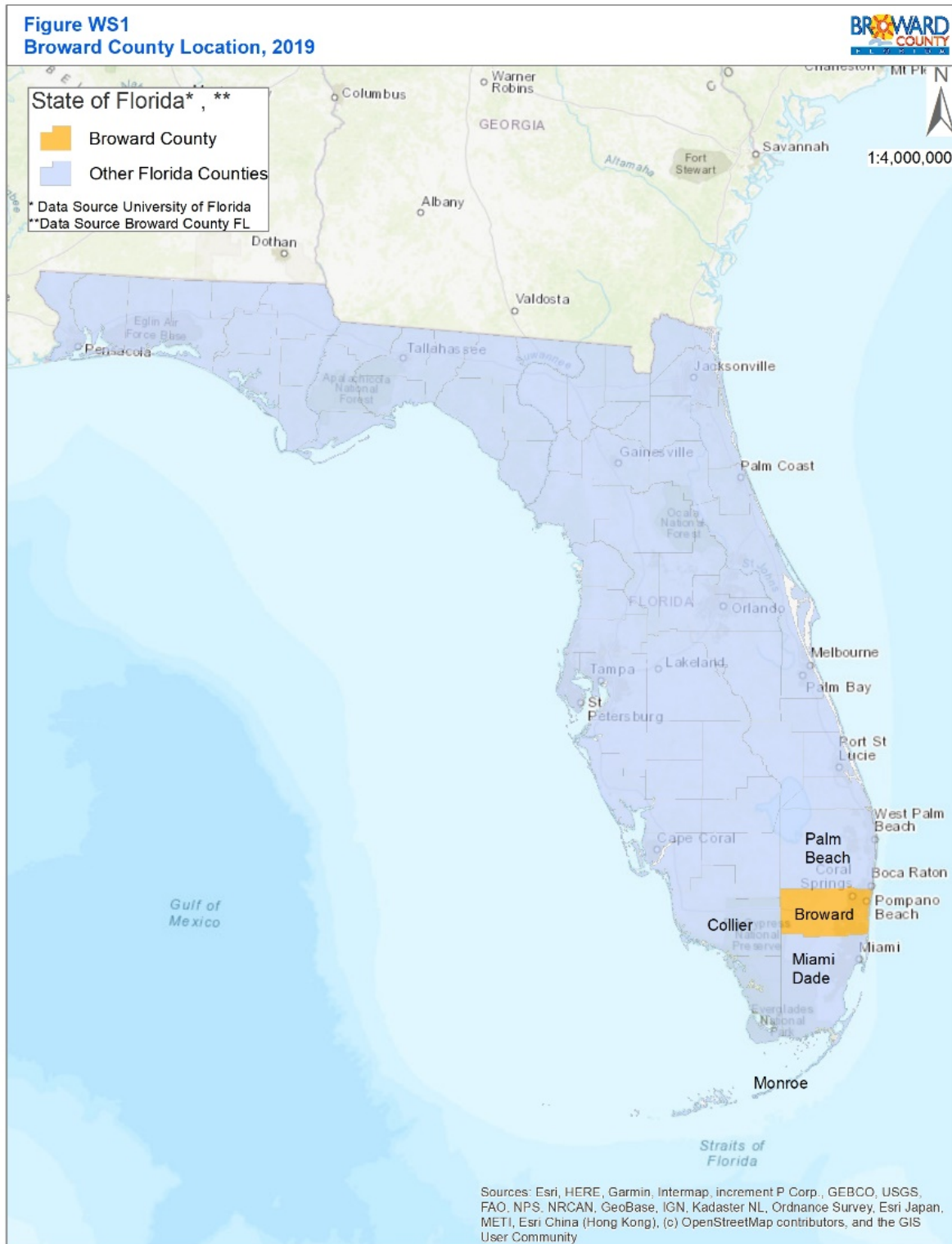


Figure WS1 Broward County Location

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 2020 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 availability of adequate water supplies and public facilities and services [Section 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 [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-year period [Section 163.3177 (3)(a)4, F.S.].
6. 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 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. **Climate Impacts and Future Water Supply Conditions:** Climate impacts and future water supply conditions need to be integrated into water resources resilience planning efforts;
2. **Water Use Limitation:** Limitation of fresh surface water and groundwater use by the SFWMD's Regional Water Availability Rule and Everglades and Lake Okeechobee Minimum Flow and Minimum Water Levels (MFL);
3. **Alternative Water Supply:** The need to develop diverse water sources to meet current and future water needs, including C-51 Reservoir Project, Floridan Aquifer, and reuse as mandated by the Ocean Outfall law; and,
4. **CERP Implementation:** Construction of additional storage systems (e.g. CERP's reservoirs, aquifer storage, and recovery systems) to capture wet season flow volumes will be necessary to increase water availability during dry conditions and attenuate damaging peak flow events from Lake Okeechobee.

A. Climate Impacts and Future 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 drought, increases in tidal and storm-related flooding, and the loss of coastal wellfield capacity due to saltwater contamination. 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, 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 their coordinated planning efforts. Water resource resilience can be achieved with relevant updates to Water Supply Facilities Work Plans and focused, actionable enhancements to comprehensive planning Goals, Objectives, and Policies (GOP). Key considerations for communities within the Southeast Florida planning areas include: 1) sea level rise, 2) saltwater intrusion, 3) extreme weather, and 4) infrastructure investments to support diversification and sustainability of water supply sources, and 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, in order to ensure that Broward's water resources will be sustainable and promote more effective and efficient water resources management. The Broward County water management community works with many groups, including the state and federal government, academia, and the private sector to study the impacts that a changing climate brings and to develop plans for mitigation and adaptation.

Among 2019 IWRP objectives, there is: "to promote water resources resiliency by evaluating future conditions, including potential climate impacts and adopt strategies to mitigate, adapt, and prevent disruptions to Broward's overall goal of more efficient and effective water management."

In addition, the Water Supply Actions within the Broward County Climate Action Plan (2015) are intended to maintain adequate water supply through conservation and adaptation, development of decision support tools necessary to build community resilience and increase the resilience of natural systems through integrated water resource management. The 11 actions that are proposed include:

- Continue local water conservation programs
- Include climate change in updates of LECWSP
- Investigate regionalization of water supply
- Monitor and protect wellfields
- Develop AWS strategies
- Model the sustainable use of the aquifer
- Evaluate impacts of flooding of contaminated sites
- Evaluate reuse water interaction with and impacts to the natural systems
- Implement reuse strategies
- Evaluate reuse considering sea level rise
- Increase percentage of pervious areas

Both the 2019 IWRP Update and Broward's Climate Action Plan support the work of the Southeast Florida Regional Climate Change Compact (SEFRCCC) to develop the Regional Climate Action Plan (RCAP) (SEFRCCC 2017), which is the four-County Southeast Florida Regional Climate Compact's guiding tool for coordinated climate action in Southeast Florida. Broward County has taken a lead role as a compact partner in organizing the water section of the Water Goal of the document, which is designed to "advance the water management strategies and infrastructure improvements needed, in parallel with existing water conservation efforts, to mitigate the potential adverse impacts of climate change and sea level rise on water supplies, water and wastewater infrastructure, and water management systems, inclusive of regional canal networks, pumps, control structures, and

operations." Twenty-one actions are included within this goal. Compact documents produced to assist policymakers, administrators, and program staff include "Integrating Climate Change and Water Supply Planning in Southeast Florida" and "Regional Impacts of Climate Change and Issues for Stormwater Management" (SEFRCCC, 2019).

Sea Level Rise

Sea level rise has significant implications for water management and water supply planning in Southeast Florida, the rate of which is accelerating. During the previous century, the global rate of sea level rise averaged approximately 1.6 mm per year. The rate of rise increased to an average of 1.7 mm per year during the second half of the last century, followed by a more significant increase to 3.3 mm per year measured during the last decade. This trend of rising sea level is reinforced by local tide data which documents an increase in regional sea level of about 9 inches during the last 100 years. While there continues to be uncertainty about the overall extent of sea level rise that might be realized in the coming century, the Fourth National Climate Assessment (NCA, USGCRP, 2018) report presents a probable range of 1 to 6 feet by 2100. In Southeast Florida, partner counties in the Southeast Florida Regional Climate Change Compact, inclusive of Broward, Palm Beach, Miami-Dade, and Monroe counties, have collectively agreed to use modified guidance developed by the U.S. Army Corps of Engineers (USACE) and a planning scenario of 9 to 24 inches additional sea level rise by 2060, consistent with projections presented in the 2014 NCA, Figure WS2 below. This unified sea level rise projection has been formally adopted by Palm Beach, Broward, Miami-Dade and Monroe Counties and is now being used to inform planning processes and project design throughout the region. As the impacts of historic sea level rise are already being realized and acceleration of the rate of rise is expected to compound local impacts and vulnerabilities, it is prudent that planning processes begin to formally reflect consideration of sea level rise as a future condition with recognized implications for near-term and longer-term planning decisions.

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

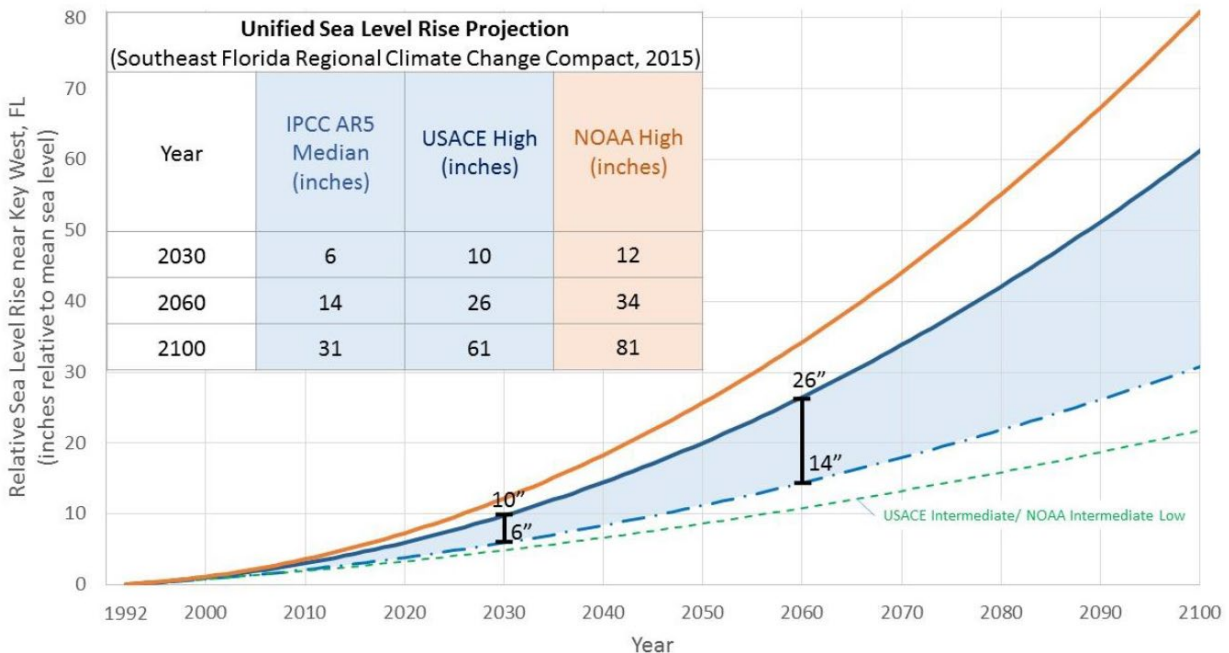


Figure WS2 Southeast Florida Regional Climate Change Compact Unified Sea Level Rise Projection¹

These realities necessitate consideration of plans and investments that may be needed to compensate for loss of existing water supplies through relocation of wellfields and the development of AWS sources, while also seeking opportunities to expand regional water storage opportunities. 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 several miles inland, groundwater supplies and potable wells are vulnerable to saltwater contamination. The Biscayne Aquifer, which serves as the regional's primary water supply, is a shallow, surficial aquifer characterized by limestone karst geology, which is highly porous and transmissive. As a result, coastal saltwater intrusion of the aquifer has begun to restrict coastal water supplies and necessitated the development of western wellfields, changes in wellfield in water management operations, and investments in reclaimed water projects to enhance aquifer recharge. At the toe of the saltwater front, chloride concentrations exceed drinking water

¹ The unified sea level rise projection is updated every 5 years, having its next one anticipated to be released at the Southeast Florida Regional Climate Change Compact Summit, in December 2019. Link to current 2015 version shown above: <https://southeastfloridacclimatecompact.org/wp-content/uploads/2015/10/2015-Compact-Unified-Sea-Level-Rise-Projection.pdf>

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

While impacts and planning efforts have historically focused on the most at risk utilities and wellfield, the accelerated rate of sea level rise and advancements in modeling and planning tools provide support and justification for a more holistic review of anticipated trends and necessary responses on both a local and regional scale.

As early as the 2000 LECWSP, these 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, the ability to shift pumpages to an inland wellfield, or an alternative source that is not impacted by the drought.

Technical assessments have further identified changes in land use, drainage of the Everglades, 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, has accelerated the movement of the front, doubling the rate at which the front has progressed during the last several decades at certain locations. It is expected that sea level rise will constitute an increasingly significant influence on the rate of saltwater migration during the decades to come and that critical wellfield capacity will be lost with an additional 2-foot increase in sea level, the extent of which will vary along the coast. Conditions will be further influenced by temporal hydrologic conditions and responses in water management operations. It is therefore 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 planned efforts to meet shared regional water demands. Continuation of groundwater monitoring and modeling efforts will be critical to predicting the movement of the front under sea level rise scenarios anticipated over the next several decades and adaptation efforts should continue to be refined in accordance with predicted and realized trends. Regional and local data will be important in informing decision-making.

In 2006, Broward County's EPCRD contracted with the United States Geological Survey (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 will also investigate the implications on the viability of water supplies and be used to identify and test possible adaptive strategies. This model was published and publicly released in March 2016.

The County is also enhancing this investment with 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. The current initial effort integrates bias-corrected, dynamically downscaled data from Global Circulation models into the updated surface/groundwater model that will be used for predictions Countywide. Refinements such as Surface Water Routing (SWR) and Urban Runoff (URO) components offer more detailed conceptualization of the surface water/groundwater interactions that can be then used to assess the predictive scenarios and comparison of alternative water resource strategies in a smaller study area of the County. This model was published and publicly released in February 2019. Initial results of the implementation of the SWR and URO packages in the study area were successful and, as such, expansion of the two packages throughout the entire urban extents of the County are currently underway.

In the recent restudy of Flood Insurance Rate Maps completed in 2014 by FEMA, the County's MIKE SHE/MIKE 11 model was utilized and updated. The County is updating this map to anticipate 100-year flood elevations that are expected to occur by 2060-2070, 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 updates, roughness coefficient improvements, addition of detention storage and ponded drainage routines, and incorporation of future tide levels. It is anticipated the Future Conditions 100-Year Flood Elevation Map will be completed in Fall of 2019, when approval process will be initiated.

The mapping of the current saltwater intrusion front is elaborated based on the end of dry season data available at 93 monitoring stations supported by local governments

throughout the region, the USGS, and the SFWMD. The current Saltwater Intrusion Line for Broward County, Figure WS3 was last updated in 2014 and the SFWMD is currently working to advance, with an anticipated publishing date of December 2019.

Extreme Weather Events

As extreme events increase in frequency and severity, comprehensive planning should consider 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 to the natural systems and provide less recharge potential for wellfields. Integrated water resource management strategies will help to mitigate for these impacts, particularly those projects that can serve to provide additional long-term storage of stormwater runoff and redistribution of excess rainfall during dry periods and drought. Regional surface water reservoirs and below ground aquifer storage and recovery (ASR) systems are potentially viable AWS projects and climate adaptation strategies.

Infrastructure Development

With increasing climate disruptions, there is a need to diversify water supply sources, improve treatment technologies and to support the development of adaptive stormwater and wastewater infrastructure design criteria to ensure long-term sustainability of key facilities. Conversely, alternative water treatment technologies generally have a high energy demand and carbon footprint that can exacerbate climate change impacts. Strategic infrastructure planning should incorporate these constraints and work within with the GOP of the Comprehensive Planning process and Water Supply Facilities Work Plans to provide for long-term sustainability and a balanced approach to future development.

Increases in groundwater deviations, as both direct and indirect response to sea level, will challenge the function of drainage systems and is expected to exacerbate flooding, for even mild storm events. Conditions will be more severe with extreme rainfall events increasing damage to low-lying utility infrastructure and contribution to prolonged surface water flooding. 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 as is the assessment of viable water supplies and impacts to the natural systems from prolonged droughts.

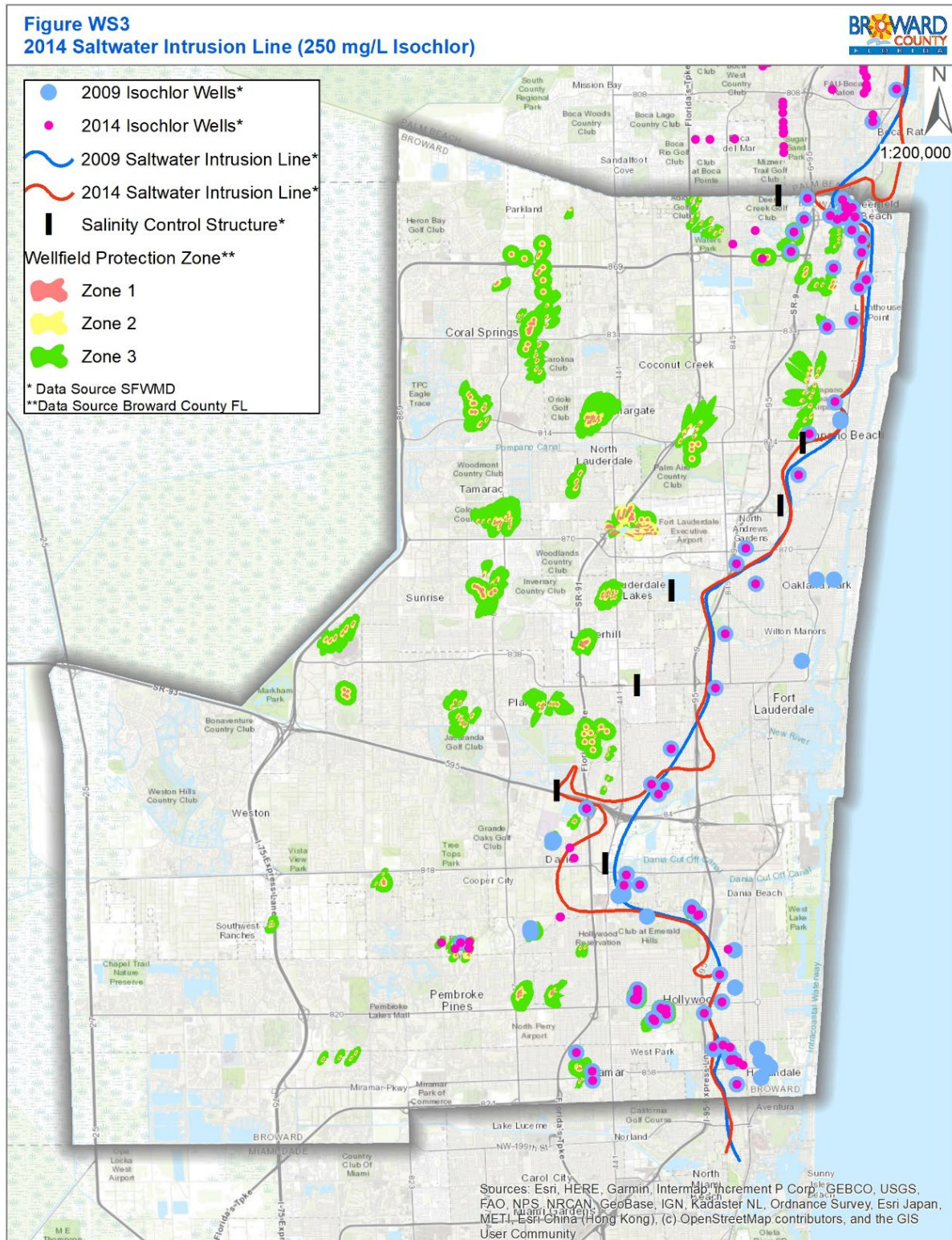


Figure WS3 Saltwater Intrusion Line (2014 SFWMD Isochlor Line – 250mg/L) for Broward County

Options that provide for a diversification of water projects and protection of resources will be fundamental and may include: regional water storage such as the C-51 Reservoir Project; ASR; the development and use of highly treated wastewater (reverse osmosis - RO) for recharge as hydrodynamic barriers; the relocation and/or regionalization of wellfields and treatment facilities away from low-lying areas; and enhancing operational flexibility.

B. Water Use Limitation

The 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 serve to protect the SAS from saltwater intrusion, ensure adequate groundwater levels for maintenance of natural systems, and prevent excessive groundwater seepage or surface water flows from the regional (Everglades) system.

As part of the establishment of 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 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 south eastern 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 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 in order to maintain MFL, Broward County is required to meet additional demands with alternative water supplies.

After the approval of the 2005-2006 LECWSP, continued concern over the safety of Lake Okeechobee's dike and ecological impacts warranted that the USACE set a new regulation schedule for lake water releases. The Lake had historically provided water supplies directly to a few rural utilities, irrigation water for the Everglades agricultural area, and backup water source for urban users in the coastal basins during droughts and dry times as 'pass through' water to the Water Conservation Areas (WCAs). With the 2008 Lake Okeechobee Regulation Schedule and lower stage levels, an average loss of approximately 430,000 acre-feet of storage diminished the level of certainty for existing legal users (SFWMD, 2013). This mandated that a prevention and recovery strategy be implemented with water resources strategies identified to meet the MFL criteria, as was done for the Everglades and Biscayne MFL. Therefore, in August 2008 the 2005-2006 LECWSP, Appendix J was amended to include a recovery strategy for the Lake Okeechobee MFL and, as with the other MFLs, the Lake MFL recovery strategy relies upon key CERP projects to be completed in addition to the completion of the Herbert Hoover Dike repairs.

In 2019, USACE initiated the development of the new Lake Okeechobee System Operating Manual (LOSOM) with the purpose to reevaluate and define operations for the Lake Okeechobee regulation schedule that to account for additional infrastructure that will soon be operational. The additional infrastructure that are being taken into consideration include the Herbert Hoover Dike rehabilitation, Kissimmee River Restoration Project, as well as the CERP C-43 West Basin Storage Reservoir and C-44 Reservoir and Stormwater Treatment Area.

The SAS in the Southeastern 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 to residents of Broward County, Miami-Dade County, and Southeastern 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 LEC planning area, which includes all of Broward County.

Withdrawals from the SAS are managed by the SFWMD through the issuance of Consumptive Use Permits (CUPs). In order 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 economic 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 the implementation of 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 driven largely by these Restricted Allocation Areas and the concurrent consumptive use restriction for future water supply withdrawals from the surficial aquifer to historic levels (prior to 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 defined 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 nontraditional 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 directly impacted the ability of local water supply entities to advance the development of AWS projects through their own individual efforts.

C. 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 the use of six ocean outfalls in Southeastern Florida as the primary means for disposal of treated domestic wastewater, two of which are in Broward County, one of which is operated by Broward County Water and Wastewater Services. The affected wastewater utilities must reuse at least 60 percent of the historic outfall flows by 2025. The objectives of this statute are to reduce nutrient loadings to the environment and to achieve the more efficient use of water for water supply needs. South Florida utilities are working to advance reuse projects to meet the requirements.

Upper Floridan Aquifer

On occasions when local utilities seek use of the Floridan Aquifer to supplement their Biscayne Aquifer-sourced water, they are faced with higher energy costs associated with treatment of the Floridan Aquifer water in South Florida, which has elevated chloride concentrations above those that are found elsewhere in Northern and Central Florida. Typically, the utilities in Broward County that utilize the Floridan Aquifer mix that water with Biscayne water supplies, thereby diluting the chlorides and subsequently providing a finished water requiring less treatment than water that is derived solely from the Floridan Aquifer.

C-51 Reservoir Project

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 was formally identified as a priority restoration strategy for the Lake Worth Lagoon dating to the 1992 Restudy of the 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 at the 2018 LECWSP as an AWS source to meet with regional projected 2040 water demands. Beyond water supply, the reservoir will contribute to capture excess flows and enhance stormwater management, reduce harmful discharges and associated nutrient loads to Lake Worth Lagoon. It should also mitigate saltwater intrusion by maintaining higher canal stages and recharging coastal wellfields along the LEC. These potential environmental enhancements are being studied as part of the Phase 2 feasibility analysis currently underway.

D. COMPREHENSIVE EVERGLADES RESTORATION PLAN Implementation

The CERP is the blueprint for refitting the region's outdated water management infrastructure. By addressing the needs of the natural system with those of the urban areas and agriculture, the plan provides considerable benefits throughout the system and is a first step towards a sustainable South Florida. The CERP is designed to capture, store, or convey water now discharged to tide, making it available for all users and yielding benefits for both the regional system and local partners. The USACE and the SFWMD are partners in the re-plumbing of the Everglades with the objective of "getting 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 state-federal initiative to speed up 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 Florida Bay while protecting coastal estuaries. The USACE led the CEPP planning effort in partnership with the SFWMD.

The Broward County Water Preserve Areas (WPA) project, part of CERP, was authorized by Congress as part of the 2014 Water Resources Reform and Development Act (WRRDA). The two primary functions of the project is 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 that was 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 maintain recharge to the aquifer and wellfields such as the Broward County South Regional in the area.

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 the EPCRD and BCWWS are 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. Currently, water service is provided by BCWWS 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 Fort Lauderdale's Planning and Zoning Department and Water utilities, the EPCRD has identified current and future water supply needs and water supplies as detailed below.

A. Broward County Settings

Broward County (County) is located along the lower east coast of Florida, between Miami-Dade County to the south, Palm Beach County to the north, and Collier and Hendry Counties to the west. The County was formed from parts of Palm Beach and Dade Counties in 1915. At that time, the population was 4,763 (Florida State Census). In 2010, the Census estimated the population of the County to be 1,748,066 making it the second most populated county in the State after Miami-Dade (2010 Census Data). The University of Florida's Bureau of Economic and Business Research (BEBR), 2018 estimate lists the County's population at 1,873,970.

In land size, the County contains more than 1,225 square miles, however, only the eastern third of the County (approximately 422 square miles) is urbanized. The remaining two-thirds of the County is composed of wetlands that constitute a large part of the Everglades WCAs. This portion of the County is actively undergoing the planning and construction related to restoration of the Everglades, the largest natural system restoration effort in the world. With a population of nearly 1.8 million living on approximately 422 square miles of relatively low-lying developable urban land, the population density of the County is approximately 4,200 people per square mile.

Balancing Everglades restoration efforts and climate change impacts with our growing communities presents the County with significant water resource planning challenges. However, Broward has long recognized that water is a shared regional resource and that effective and efficient water management requires Countywide and regional coordination. To this end, the County is a founding member of the Southeast Florida Regional Climate

Change Compact and board member of the Resilient Utility Coalition to ensure sustainability of the water resources in our region.

Southeast Florida is widely considered one of the most vulnerable regions with respect to the impacts of climate change and sea level rise. This is largely the result of several unique geographic characteristics, which include low land elevations, flat topography, a porous geology, and dense coastal development. In combination, climate change and sea level rise are expected to present significant challenges relating to water resource planning, management, and infrastructure for communities throughout the region, which includes Palm Beach, Broward, Miami-Dade, and Monroe Counties. These communities have agreed to partner in regionally-coordinated climate mitigation and adaptation strategies as part of the Southeast Florida Regional Climate Change Compact (SEFRCCC) and have jointly developed and adopted a Regional Climate Action Plan (RCAP 2.0), including 142 recommendations in twelve primary focal areas, with 21 specific to the focal area of “Water”, Table WS1 below. These recommendations are intended to meet the goals of advancing water management strategies and infrastructure improvements needed to mitigate for adverse impacts of climate change and sea level rise on water supplies. Recommendations are incorporated throughout this 2020 Work Plan and related comprehensive planning element updates.

Table WS1 Water Supply Recommendations from the Regional Climate Action Plan 2.0¹

¹ WS-1	Develop and share new water management information, methods, technical capabilities, and trends addressing key climate variability and sea level rise concerns through the Compact’s collaborations with state and federal agency partners and academic institutions, as well as through the RCAP. Establish a method for a periodic exchange of ideas between water resource managers, policymakers, stakeholders, scientists, and researchers in collaboration with the Compact, the South Florida Water Management District, and local academic partners.
WS-2	Ensure all water resource policy, planning, and management decisions in the Lower East Coast Water Supply Planning Area are consistently aligned with: a) the latest Southeast Florida unified sea level rise projections; b) regional climate scenarios for planning (e.g., storm surge, design storm events); and, c) hydrologic models used in adaptation planning, from local to regional scales. Ensure all water resource policies consider regional water management issues, including flooding and water variability. For flooding, use impact assessments for observed and predicted climate variability on the frequency, duration, and intensity of flooding connected to sea level rise, extreme tidal excursions, storm surges, and 100-year rainfall events. Use impact assessments to determine where impacts will likely be greatest. For water availability, examine the effects of climate change and sea level rise on water availability and groundwater vulnerability to saltwater intrusion, based on potential changes in precipitation and evapotranspiration patterns and associated extreme drought and flood events.
WS-3	Encourage the South Florida Water Management District to integrate potential future climate conditions, sea level rise scenarios, and potential impacts to water quality and supply into the regional water management models used to support the Lower East Coast Water Supply Plan, environmental resource permitting, and consumptive use permitting.

WS-4	Ensure consistency in efforts to map saltwater intrusion across the region to create better information and improve management decisions for protecting regional freshwater aquifers. Coordinate the methodology and schedule for the saltwater intrusion mapping used to maintain and update the regional saltwater intrusion baseline mapping conducted by the South Florida Water Management District and the U.S. Geological Survey, at a minimum of every five years. Utilize saltwater intrusion models and validated data to identify wellfields and underground infrastructure at risk of contamination or infiltration by saltwater due to rising sea levels.
WS-5	Coordinate among city and county government public works agencies, water utilities, and other operators of water infrastructure to develop and maintain local and regional inventories of existing potable water supply wellfields, treatment and distribution systems, wastewater treatment and collection infrastructure, and septic tanks and drain fields. Assess the potential for climate change impacts on each component of water infrastructure under different climate change scenarios and develop adaptation strategies for affected systems, including infrastructure that may require replacement, reinforcement, or relocation to ensure the long-term viability of the system.
WS-6	Track the climate resilience projects for water infrastructure being designed and built by local governments and utility districts across Southeast Florida to aid local peer learning. Develop a regionally coordinated geodatabase to illustrate and catalog local and regional resilience projects, planning tools, and infrastructure investments, and a formal data management strategy for water infrastructure projects that could be scaled in the future to include other infrastructure (e.g., communications, transportation, and energy).
WS-7	Modernize permitting, planning, and design standards for development and infrastructure improvements to drainage systems, surface water management systems, and finished floor elevations based on updates to groundwater table maps, flood elevation maps, and tidal elevations. Prioritize design standards that maintain project compatibility, infrastructure connectivity, and level of service under potential future climate conditions.
WS-8	Coordinate with the South Florida Water Management District and local public officials to request a comprehensive assessment of the Central and South Florida flood control system by the U.S. Army Corps of Engineers. Determine the regional flood control system's performance under potential future climate conditions based on the U.S. Army Corps of Engineers' comprehensive assessment. Develop a resilience strategy that will ensure existing levels of service are maintained or improved under future conditions.
WS-9	Advocate for an update of the Florida Department of Environmental Protection's Stormwater Management Rule, "SFWMD Environmental Resource Permit Applicant's Handbook – Volume II," through the Southeast Florida Regional Climate Collaborative Policy advocacy process. Advocate for rule changes that integrate potential future climate conditions and stormwater harvesting initiatives in permitting criteria at all levels, including average wet season groundwater elevations; unified sea level rise projections; and intensity, duration, and frequency curves.
WS-10	Continue to utilize a combination of inundation maps and stormwater models to identify areas and infrastructure at increased risk of flooding. Evaluate the potential impacts of changes in groundwater levels on wastewater and stormwater systems (including septic systems, wastewater collection, and conveyance and storage systems), with consideration of water quantity and quality (including public health-related metrics). Use the results of the above-stated analyses as the basis for site planning and regulation, and for identifying and prioritizing adaptation needs and strategies.
WS-11	Promote the development of green infrastructure and alternative, net-zero greenhouse gas emission strategies for water supply, stormwater, and wastewater management focused on achieving a balance between water availability and consumption, limiting energy use to the amount produced on-site via renewable energy, and eliminating solid waste sent to landfills. Create

	comprehensive strategies to advance the multiple benefits and sustainability of services provided by net-zero practices.
WS-12	Coordinate across regional, state, and federal agencies to develop and apply appropriate hydrologic and hydraulic models to further evaluate the efficacy of existing water management systems and flood control and drainage infrastructure under variable climate conditions. Quantify the capacity and interconnectivity of the surface water control network and develop feasible adaptation strategies. Develop common data standards and database protocol for maintaining water management system components.
WS-13	Convene forums to promote a joint assessment and planning strategy involving local water utilities, wastewater service providers, water managers, and partners to the Southeast Florida Regional Climate Change Compact for coordinated consideration of: a) stormwater use and disposal; b) rainfall-derived inflow and infiltration; c) traditional and alternative water supplies; d) wastewater disposal; e) expansion of reuse and water conservation measures (e.g., maintaining adequate aquifer levels and minimizing the use of potable water for irrigation purposes); and, f) amendments to applicable development codes and regulations. Develop local integrated water management plans based on joint assessment and planning strategies.
WS-14	Undertake a comprehensive evaluation of stormwater improvements necessary to expand surface water storage, enhance water quality treatment, and reduce stormwater discharges in the delivery of flood protection needs and environmental priorities for the Everglades and estuarine and coastal ecosystems. Improve stormwater management through distributed storage, integrated stormwater systems, and additional best management practices.
WS-15	Encourage collaborative programs with local universities—including the Compact’s partnership with the Florida Climate Institute—to improve community and stakeholder communication and education efforts regarding potential local and regional climate change impacts. Build partnerships and technology exchanges with public, private, academic, domestic, and international partners to bring additional experience and innovation to resilience planning, projects, and decision support. Continue to encourage, foster, and support collaborative investigative work and scientific research that improves water resource management, including: a) downscaling global climate models to represent precipitation patterns at the regional and local scale and to develop standardized precipitation scenarios for the region; b) identifying and targeting gaps in monitoring and data availability (e.g., light detection and ranging, environmental and water quality data, or data supporting regional climate indicators) to improve the quantification of the hydrologic system and its response to climate change (e.g., evapotranspiration, surface and groundwater levels, water quality, precipitation, and local sea level) through local program efforts, agency collaborations, and advocacy for additional state and/or federal resources, as needed; and c) developing integrated risk-based decision-support tools and processes for application in the analysis and selection of infrastructure design, water resource management, natural systems management, and hazard mitigation alternatives. Tools should facilitate the consideration of the potential economic costs of comparative planning scenarios, management decisions, and infrastructure investments, as well as the evaluation of potential trade-offs.
WS-16	Cultivate partnerships with regional, federal, and state agencies and professional associations with expertise in integrated water resource planning as sources of important research, including: a) the U.S. Army Corps of Engineers Institute for Water Resources; b) the United States Geological Survey; c) the Environmental Protection Agency; d) the National Oceanic and Atmospheric Administration; and, e) water foundations..
WS-17	Identify, incorporate, and prioritize preferred climate adaptation improvement projects pertaining to water supply, wastewater systems, stormwater management, and flood protection as part of

	capital improvement plans. Develop projects, pursue funding options (including independent funding mechanisms), and implement projects.
WS-18	Coordinate the implementation of innovative water management technologies across multiple jurisdictions as part of piloted solutions to foster shared investments. Facilitate knowledge sharing about the results, costs, and savings from management technologies. Scale successful cross-jurisdictional technologies to reduce the potential for redundant investments and achieve economies-of-scale while fairly distributing costs and benefits across multiple project beneficiaries.
WS-19	Identify existing underperforming infrastructure and implement adaptable infrastructure strategies that facilitate targeted investments, allow managed performance, and achieve greater flexibility in system operations.
WS-20	Continue to support the Comprehensive Everglades Restoration Plan (CERP) and its updated versions as fundamental to Everglades restoration. Contribute to the ongoing implementation of CERP and updates to implementation plans (such as the Integrated Delivery Schedule) through the South Florida Ecosystem Restoration Task Force and relevant working groups. Publicize the role of CERP as a regional climate resilience strategy, particularly as a way to increase freshwater flows to the Everglades system, which improves water quality, maximizes regional freshwater storage and aquifer recharge, and creates the potential to abate saltwater intrusion, an increasingly important effort under variable climate conditions and in the face of sea level rise.
WS-21	Develop new and combine existing land acquisition priorities in a regional setting to protect, preserve, and enhance water storage. Develop regional and distributed surface water storage (e.g., C-51 Reservoir Project and interconnected urban systems) to increase the potential for stormwater capture and reuse for water supply, aquifer recharge, flood management, and environmental benefits.

1. Source: Water Supply Recommendations from the Regional Climate Action Plan 2.0
<https://southeastfloridacclimatecompact.org/recommendation-category/ws/>

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 and 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.

B. 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 amongst a diversity of stakeholders including water managers, utility directors, drainage districts, and state and local government entities. The water management community in Broward County consists of 27 water providers, 23 special districts and 15 wastewater providers across 31 municipalities, Table WS2 below.

Table WS2 Lists of Municipalities, Utilities, and Districts in Broward County

Broward County Municipalities (https://en.wikipedia.org/wiki/Broward_County,_Florida)				
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 (SFWMD 2018 LEC Update-Appendix A)				
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 / 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 EPCRD provides vital information and guidance that support the programs in the Broward County 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 mitigation strategies against climate change 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 the advancement of 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, 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 report design was modernized from a paper document to digitally interactive. 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 Reuse Master Plan. Feasibility and design projects as well as construction projects are granted bi-annually as available funds allow. 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.

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 was 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 is presented at the 2018 LECWSP as an AWS source to meet with regional projected 2040 water demands.

C-51 Reservoir Project location is adjacent to the SFWMD's existing L-8 Flow Equalization Basin in Palm Beach County and is expected to share the same impermeable geologic formation that provides for significant inground ground storage capacity with limited seepage losses or additional construction requirements. The initial intended purpose was to capture excess stormwater discharged to the 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.
- 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.
- Mitigates for saltwater intrusion and protects wellfields in coastal communities.
- Serves as a regional AWS source.
- Supports water resource protection and potential adaptations strategies considering sea level rise and during drought.

Among 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 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.
- Reduces longer-term need for new water infrastructure and energy-intensive treatment technologies.

Hydrologic modeling indicates the ability to capture enough basin runoff to reduce excess stormwater flows from the western C-51 Basin flows to the Lake Worth Lagoon by approximately 40% with a concomitant reduction in associated nutrient loads. Excess stormwater capture in the C-51 Reservoir Project can be later redistributed through the existing canal network for the benefit of providing aquifer recharge and helping to sustain regional water resources. The C-51 Reservoir Project is modeled to support approximately 150 million gallons per day (MGD) in stormwater reuse for beneficial purposes while achieving critical water quality improvements in the Lake Worth Lagoon.

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. public water supply utilities have executed agreements with the property owners to purchase capacity as part of total reservoir storage. The utilities have received or are processing modifications to their water use permits to reflect this AWS source as a means for meeting future demands.

The mining operation for Phase 1 is complete and 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. The FDEP has issued a diversion and impoundment consumptive use permit and an environmental resource permit for construction and operation of Phase 1. Phase 2 of the project could provide an additional 46,000 acre-feet of storage, most likely for natural systems [Section 373.4598, F.S.]. The FDEP has issued a conceptual environmental resource permit for Phase 2.

Additionally, water routed south to the Hillsboro Canal could be redistributed to recharge local canals and drainage districts in Broward County, pursuant to an operations and maintenance agreement between the SFWMD and Palm Beach Aggregates and implemented through an operating plan with the SFWMD (under development) or other local water control districts.

To date, agreements have been executed for 20 MGD of storage capacity out of the available 35 MGD of storage capacity in Phase 1: Broward County (6 MGD); Sunrise (5 MGD); Hallandale Beach (1 MGD), Dania Beach (1 MGD), Margate (2 MGD), Fort Lauderdale (3 MGD) and Pompano Beach (2 MGD). Palm Beach Aggregates has indicated that construction financing will move forward based on the signed agreements for 20 MGD of storage capacity. Construction financing is anticipated to be available by August 31, 2020 with construction completed within approximately 24 months following financing. Permitting for each of these participants is in various stages but not yet complete. In 2017, the Florida Legislature approved the project as a priority water supply project under enabling legislation Senate Bill 10. Phase 2 would expand the project area to include 46,000 acre-feet of storage and potentially another 115 MGD, which is envisioned for environmental purposes. Senate Bill 92 (2019) clarified language and the intent of the project and allowed the SFWMD to negotiate for any portion of the project not already committed to partners for water supply.

Floridan Aquifer

As an AWS, the expanded use of the Floridan Aquifer system is currently being investigated with respect to its long-term viability as a water supply resource through additional modeling and studies. Broward County has, in cooperation with USGS, completed Phase 1 Feasibility Study of the Upper Floridan Aquifer in March 2014. The study 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. Water utilities in these areas may consider further studies around these features when planning project near their vicinities.

The SFWMD also completed limited water supply modeling of the Floridan aquifer as part of the 2018 LEC plan update. The model included an allocation of 3.0 MGD for BC 2A/NR by the year 2040. This pumping stress and other pumping in the region resulted in a drop of 5.1-10 ft in groundwater levels over 2016 levels but no impact to water quality (chloride levels) in the Upper Floridan region where the wells would be placed. Although initially positive for Floridan development, model results would have to be rerun with current planned rates and well sites should BC go forward with the utilization of the Floridan which is not necessary at this time.

District 2A Aquifer Storage & Recovery (ASR)

In 1993, a permit to construct an ASR well at Broward County District 2A WTP was submitted to FDEP. The system was designed to inject treated water into the upper Floridan aquifer at approximately 1,100 feet below land surface. Water Quality Criteria Exemptions for color, iron and total dissolved solids were obtained. Five testing cycles were completed as shown in Table WS3 beginning in 1998 and completing six years later. Cycle test results provided in Table WS4 are varied but, generally average around 30 percent in the larger cycles (Hazen & Sawyer, 2004).

Table WS3 District 2A ASR Cycle Testing ¹

Cycle	Recharge (days)	Storage (days)	Recovery (days)
Cycle 1: July 9, 1998 to July 21, 1998	11	0	1.5
Cycle 2: July 27, 1998 to November 12, 1998	91	0	17
Cycle 3: November 13, 1998 to	87	9	21
Cycle 4: November 12, 2003 to December 31, 2003	30	0	20
Cycle 5: January 1, 2004 to March 3, 2004	33	0	29

1. Source: Hazen & Sawyer Technical Memorandum Broward County Office of Environmental Services 2A Water Treatment Plan – Aquifer Storage and Recovery, dated October 6, 2004.

Table WS4 District 2A ASR Cycle Testing Results ¹

Cycle	Rate In (MGD)	Volume In (MG)	Rate Out (MGD)	Volume Out (MG)	Percent Recovery (%)
1	2.01	22.13	1.00	1.50	6.8
2	2.15	195.84	2.16	36.65	18.7
3	2.14	185.94	2.98	56.62	30.5
4	1.79	53.74	0.61	12.18	22.7
5	1.85	61.19	0.59	18.27	29.9

1. Source: Hazen & Sawyer Technical Memorandum Broward County Office of Environmental Services 2A Water Treatment Plan – Aquifer Storage and Recovery, dated October 6, 2004.

According to the Hazen & Sawyer 2004 Technical Memorandum, percent recoveries of between 75 and 90 percent are needed for an ASR well to be viable for use. The memorandum cites the casing setting depth as one of the possible causes for low recovery percentages during cycle testing. Additionally, the District 2A ASR well was limited by the Broward County Health Department to an initial recovery chloride concentration of 225 milligrams per liter (mg/L) which limited the recovery volume significantly. The chloride limitation was later increased to 1,000 mg/L but, the well was no longer in use. When the well came up for Class V permitting with FDEP in 2013, Broward County made the decision based on the ASR well percent recovery and permitting costs to abandon the ASR well.

Site 1 Hillsboro ASR

ASR is a recognized AWS technology and can serve as an effective component of an integrated water management system. The Site 1 Hillsboro Aquifer ASR project was originally designed, constructed, and tested over an 18-year period as a potential component of CERP. The project required the collaboration of a multiagency, multidisciplinary team of hydrogeologists, engineers, and environmental scientists. The Hillsboro ASR system was built to capture excess surface water from the Hillsboro Canal, store it in the Upper Floridan Aquifer, and recover stored water back into the Hillsboro Canal when surface water levels are low. The ASR well was constructed in 1999/2000 and consisted of a 24-inch diameter casing completed to a depth of 1,015 feet below land surface in the Upper Floridan Aquifer. The surface facilities were constructed between 2006 and 2007 and consisted of an intake/discharge structure, screen filters, UltraViolet disinfection units, pumps, piping, valves, electrical controls, and meters. The well was designed to recharge and recover approximately 5 MGD of surface water.

Initial background water quality was collected and analyzed in 2008 prior to cycle testing. Cycles 1, 2, and 3 were performed between 2010 and 2012. The well remained inactive between 2012 and 2016. A second background water quality sampling was performed in 2016 and Cycle Test 4 (SFWMD 2018) was completed in 2017. The below is a summary of the testing conclusions.

- During recovery, the ASR well was to flow freely back to the Hillsboro Canal under artesian pressure at a flow rate of 2 MGD.
- The recovery efficiency for Cycle 4 was approximately 60 percent, greater than previous cycles.
- Water quality data indicated that recharge water mixed and diffused with Upper Floridan Aquifer groundwater at distances of 330 and 1,010 feet away from the ASR well.
- Recovered water had an initial arsenic concentration of 25 parts per billion (ppb), which decreased to less than 10 ppb after 3 weeks.
- Arsenic was not detected at distance from the ASR well during the recovery period.

The SFWMD approached BCWWS following the completion of Cycle 4 to suggest a limited operation of the well facilities to support urban water supply demands. Due to the age and required maintenance of the surface facilities, the permit requirements, and the need to continue building a storage zone with hope of improving the well recovery efficiency, BCWWS declined the offer of limited operation.

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. Although progress has been made on the Northern Broward County Recharge System, it has not yet been completed. There are three identified projects that need to be completed to integrate the system:

- The C-1/C-2 Interconnect near Sample Road and the CSX Railroad. The project has been designed and construction funding is being sought.
- The study of a potential C-4 Interconnect between north and south Tradewinds Park was completed and it was determined that the environmentally friendly directional drilling project is not financially feasible at the present time.
- The C-7 Interconnect just north of Sample Road in the Coconut Creek Main Street Project will coincide with development of the area. The basin divide control structure is being constructed with the development of the parcel just to the north of Sample Road. The interconnect will be complete when the final canal segment is built with the development of the remaining farmland.

Depending upon the final routing of water deliveries associated with development of the C-51 reservoir project, additional construction may be required in the central and southern parts of the County to further integrate the system.

Water Use Efficiency/Conservation

The 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 "Water Matters" campaign which are designed to produce long-term demand reductions along with improvements in water quality. These programs, targeted at various user groups, include: NatureScape Broward, Know the Flow, Water Matters Day, Conservation Pays, NIS, and the NatureScape Broward School Board Environmental Partnership Agreement. The overall goal of the Water Matters programs is to reach a sustained minimum 10% reduction in water use Countywide 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, Go Green Sustainability Programs, 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 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, wasteful toilets in addition to the distribution of other water efficient 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 Commission's 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.

- **NatureScape Irrigation Services.** Launched in 2005, the NIS is implemented by the EPCRD with cost-share provided by BCWWS and 18 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 3,000 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, the NatureScape Broward program 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, and the planting of native, non-invasive and other drought-tolerant plants in Broward County. Broward County was the first county in the U.S. to be certified under the Community Wildlife Habitat program. In addition, there are 14 certified and 9 registered County municipalities and over 4,500 landscapes that have been certified to date.

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 EPCRD contracted with the USGS to develop a numerical model to evaluate to 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 expended 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 implications on the viability of water supplies and can be used to identify and test possible adaptive strategies.

The 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, Broward County is currently partnering with USGS to advance the expansion of the two packages throughout the entire urban extent of the County.

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.

The calculated average groundwater elevation is based on model outputs for the wet season months of May through October over a ten-year period of 2060-2069. The models used to simulate average future conditions were the Broward County Inundation Model and the Broward County Northern Variable Density model, both developed in cooperation with the USGS. The future conditions applied in the modeling process consist of both precipitation and sea level rise. The future precipitation pattern is based on the Center for Ocean-Atmospheric Prediction Studies downscaled Community Climate System Model

global model and represents an increase of 9.1% rainfall from the base case of 1990-1999 (53.4 inches/year to 58.2 inches/year). Sea level rise was based on the USACE National Research Council Curve 3, which equates to an increase of 26.6 to 33.9 inches to the future period from 1992 levels.

In the recent 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 using the results of the FEMA study to calculate 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 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.

C. Comprehensive Everglades Restoration Plan

Among the over 60 CERP components, the Central Everglades Planning Project, Broward Water Preserve Areas (WPAs), and Secondary Canal Interconnect.

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. The WPAs are in the CERP and were authorized in the 2014 Water Resources Reform and Development Act. The current USACE schedule projects the C-11 component to be constructed by 2023.

<https://usace.contentdm.oclc.org/utis/getfile/collection/p16021coll11/id/2552>

The USACE forecasts the WPAs' remaining construction timelines beyond 2023.

Secondary Canal Improvement Project

The Broward County Secondary Canal Improvement Project, as part of the CERP, is a water management project to optimize the integration and operation of the County's secondary canal system and support Everglades restoration by reducing the County's reliance on water from the regional system.

Authorized and to be funded by the U.S. Congress, State of Florida, and local government, the goals of the Broward County Secondary Canal Improvement Project are to capture as much annual rainfall as possible for storage and recharge of the Biscayne Aquifer, to maintain water levels in wetlands, and to stabilize saltwater intrusion. Additionally, through more efficient management of the local water resources, urban demand on the regional system is expected to be reduced, as well as seepage losses from the WCAs, as the project has the potential to raise groundwater levels on the east side of the levee.

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 2020 Work Plan spans 20 years, covering 2020 to 2040.

A. County-Wide Population Analysis

This 2020 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 the EPCRD is to identify the future water supply needs of BMSD areas of Broward County and to present regional strategies supporting Countywide 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 water service by BCWWS; hence these areas were 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. EPCRD has coordinated with the Fort Lauderdale Planning and Zoning Department and the water utility in identifying 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 2040. The population modeling was performed by Broward County Planning and Development Management Division (BCPDMD) using the Broward County Traffic Analysis Zones (TAZ) and municipal forecasts updated in 2017 to develop the projected populations based on the University of Florida's BEBR Bulletin 175, "Detailed Population Projections by Age, Sex, Race, and Hispanic

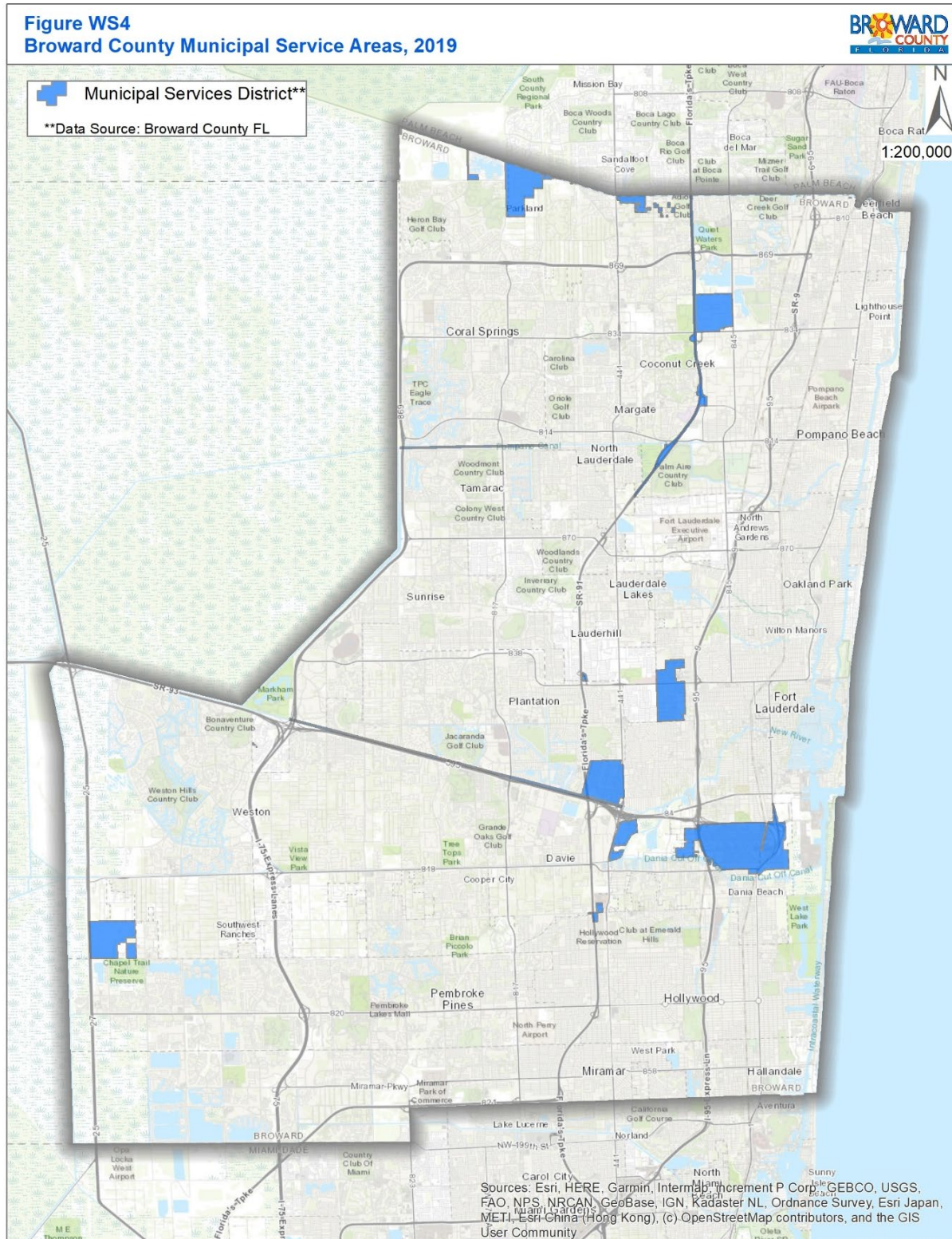


Figure WS4 Broward County Municipal Service Areas

Origin, for Florida and Its Counties, 2020-2045, With Estimates for 2015” to Broward County’s 2017 Traffic analysis Zones (TAZ) and municipalities. The demographic forecast model update is detailed in, “Broward County and Municipal Population Forecast and Allocation Model (PFAM), 2017 (BCPDMD, 2017) based on the original PFAM developed in 2012 and updated in 2014.

This 2020 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 2018 LECWSP Update, with discussion of any deviations.

BCPDMD is responsible for providing updated population forecasts throughout the County. The Broward County PFAM 2017 update was used to develop County population by jurisdiction. Updated population projections from University of Florida’s BEBR Bulletin 178 and the Broward County PFAM 2017 update are summarized below in 5-year increments through 2040, Table WS5 below.

Table WS5 Broward County Population Projections 2020-2040

Year	BEBR Population Estimates ¹	BCPDMD Population Estimates ²	SFWMD Population Estimates ³
2020	1,914,498	1,894,285	1,931,057
2025	1,989,753	1,990,171	2,029,704
2030	2,052,432	2,051,056	2,109,543
2035	2,111,652	2,110,602	2,175,718
2040	2,158,080	2,156,835	2,232,397

1. BEBR Medium Populations from “Detailed Population Projections by Age, Sex, Race, and Hispanic Origin for Florida and its Counties 2020-2045, with Estimates for 2015, June 2016,” 2016
2. BCPDMD Broward County and Municipal Population Forecast and Allocation Model, 2017
3. SFWMD, Lower East Coast Water Supply Plan, November 2018

The percent difference between the BEBR and the BCPDMD projections is no more than one percent. The percent difference between the BCPDMD and the SFWMD projections ranges between 2 and 3 percent from 2020 through 2040. The PFAM is structured using 953 TAZ within 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 and 2010 Census. The household forecasts are then assigned to TAZ based on: (1) the change in household size distribution; (2) TAZ level distribution of households; and (3) the capacity of each TAZ to absorb additional housing units. BCPDMD also obtained input from the local planning and service delivery entities and referenced the Broward County Land Use Plan to estimated household distributions within TAZ and municipal boundaries (BCPDMD, 2017).

B. Current and Future Served Areas

The current and future served areas for BCWWS and the Cities of Fort Lauderdale and Hollywood 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 239,000. The bulk water user, City of Coconut Creek, accounts for a population of approximately 56,000. Including the City of Coconut Creek, the utility serves about 12 percent of the County's total population. For the year 2017, treated water sold to retail customers equaled about 19 MGD on an annual average basis. Metered water sales to Coconut Creek equaled an additional 5 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 are operated 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 PWS [Public Water Supply] 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 consists 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 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 percent of residential units in a TAZ-UAZ subsection out of the total TAZ dwelling units count. The projected BCWWS populations by district are shown in Table WS6 below and populations within Districts 1, 2, 3A and 3BC by municipality served are shown in Tables WS7, WS8, WS9 and WS10, respectively. are based on the results of an update to the AWS Conceptual Master Plan produced by Brown and Caldwell (Brown & Caldwell, 2019).

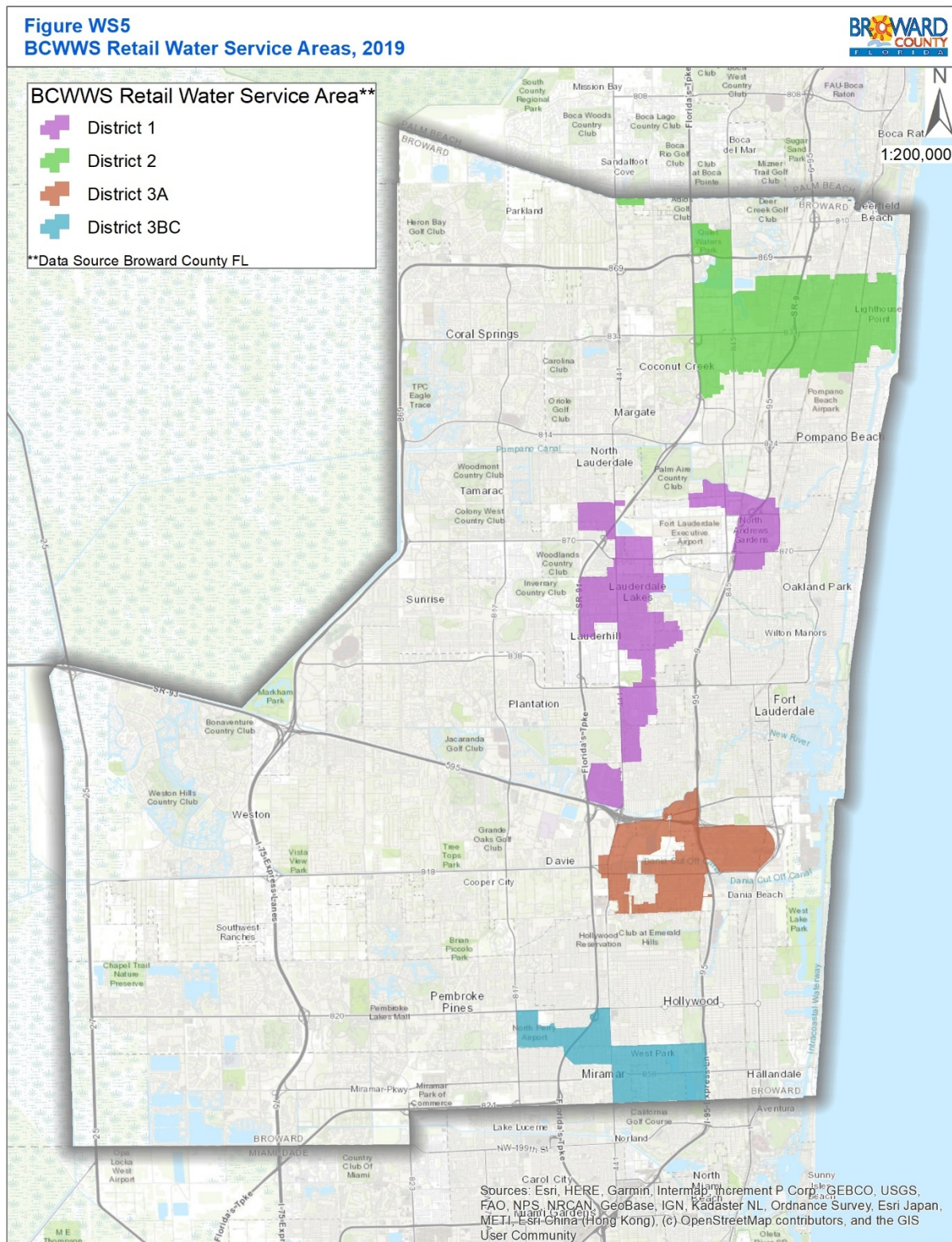


Figure WS5 BCWWS Retail Water Service Areas

Table WS6 BCWWS Service Area Population Projections 2015-2040¹

BCWWS Service Area	2015	2020	2025	2030	2035	2040
District 1	75,931	78,718	84,292	89,479	92,895	95,299
District 2 Total	110,278	113,023	114,814	119,226	121,410	122,631
D2	55,052	54,510	55,702	57,779	58,493	58,672
Coconut Creek	55,226	58,513	59,112	61,447	62,917	63,959
District 3A	16,321	16,908	18,083	19,075	19,686	20,109
District 3BC	36,263	37,486	38,889	41,146	42,639	43,625
BCWWS Total	238,793	246,135	256,078	267,859	276,630	281,278

1. Based on 2017 BCPDMD TAZ estimate translation to UAZ populations performed by Brown and Caldwell for BCWWS, 2019

Table WS7 District 1 - Population Projection by Municipality ¹

Municipality	2015	2020	2025	2030	2035	2040	2045
DISTRICT 1 TOTAL	75,931	78,718	84,292	89,479	92,895	95,299	97,665
FORT LAUDERDALE	7,306	7,856	8,830	9,311	9,670	9,962	10,293
LAUDERHILL	8,376	8,237	9,116	10,714	11,664	12,411	13,180
LAUDERDALE LAKES	31,928	32,479	33,305	35,327	36,650	37,554	38,398
NORTH LAUDERDALE	6,844	6,719	8,213	8,236	8,358	8,350	8,325
OAKLAND PARK	12,113	13,109	12,914	13,374	13,545	13,639	13,680
POMPANO BEACH	521	561	586	632	660	682	705
PLANTATION	184	263	591	803	973	1,133	1,315
TAMARAC	1,423	2,382	2,444	2,508	2,604	2,662	2,709
BMSD	7,236	7,112	8,293	8,574	8,771	8,906	9,060

1. Based on 2017 BCPDMD TAZ estimate translation to UAZ populations performed by Brown and Caldwell for BCWWS, 2019

Table WS8 District 2 - Population Projection by Municipality ¹

Municipality	2015	2020	2025	2030	2035	2040	2045
DISTRICT 2 TOTAL	55,052	54,510	55,702	57,779	58,493	58,672	58,677
COCONUT CREEK	66	65	65	66	66	65	64
DEERFIELD BEACH	22,823	22,467	23,085	24,193	24,617	24,820	24,925
LIGHTHOUSE POINT	8,970	8,871	8,743	8,908	8,969	8,981	8,956
POMPANO BEACH	23,193	23,107	23,809	24,612	24,841	24,806	24,732

1. Based on 2017 BCPDMD TAZ estimate translation to UAZ populations performed by Brown and Caldwell for BCWWS, 2019

Table WS9 District 3A - Population Projection by Municipality ¹

Municipality	2015	2020	2025	2030	2035	2040	2045
DISTRICT 3A TOTAL	16,321	16,908	18,083	19,075	19,686	20,109	20,504
DANIA BEACH	15,307	15,888	16,808	17,379	17,680	17,824	17,950
DAVIE	60	60	325	538	710	874	1,033
FORT LAUDERDALE	721	713	705	906	1,044	1,161	1,271
HOLLYWOOD	233	247	245	252	252	250	250

1. Based on 2017 BCPDMD TAZ estimate translation to UAZ populations performed by Brown and Caldwell for BCWWS, 2019

Table WS10 District 3BC - Population Projection by Municipality ¹

Municipality	2015	2020	2025	2030	2035	2040	2045
DISTRICT 3ABC TOTAL	52,584	54,394	56,972	60,221	62,325	63,734	65,235
DANIA BEACH	15,307	15,888	16,808	17,379	17,680	17,824	17,950
DAVIE	60	60	325	538	710	874	1,033
FORT LAUDERDALE	721	713	705	906	1,044	1,161	1,271
HOLLYWOOD	4,698	4,922	5,266	5,603	5,840	6,036	6,250
MIRAMAR	6,615	6,623	7,359	8,291	8,858	9,310	9,832
PEMBROKE PINES	4,040	4,384	4,334	4,294	4,417	4,477	4,520
PEMBROKE PARK	6,940	6,922	6,792	7,127	7,292	7,355	7,412
WEST PARK	14,203	14,882	15,383	16,083	16,484	16,697	16,967

1. Based on 2017 BCPDMD TAZ estimate translation to UAZ populations performed by Brown and Caldwell for BCWWS, 2019

City of Fort Lauderdale

Broward County works closely with the City of Fort Lauderdale through involvement in the County Commission's Water Advisory Board and its Technical Advisory Committee, Southeast Florida Utility Council, Broward Water Partnership and other area technical and policy groups. The City's populations were obtained from the City's DRAFT Water Supply Facility Work Plan 2020 Update. The municipal utility owned and operated by the City of Fort Lauderdale is one of the largest purveyors of potable water in Broward County in terms of total water delivery, providing service to approximately 240,000 customers in 2017. The utility's service area, shown in Figure WS6, encompasses a total area of 43 square miles, approximately one-tenth the total area of urban Broward County. Customers include residential, commercial and industrial properties within the Cities of Fort Lauderdale, Lauderdale Lakes, North Lauderdale, Oakland Park, and Wilton Manors; portions of BMSD and the Cities of Tamarac, and Lauderhill; Port Everglades; Towns of Lauderdale-By-The-Sea and Davie; and Villages of Lazy Lake and Sea Ranch Lakes. Emergency potable water interconnections are maintained with the Cities of Dania Beach, Pompano Beach, and

Plantation and BCWWS service area. The population of Fort Lauderdale and the other municipalities in the water service area was forecasted based on 2017 BCPDMD TAZ estimate translation to UAZ populations performed by EPCRD using 2018 SFWMD LECWSP Service Area Boundaries. The City of Fort Lauderdale Utility Service Area population projections for 2015-2040 are shown in Table WS11 and were obtained from the City's Draft Water Supply Facilities Work Plan Update for 2020.

Table WS11 City of Fort Lauderdale Utility Service Area Population by Jurisdiction, Actual 2015 and Forecasted 2020 to 2040

Jurisdiction	2015	2020	2025	2030	2035	2040
TOTAL	235,840	241,454	274,470	292,768	304,918	315,109
Fort Lauderdale	175,228	179,997	208,747	222,915	232,419	240,134
Lauderdale by The Sea	4,147	3,689	3,996	3,940	3,890	3,850
Sea Ranch Lakes	700	693	680	715	734	746
BMSD	6,457	7,060	7,854	8,561	8,854	9,486
Davie	529	526	700	821	919	1,016
Lauderdale Lakes	381	383	378	386	386	390
Lauderhill	2,917	2,862	3,085	3,306	3,450	3,571
Lazy Lake	26	25	27	29	30	31
North Lauderdale	358	352	1,145	1,145	1,133	1,123
Oakland Park	31,111	31,852	32,719	34,693	36,114	37,145
Tamarac	2,054	2,037	2,007	2,032	2,054	2,041
Wilton Manors	11,932	11,878	13,132	14,225	14,935	15,576
Port Everglades	Population is included in BMSD					

Source: City of Fort Lauderdale Draft Water Supply Facilities Work Plan Update for 2020 - Based on BEBR data.

City of Hollywood

Broward County works closely with the City of Fort Lauderdale through involvement in the County Commission's Water Advisory Board and its Technical Advisory Committee, Southeast Florida Utility Council, Broward Water Partnership and other area technical and policy groups. The City's populations were obtained from the City's DRAFT Water Supply Facility Work Plan 2020 Update. The City of Hollywood's service area includes population projection of approximately 230,000 in year 2040, Table WS12 below. Through the bulk sales agreements with BCWWS, the City of Hollywood provides treated water to BCWWS

to serve its southernmost service areas (District 3A, 3B/C). The City of Hollywood utility service area include the Cities of Hollywood and West Park, portions of the City of Dania Beach, Town of Davie, City of Fort Lauderdale, and Seminole Tribe of Florida Hollywood Reservation. No population breakdown by municipality was available when this plan was written.

Table WS12 City of Hollywood Utility Service Area Population Projections 2015-2040

Service Area	2015	2020	2025	2030	2035	2040
TOTAL Hollywood	194,411	200,574	207,352	216,861	223,595	228,166
City of Hollywood Retail	141,827	146,180	150,380	156,640	161,270	164,432
BCWWS District 3A Wholesale	16,321	16,908	18,083	19,075	19,686	20,109
BCWWS District 3B/C Wholesale	36,263	37,486	38,889	41,146	42,639	43,625

Source: City of Hollywood 2015 Water Supply Plan Potable Water Sub-Element, January 2015. Table 2-3 and Broward County Water Supply Facilities Work Plan 2020.

C. Potable Water Level of Service Standard

The potable water level of service standards for BCWWS and the Cities of Fort Lauderdale and Hollywood are detailed in the sections below.

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 WS13 summarizes the five-year average (2013-2017) 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 WS13 BCWWS Retail Potable Water Level of Service Standards ¹

District of BCWWS	Finished Water Level of Service (gpcd)
District 1	96
District 2	112
District 3A and 3BC	127

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

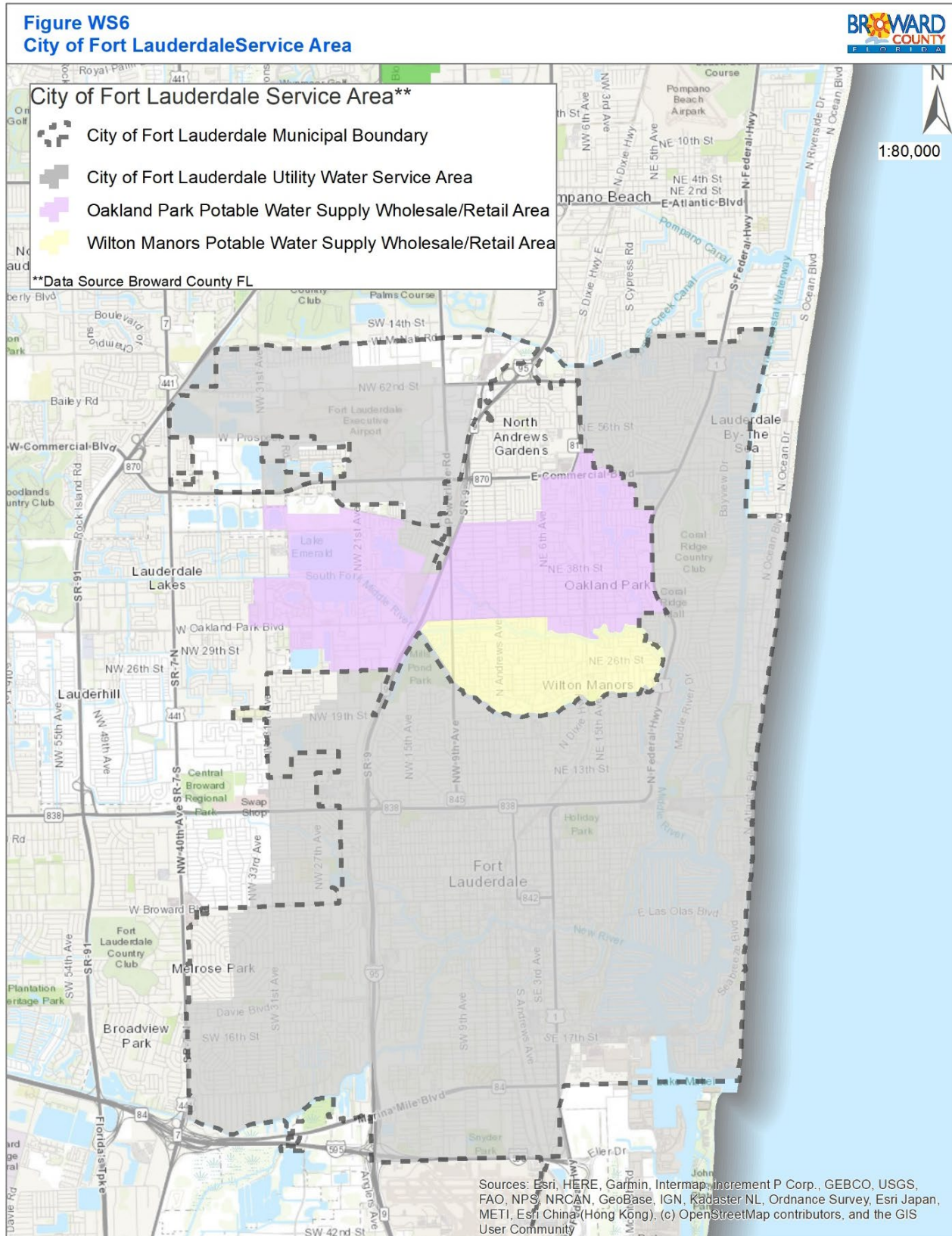


Figure WS6 City of Fort Lauderdale Service Area

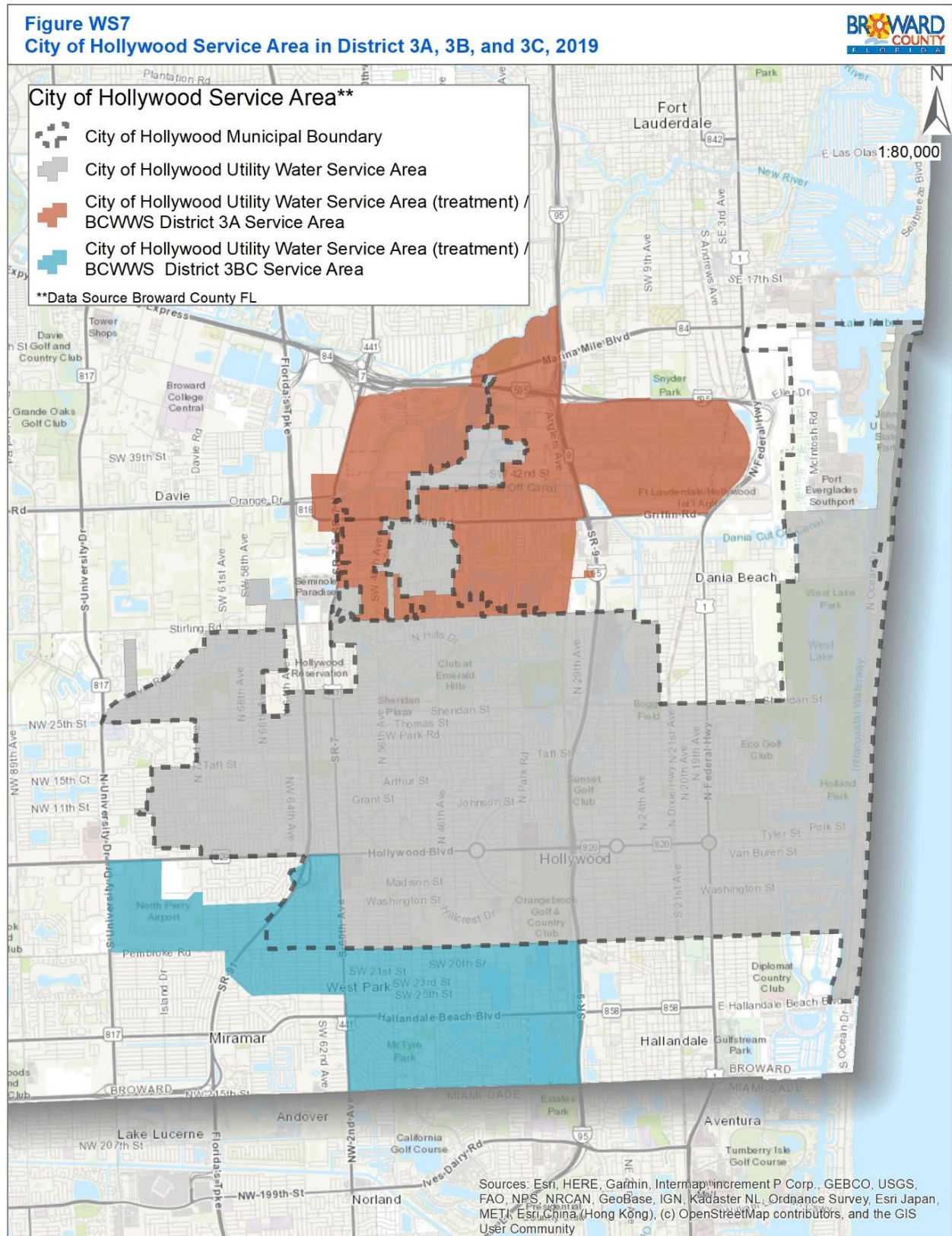


Figure WS7 City of Hollywood Service Area in District 3A, 3B, and 3C

City of Fort Lauderdale

The City of Fort Lauderdale has the responsibility to determine if it can adequately serve existing and potential customers. To that end, Fort Lauderdale has adopted their level of service for finished water at 170 gallons per day finished water per person (SFWMD LECWSP, 2018). In 2016, the average day demand throughout their service area was 41.4 MGD. The finished water per capita demand averaged 173 gallons per person per day from 2013 to 2016.

City of Hollywood

The City of Hollywood has the responsibility to determine if it can adequately serve the existing and potential customers within their service areas. To that end, Hollywood has adopted a level of service of 116 gallons per day finished water per person (2016). In 2016, the average day demand throughout their service area was 22.79 MGD. The finished water per capita demand averaged 113 gallons per person per day from 2013 to 2016.

D. Water Supply Provided by Local Governments

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 WS8 shows the location of the District 1 WTP, storage tanks, and finished water distribution pipe 12-inches and larger within 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 April 2008 for a 20-year permit duration to withdraw water from the Biscayne Aquifer and Floridan Aquifer. The permit allocates an annual withdrawal from the Biscayne Aquifer of 3,664 million gallons (MG) with a maximum month of 333 MG and an annual withdrawal from the Floridan Aquifer of 1,410 MG with a maximum month of 128 MG. Water use demand projections are presented in Table WS14 below for finished water and Table WS15 for raw water through year 2040. Finished water projections are also shown by municipality within the District 1 service area. Municipal demand projections were estimated based on the actual 2015 use and the 5-year historic gallons per capita day of 96 gpcd was applied to 2020 through 2040 populations to calculate demand. Demand estimates are shown in Table WS16 below. The projected raw water use accounts for 56 percent of the WTP capacity in year 2040.

Table WS14 District 1 Actual and Projected Finished Water Demands

Planning Year	Population (UAZ Estimate)	Finished Water Demands		
		Annual (MG)	Average Day (MGD)	Per Capita Use
Actual Water Use ¹				
2010	75,091	2,596	7.11	95
2011	75,259	2,677	7.33	97
2012	75,427	2,669	7.31	97
2013	75,595	2,606	7.14	94
2014	75,763	2,617	7.17	95
2015	75,931	2,740	7.51	99
2016	76,488	2,681	7.35	96
2017	77,046	2,686	7.36	96
Projected Water Use ²				
2020	78,718	2,755	7.55	96
2025	84,292	2,950	8.08	96
2030	89,479	3,132	8.58	96
2035	92,895	3,252	8.91	96
2040	95,299	3,336	9.14	96

1. BCWWS Monthly Operating Reports for Water Treatment Plant Finished Water Flow

2. Projected Water Use based on Finished Water Per Capita (5-Year Average) of 96 gallons per capita day

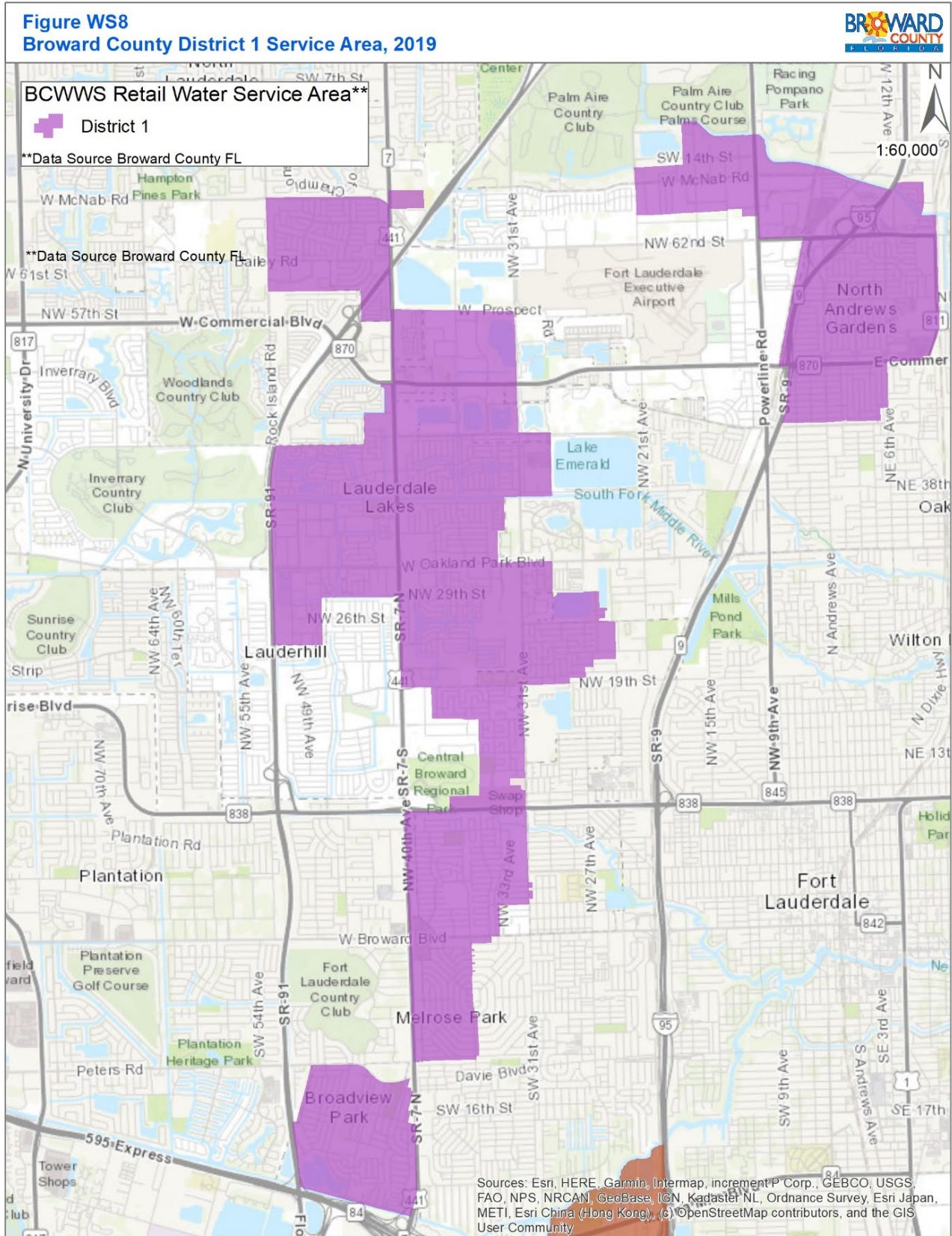


Figure WS8 BCWWS District 1 Service Area

Table WS15 District 1 Actual and Projected Raw Water Demands

Planning Year	Finished Water Annual Demand (MG)	Raw Water Demands			
		Raw : Finished Ratio	Annual (MG)	Average Day (MGD)	Maximum Month (MGM)
Actual Water Use ¹					
2010	2,596	1.08	2,794	7.65	247
2011	2,677	1.13	3,023	8.28	273
2012	2,669	1.10	2,946	8.07	258
2013	2,606	1.09	2,843	7.79	260
2014	2,617	1.06	2,763	7.57	246
2015	2,740	1.05	2,886	7.91	267
2016	2,681	1.06	2,849	7.81	253
2017	2,686	1.05	2,809	7.70	257
Projected Water Use ^{2,3}					
2020	2,755	1.05	2,904	7.96	263
2025	2,950	1.05	3,110	8.52	282
2030	3,132	1.05	3,301	9.04	299
2035	3,252	1.05	3,427	9.39	311
2040	3,336	1.05	3,516	9.63	319

1. BCWWS Monthly Operating Reports for Individual Well Pumpages
2. Projected Raw Water based on Actual Raw Water to Finished Water Ratio (3-Year Average) of 1.05
3. Projected Maximum Month based on Actual Maximum Month to Average Day Ratio (5-Year Average) of 33.07

Table WS16 Projected Average Day Finished Water by Municipality within District 1 in MGD ¹

Municipality	2015 ²	2020	2025	2030	2035	2040
FORT LAUDERDALE	0.72	0.75	0.85	0.89	0.93	0.96
LAUDERHILL	0.83	0.79	0.88	1.03	1.12	1.19
LAUDERDALE LAKES	3.16	3.12	3.20	3.39	3.52	3.61
NORTH LAUDERDALE	0.68	0.65	0.79	0.79	0.80	0.80
OAKLAND PARK	1.20	1.26	1.24	1.28	1.30	1.31
POMPANO BEACH	0.05	0.05	0.06	0.06	0.06	0.07
PLANTATION	0.02	0.03	0.06	0.08	0.09	0.11
TAMARAC	0.14	0.23	0.23	0.24	0.25	0.26
BMSD	0.72	0.68	0.80	0.82	0.84	0.85

1. Calculated using District 1 Finished Water 5-Year Average Gallons Per Capita Day of 96 gpcd2. 2015 demand Calculated using District 1 Finished Water Actual Gallons Per Capita Day of 99 gpcd

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 for 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 WS9 shows the location of the District 2 WTP, storage tanks, and finished water distribution pipe 12-inches and larger with 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 March 2008 for a 20-year permit duration to withdraw water from the Biscayne and Floridan Aquifers. 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 6,388 million gallons (MG) with a maximum month of 585 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 WS17 for finished water and Table WS18 for raw water through year 2040. Finished water projections are also shown by municipality within the District 2 service area. Municipal demand projections were estimated based on the actual 2015 use and the 5-year historic gallons per capita day of 112 gpcd was applied to 2020 through 2040 populations to calculate demand. Demand estimates are shown in Table WS19 below. The projected raw water use accounts for approximately 49 percent of the WTP capacity in year 2040.

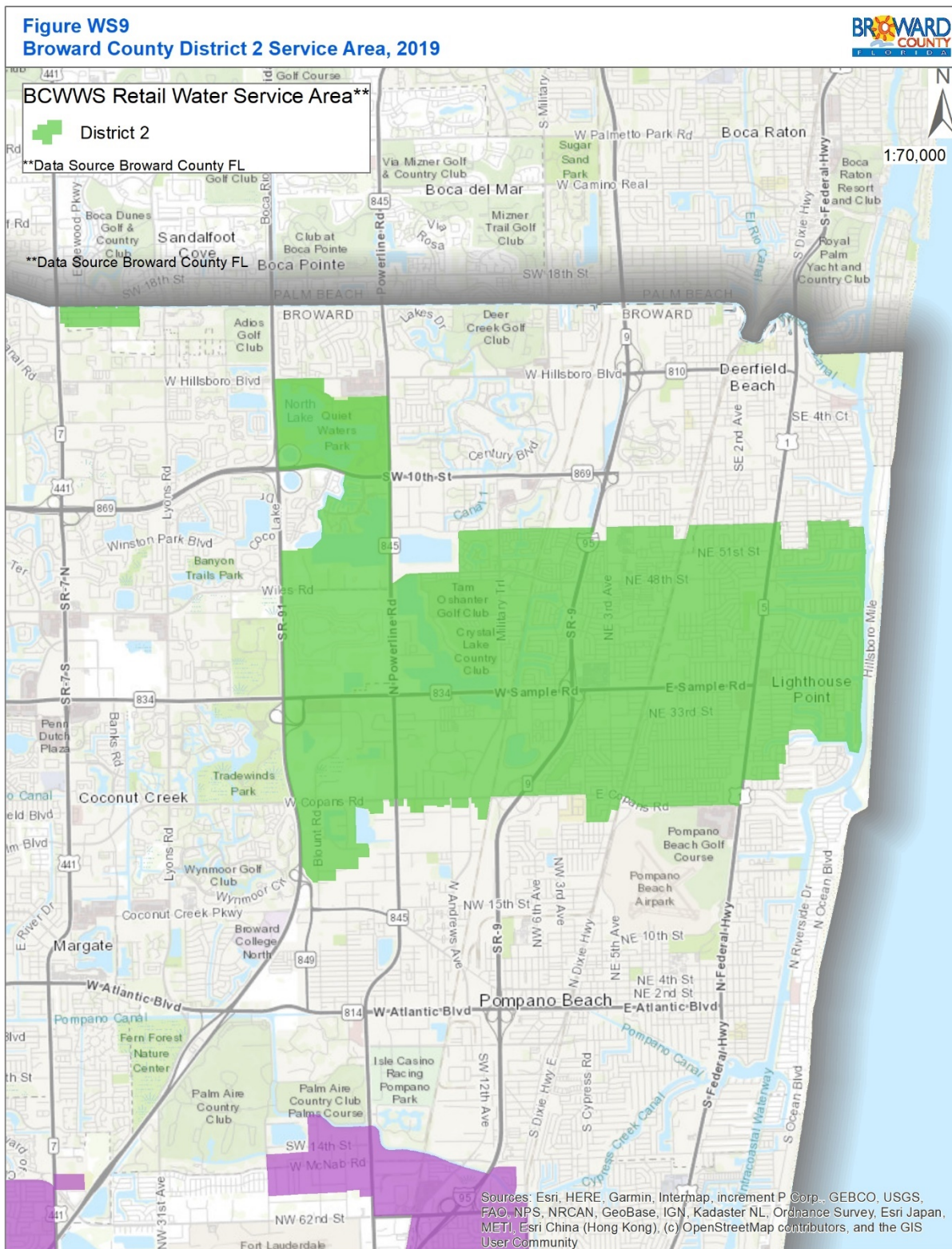


Figure WS9 BCWWS District 2 Service Area

Table WS17 District 2 Actual and Projected Finished Water Demands

Planning Year	Population (UAZ Estimate)	Finished Water Demands		
		Annual (MG)	Average Day (MGD)	Per Capita Use
Actual Water Use ¹				
2010	109,181	4,560	12.49	114
2011	109,400	4,496	12.32	113
2012	109,620	4,326	11.85	108
2013	109,839	4,496	12.32	112
2014	110,059	4,322	11.84	108
2015	110,278	4,599	12.60	114
2016	110,827	4,554	12.48	113
2017	111,376	4,661	12.77	115
Projected Water Use ²				
2020	113,023	4,630	12.69	112
2025	114,814	4,704	12.89	112
2030	119,226	4,885	13.38	112
2035	121,410	4,974	13.63	112
2040	122,631	5,024	13.76	112

1. BCWWS Monthly Operating Reports for Water Treatment Plant Finished Water Flow
2. Projected Water Use based on Finished Water Per Capita (5-Year Average) of 112 gallons per capita day

Table WS18 District 2 Actual and Projected Raw Water Demands

Planning Year	Finished Water Annual Demand (MG)	Raw Water Demands			
		Raw: Finished Ratio	Annual (MG)	Average Day (MGD)	Maximum Month (MGM)
Actual Water Use ¹					
2010	4,560	1.08	4,942	13.54	440
2011	4,496	1.04	4,689	12.85	418
2012	4,326	1.04	4,488	12.30	415
2013	4,496	1.03	4,629	12.68	415
2014	4,322	1.05	4,520	12.38	413
2015	4,599	1.04	4,793	13.13	432
2016	4,554	1.03	4,709	12.90	423
2017	4,661	1.04	4,833	13.24	434
Projected Water Use ^{2,3}					
2020	4,630	1.04	4,880	13.37	442
2025	4,704	1.04	4,957	13.58	449
2030	4,885	1.04	5,148	14.10	466
2035	4,974	1.04	5,242	14.36	475
2040	5,024	1.04	5,295	14.51	480

1. BCWWS Monthly Operating Reports for Individual Well Pumpages inclusive of the Deerfield Beach Raw Water Large User
2. Projected Raw Water based on Actual Raw Water to Finished Water Ratio (3-Year Average) of 1.04
3. Projected Maximum Month based on Actual Maximum Month to Average Day Ratio (5-Year Average) of 32.90

Table WS19 Projected Average Day Finished Water by Municipality within
District 2 in MGD ¹

Municipality	2015 ²	2020	2025	2030	2035	2040
COCONUT CREEK	0.01	0.01	0.01	0.01	0.01	0.01
DEERFIELD BEACH	2.60	2.52	2.59	2.71	2.76	2.78
LIGHTHOUSE POINT	1.02	0.99	0.98	1.00	1.00	1.01
POMPANO BEACH	2.64	2.59	2.67	2.76	2.78	2.78

1. Calculated using District 2 Finished Water 5-Year Average Gallons Per Capita Day of 112 gpcd
2. 2015 demand Calculated using District 2 Finished Water Actual Gallons Per Capita Day of 114 gpcd

BCWWS District 3A and 3BC:

District 3 service area is divided into two geographically separate subdistricts 3A, Figure WS10, and 3BC, Figure WS11. 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 its 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 9, 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 6.4 MGD and is projected to increase to 8.3 MGD by 2040 as shown Table WS20 below. District 3's raw water demand is anticipated to be around 9.0 MGD in 2045 as shown in Table WS21, based on historical raw to finished water ratio of 1.09. BCWWS continues to coordinate closely with the City to ensure that future demands for District 3 are adequately addressed.

Finished water demand was estimated as shown in Table WS22 (District 3A) and WS23 (District 3BC) by using the finished water 5-year historical gallons per capita day of 127 and the municipal populations for District 3A and District 3BC. Year 2015 was calculated using the actual gallons per capita day of 130.

Figure WS10 BCWWS District 3A Service Area

Table WS20 District 3A and 3BC Actual and Projected Finished Water Demands

Planning Year	Population (UAZ Estimate)	Finished Water Demands				
		Annual (MG)	Average Day (MGD)	Per Capita Use	Maximum Month (MGM)	Max Mo : Avg Day Ratio
Actual Water Use ¹						
2010	32,480	2,080	5.70	118	192	33.74
2011	49,158	2,210	6.05	126	196	32.42
2012	50,014	2,230	6.11	122	200	32.79
2013	50,871	2,362	6.47	127	204	31.59
2014	51,727	2,369	6.49	125	221	33.99
2015	52,584	2,490	6.82	130	222	32.51
2016	52,946	2,491	6.82	129	218	31.97
2017	53,308	2,383	6.52	122	212	32.48
Projected Water Use ^{2,3}						
2020	54,394	2,523	6.91	127	244	32.51
2025	56,972	2,642	7.24	127	256	32.51
2030	60,221	2,793	7.65	127	270	32.51
2035	62,325	2,891	7.92	127	280	32.51
2040	63,734	2,956	8.09	127	286	32.51

1. BCWWS Monthly Operating Reports for 3A, 3B and 3C Finished Water Meters
2. Projected Water Use based on Finished Water Per Capita (5-Year Average) of 127 gallons per capita day
3. Projected Finished Water Maximum Month based on Actual Finished Maximum Month to Average Day Ratio (5-Year Average) of 32.51

Table WS21 District 3A and 3BC Actual and Projected Raw Water Demands

Planning Year	Finished Water Annual Demand (MG)	Raw Water Demands			
		Raw: Finished Ratio	Annual (MG)	Average Day (MGD)	Maximum Month (MGM)
Actual Water Use ¹					
2010	2,080	1.09	2,267	6.21	210
2011	2,210	1.09	2,409	6.60	214
2012	2,230	1.09	2,431	6.66	218
2013	2,362	1.09	2,575	7.05	223
2014	2,369	1.09	2,582	7.07	240
2015	2,490	1.09	2,714	7.44	242
2016	2,491	1.09	2,715	7.44	238
2017	2,383	1.09	2,599	7.12	231
Projected Water Use ^{2,3}					
2020	2,523	1.09	2,743	7.52	244
2025	2,642	1.09	2,873	7.87	256
2030	2,793	1.09	3,037	8.32	270
2035	2,891	1.09	3,143	8.61	280
2040	2,956	1.09	3,214	8.81	286

1. BCWWS Monthly Operating Reports for 3A, 3B and 3C Finished Water Meters
2. Projected Raw Water based on SFWMD LECWSP 2018 Update, Appendix B, Table B-4 entry for Hollywood of 1.09
3. Actual and Projected Raw Water Maximum Month based on Actual Finished Maximum Month to Average Day Ratio (5-Year Average) of 32.51

Table WS22 Projected Average Day Finished Water by Municipality within District 3A in MGD ¹

Municipality	2015 ²	2020	2025	2030	2035	2040
DISTRICT 3A TOTAL	2.12	2.15	2.30	2.42	2.50	2.55
DANIA BEACH	1.99	2.02	2.13	2.21	2.25	2.26
DAVIE	0.01	0.01	0.04	0.07	0.09	0.11
FORT LAUDERDALE	0.09	0.09	0.09	0.12	0.13	0.15
HOLLYWOOD	0.03	0.03	0.03	0.03	0.03	0.03

1. Calculated using District 1 Finished Water 5-Year Average Gallons Per Capita Day of 127 gpcd
2. 2015 demand Calculated using District 1 Finished Water Actual Gallons Per Capita Day of 130 gpcd

Table WS23 Projected Average Day Finished Water by Municipality within District 3BC in MGD ¹

Municipality	2015 ²	2020	2025	2030	2035	2040
DISTRICT 3BC TOTAL	4.71	4.76	4.94	5.23	5.42	5.54
HOLLYWOOD	0.58	0.59	0.64	0.68	0.71	0.73
MIRAMAR	0.86	0.84	0.93	1.05	1.12	1.18
PEMBROKE PINES	0.53	0.56	0.55	0.55	0.56	0.57
PEMBROKE PARK	0.90	0.88	0.86	0.91	0.93	0.93
WEST PARK	1.85	1.89	1.95	2.04	2.09	2.12

1. Calculated using District 1 Finished Water 5-Year Average Gallons Per Capita Day of 127 gpcd
2. 2015 demand Calculated using District 1 Finished Water Actual Gallons Per Capita Day of 130 gpcd

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 WS24 and Table WS25 details the individual large user allocation limitations.

Table WS24 SRW CUP Allocation Summary

Limitation	Duration	Average Day (MGD)	Maximum Month (MGD)
Temporary 5-Year Allocation	March 2018 to March 2023	15.64	533.17
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 WS25 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)
Temporary 5-Year Allocation (March 2018 - March 2023)	3.02	3.61	7.27	1.74	15.64
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.

City of Fort Lauderdale

Data indicate that City of Fort Lauderdale demands may exceed their Biscayne Aquifer supply in year 2035. The City's Water Supply Facility Work Plan 2020 Update outlines plans to address the potential deficit by investing in RO treatment of Floridan aquifer water (Hazen & Sawyer, 2019). In addition to the City's plans to develop 6 MGD of Floridan aquifer supply, the City signed an agreement in January 2020 for the purchase of 3 MGD of C-51 Reservoir water.

In 1926, the 6 MGD capacity Peele-Dixie lime softening WTP was opened in western Fort Lauderdale. Over the years, the plant has been expanded and modernized, increasing its capacity to 20 MGD. In 2008 the WTP was converted from a lime softening to membrane facility with a treatment capacity of 12 MGD at 85 percent treatment efficiency. The Fiveash lime softening WTP was built in 1954 to treat 8 MGD. Through a series of expansions, the plant has been able to keep pace with the rapid growth experienced in Fort Lauderdale and today has a designed capacity of 70 MGD. The Fiveash WTP is supplied raw groundwater for treatment from the Prospect Wellfield.

Raw water for the City of Fort Lauderdale is supplied by the Peele-Dixie and Prospect wellfields, which draw from the SAS. The raw water is treated at two water treatment facilities, the Peele-Dixie nanofiltration plant and the Fiveash lime softening plant. There are 37 active wells between the two. The Peele-Dixie and Prospect wellfields have a combined pumping capacity of approximately 107 MGD. The City constructed two Floridan aquifer test wells at the Peele Dixie wellfield location to collect water quality and drawdown information as part of their plans to move towards RO treatment of Floridan aquifer water.

The City of Fort Lauderdale's CUP (Permit No. 06-00123-W) issued on September 11, 2008, for 20 years, allows the City to pump a combined annual average daily allocation for the two wellfields of 52.55 MGD. In 2018, the combined pumpage from the Peele-Dixie and Prospect wellfields averaged 41.49 MGD (11.06 MGD below the permitted allocation). The City's SFWMD CUP limitations on Biscayne and Floridan aquifer withdrawals are the following:

- Annual Allocation Limit – 22,334 million gallons (MG) - 61.19 MGD
- Biscayne Aquifer Annual Withdrawal Limit – 19,181 MG – 52.55 MGD
- Floridan Aquifer Allocation Limit – 3,153 MG – 8.64 MGD.

(Hazen & Sawyer, 2019)

The City of Fort Lauderdale maintains a total of 10 water system interconnections with BCWWS District 1 (3), the Cities of Plantation (1), Tamarac (3), and Pompano Beach (1), and Town of Davie (1).

Fort Lauderdale has adopted its finished water level of service for potable water at 170 gpcd (SFWMD LECWSP, 2018). In 2015, the average per capita demand throughout the City's service area was 176 gpcd (Table WS26). Projected water use for each municipality in the City's service area is estimated in Table WS27 by applying the 5-year average gallons per capita day of 164 to the population projections for the individual municipalities.

Table WS26 Fort Lauderdale Water Demand Forecast*

Year	Population	Overall Raw Water Per Capita (gpcd)	Finished Water Per Capita (gpcd)	Avg Day Biscayne Aquifer Raw Water Demand (MGD)	Avg Day Finished Water Demand (MGD)	Max Day Finished Water Demand (MGD)
2015	235,840	176	169	41.5	39.8	48.9
2020	241,454	172	164	41.5	39.6	48.7
2025	274,470	172	164	47.2	45.0	55.4
2030	292,768	172	164	50.4	48.0	59.1
2035	304,918	172	164	52.4	50.0	61.5
2040	315,109	172	164	54.2	51.7	63.6

Source: City of Fort Lauderdale Water Supply Facilities Work Plan 2020 Update DRAFT, November 7, 2019

Table WS27 Fort Lauderdale Water Demand Forecast by Service Area Municipality

Jurisdiction	2015	2020	2025	2030	2035	2040
TOTAL	39.86	39.60	45.01	48.01	50.01	51.68
Fort Lauderdale	29.61	29.52	34.23	36.56	38.12	39.38
Lauderdale by The Sea	0.70	0.60	0.66	0.65	0.64	0.63
Sea Ranch Lakes	0.12	0.11	0.11	0.12	0.12	0.12
BMSD	1.09	1.16	1.29	1.40	1.45	1.56
Davie	0.09	0.09	0.11	0.13	0.15	0.17
Lauderdale Lakes	0.06	0.06	0.06	0.06	0.06	0.06
Lauderhill	0.49	0.47	0.51	0.54	0.57	0.59
Lazy Lake	0.00	0.00	0.00	0.00	0.00	0.01
North Lauderdale	0.06	0.06	0.19	0.19	0.19	0.18
Oakland Park	5.26	5.22	5.37	5.69	5.92	6.09
Tamarac	0.35	0.33	0.33	0.33	0.34	0.33
Wilton Manors	2.02	1.95	2.15	2.33	2.45	2.55
Port Everglades	Population is included in BMSD					

Source: Calculation based on Hazen & Sawyer City of Fort Lauderdale Water Supply Facilities Work Plan 2020 Update Population and Demand Projections.

E. 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, Twitter,

Facebook, 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 2018 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. In addition, the County has developed door hangers in English, Spanish, and Creole which cites these irrigation restrictions and distributed these to code enforcement agencies during their annual meetings. It has also developed a sticker with the irrigation restrictions that are placed within irrigation controller boxes at all public schools that are evaluated as part of the Environmental Partnership between the County and School Board of Broward County.

Voluntary and incentive-based initiatives are offered primarily through both the Broward Water Partnership's Conservation Pays and NatureScape Irrigation Service 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. In addition, beginning in 2019, the County has established a Conservation Partner of the Year Award to recognize local municipalities for their water conservation efforts. This award is made at Water Matters Day.

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 2018 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 2018-2019 school year, County staff assisted the Global Scholars program in arranging for field trips and providing guest speakers to augment the "World of Water" focus which was the theme for the year.

Media campaigns. The Conservation Pays program promotes indoor water conservation through several media campaigns each year. The most recent campaign, "Play Conservation Pays and Win" used online gamification to educate the public on water conservation, sustainability, and climate change and had over 5,000 players.

Informative billing. The Conservation Pays program provides utility partners with blurbs to include in its billing.

Training staff and associates at facilities and operations that provide irrigation and landscaping materials, services, and supplies. The NatureScape Irrigation Services trains and 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 Broward program is working with big box stores to

promote water conservation by including more Florida-friendly plant selections within their stores.

Florida-Friendly Landscaping™ demonstration gardens are 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 offers workshops to promote water conservation and annually promotes water conservation to residents at Broward **Water Matters** Day, an event in March which draws 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 with efficient ones are promoted through the Conservation Pays program. A new rebate program promoting smart irrigation equipment has recently been implemented through the NatureScape Irrigation Service.

Through the County's water conservation initiatives, as of the end of September 2019, cumulative water savings of 4.44 billion gallons have been realized. Some draft results are presented in Table WS28 and the estimation of municipal participation across the County is presented in Table WS29.

Table WS28 Water Savings Realized Through County Water Conservation Programs

Name of Program	Metric	Cumulative gallons saved
NIS	3,508 evaluations	1,643,802,415
Environmental Partnership Irrigation Evaluations	199 evaluations	275,010,020
Conservation Pays Program	155,581 toilet rebates	2,497,634,300
NatureScape Broward	4,619 Florida-friendly habitats	26,850,000

Source: County Water Conservation Program. The information contained in this table is in draft and subject to change.

Table WS29 Participation in County water conservation programs

Municipality/Utility/Other	NIS (mobile irrigation lab)	Broward Water Partnership Conservation Pays (Indoor Conservation)	NatureScape Broward (Florida-Friendly Landscaping™)	Water Matters Education and Outreach
BMSD/WWS	X	X	X	X
Broward County Public Schools	X	X	X	X
Coconut Creek	X	X	X	X
Cooper City	X	X	X	X
Coral Springs	X	X	X	X
Coral Springs Improvement Dist.	X			
Dania Beach	X	X		X
Davie	X	X	X	X
Deerfield Beach	X	X	X	X
Fort Lauderdale	X	X	X	X
Hallandale Beach	X	X	X	X
Hillsboro Beach				X
Hollywood	X	X	X	X
Lauderdale-by-the-Sea			X	X
Lauderdale Lakes			X	X
Lauderhill		X	X	X
Lazy Lake				X
Lighthouse Point			X	X
Margate	X	X	X	X
Miramar	X	X	X	X
North Lauderdale	X		X	X
Oakland Park	X		X	X
Parkland			X	X
Pembroke Park			X	X
Pembroke Pines	X	X	X	X
Plantation	X	X	X	X
Pompano Beach	X		X	X
Sea Ranch Lakes				X
Southwest Ranches			X	X
Sunrise	X	X	X	X
Tamarac			X	X
West Park			X	X
Weston		X		X
Wilton Manors			X	X

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, Countywide landscape 2-day per week irrigation restrictions. 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=PTI_ICOOR_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 Broward County residents including NatureScape Broward, Water Matters Day, Know the Flow, NIS, 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. The utility also supports the Water Matters Program by purchasing and distributing rain gauges at the annual Broward Water Matters Day event.

City of Fort Lauderdale

The City of Fort Lauderdale has an active water conservation program, as detailed in the City's CUP, ordinances, and in their 2014 Water Supply Plan Update. In the 2008 CUP Renewal, the City used an aggressive approach to control its water demand by developing a conservation program through several initiatives. The first is the City's current efforts at retrofitting and upgrading significant portions of the water delivery systems, including leak detection. The City anticipates that the percentage of unaccounted for water loss will be reduced as this process is implemented. The second is the passage of an ordinance that the City estimated would meet a 10 percent reduction in the projected demands, compared to historical demands. The final initiative is the continued implementation of existing programs such as: limitation of irrigation hours, ultra-low volume plumbing in new developments, xeriscaping principles, conservation-based rate structure, rain sensor requirements, and the City's water conservation education program. More recently, the city is planning on implementing advanced metering infrastructure system wide to enable two-way communication between utilities and customers using smart meters, communication networks and data management systems. The City expects to achieve certain quantifiable goals in the implementation of this program and the City will provide data to the SFWMD on the progress of this demand management program. The City estimates this effort will result in an estimated per capita use rate of approximately 170 gallons per day, which was used for calculating the future demands for the service area.

The City also participates in the Broward Countywide Conservation Pays Program, in collaboration with 18 partners, to provide a coordinated regional campaign focused on water conservation and the distribution of rebates and other incentives.

As partners in the NIS with 18 local water utilities, the City annually selects a group of large water users, including government facilities, parks, schools, and homeowner associations, where the greatest potential exists for significant water savings. Tailored irrigation evaluations are performed by the NIS team of certified experts to capture measured water savings. Best management practices that encourage the 'right plant in the right place' and

smart irrigation are included in each report to help to promote water conservation messaging that adds to long-term water savings.

Fort Lauderdale is a registered County municipality in the community wildlife habitat program through NatureScape Broward. This program 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, and the planting of native, non-invasive, and other drought tolerant plants.

F. 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 2018, the annual average daily wastewater flow at the facility was 71.8 MGD. Wastewater effluent is divided between deep injection well disposal and ocean outfall discharge. Approximately 3.8 MGD of the treated wastewater is reused at the facility or at adjacent facilities for irrigation, process or cooling water. Approximately 0.2 MGD of the reuse generated at the North Regional WWTP is delivered for residential and public access area irrigation (Annual Reuse Report to FDEP submitted on November 29, 2018). 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 (44 MGD) and by ocean outfall (24 MGD). However, of the water sent to the ocean outfall, an average 3

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 is proceeding with 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. The expansion of the Reclaimed Water Treatment System at the North Regional WWTP is underway and a contract has been let for construction. Pre-construction activities are nearing completion and it is anticipated that construction of the pipeline will commence the first quarter of 2020. 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 continues to work towards meeting the requirements of the 2008 Ocean Outfall statute before 2025.

City of Fort Lauderdale

The City of Fort Lauderdale's George T. Lohmeyer Wastewater Treatment Facility is a central regional facility used to treat wastewater in a region encompassing Port Everglades, the Cities of Fort Lauderdale, Wilton Manors, and Oakland Park and parts of the City of Tamarac, Town of Davie, and BMSD. The facility has an FDEP-permitted capacity of 56.7 MGD. Treated effluent from the facility is disposed through five deep injection wells.

As stated in the City's Draft Water Supply Facilities Work Plan (November 7, 2019), "The facility does not currently treat effluent to reclaimed water standards for public irrigation or other offsite 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. A second feasibility study in 2009 was for the reclaimed water in the area of the Convention Center Broward County provided a 50% cost share for \$5,000. 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". Key conclusions of the report were (CDM, 2008):

- The GTL WWTP is located far from any significant users of reclaimed water, such as golf courses. Therefore, the construction of an irrigation-quality reclaimed water production facility at or near the plant to provide further treatment of effluent to public reuse standards is not feasible. There is little available space on the plant site or plant vicinity to construct the required treatment facilities. In addition, due to high levels of infiltration into gravity sewer piping located near coastal areas and waterways, the chloride concentration in the treated effluent over 1,100-mg/L, resulting in unaffordable levels of treatment to reuse standards at the GTL WWTP site. Therefore, the only practical alternatives for implementing reuse systems are off-site and near potential beneficial uses of reclaimed water;
- Two options studied (reclaimed water facilities at the E-Repump Station and the Former Composting Facility¹) are technically feasible but are not be economically viable.

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."

City of Hollywood

The City of Hollywood operates a regional WWTP that is subject to the requirements of the 2008 Ocean Outfall statute. The City of Hollywood implemented a reuse system that delivers up to 4 MGD of blended low-salinity reuse water for irrigation and an annual average of 4 MGD of high-salinity reuse water that is used internally at the City's Southern

Regional Wastewater Treatment Plant. The City is working towards having 10 MGD of reuse capacity by 2025 by the following methods:

- Credit for Existing Onsite Process Reuse – 4 MGD
- Reuse Water for Irrigation within the City – 1.5 MGD
- Contracted Reuse – 4.5 MGD

The City feels that the existing system may be expandable to additional contract, residential irrigation and commercial uses in the future up to an additional 0.3 MGD (Hollywood, 2020).

SPECIAL RECOMMENDATIONS AND ACTIONS

BCWWS, 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. The County projects listed in Chapter 6 and Appendix E of the 2018 LECWSP Update are listed below.

A. 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 is anticipated to be complete by 2021 at an estimated cost of \$59 million. As of September 2019, the project is 25 percent complete (Quarterly Report for Major Capital Projects in the Public Works Department Memorandum dated October 3, 2019).

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 is anticipated to be complete by 2021 at an estimated cost of \$29 million (Quarterly Report for Major Capital Projects in the Public Works Department Memorandum dated October 3, 2019).

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 is anticipated to be complete by 2021 at an estimated cost of \$6.4 million (Quarterly Report for Major Capital Projects in the Public Works Department Memorandum dated October 3, 2019).

B. C-5 I 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 is scheduled to begin in October 2019 with full operation anticipated by October 2021.

C. Technical Water Resources Assessments

Climate change 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 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 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 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 needs 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 WM4.8. 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 (EPPD) 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 WSWFP 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.

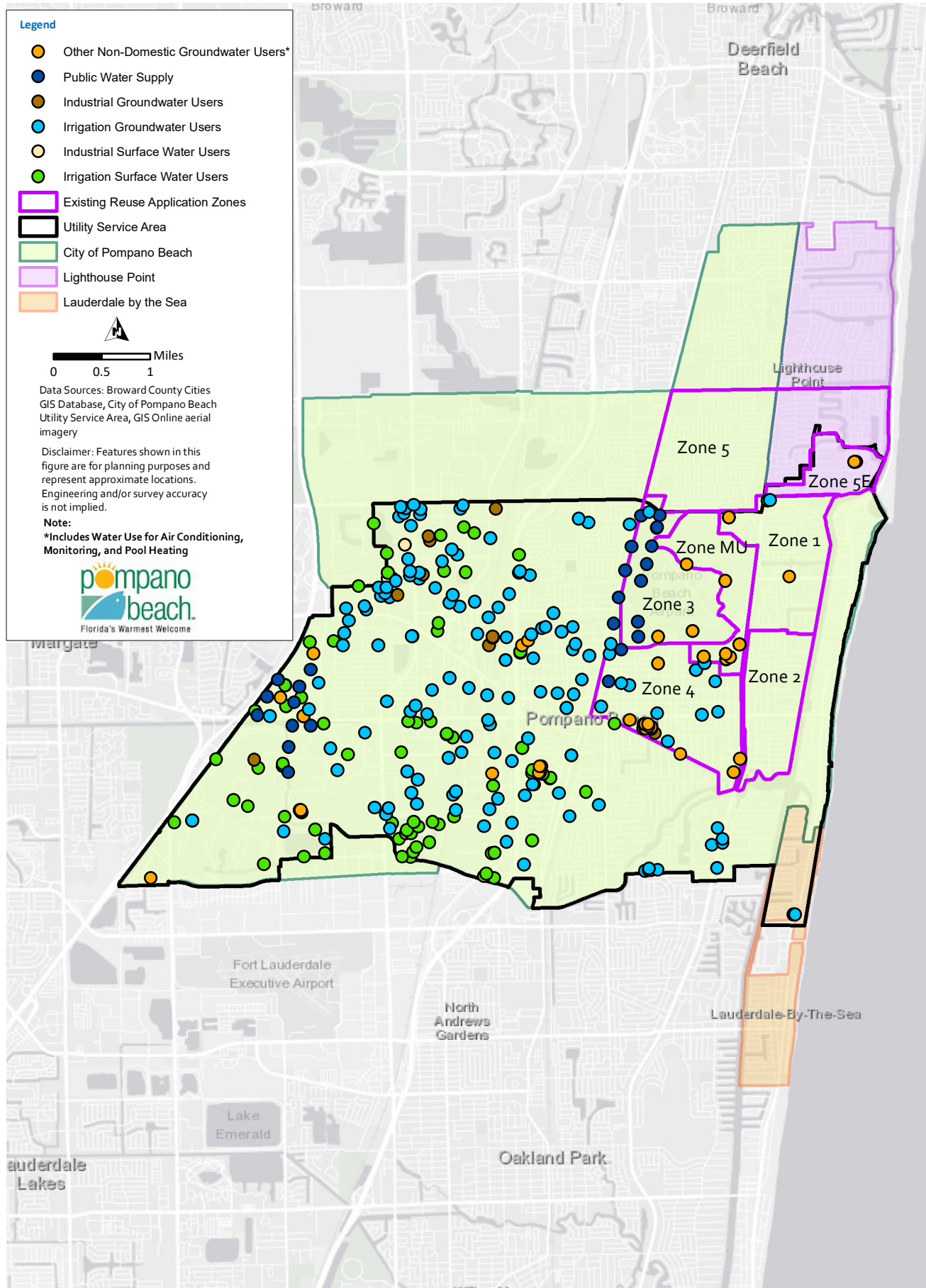
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Appendix B

INDIVIDUAL WUP HOLDERS BY USE IN THE CITY OF POMPANO BEACH



Permit Number ⁽¹⁾	Application Number ⁽¹⁾	Permit Type ⁽¹⁾	CUP User ⁽¹⁾	Source ⁽¹⁾	Acres Service ⁽¹⁾	Well Casing Diameter (ft) ⁽¹⁾	Well Depth (ft) ⁽¹⁾	Pump/Well ⁽¹⁾	Facility Status ⁽¹⁾	Water Use ⁽¹⁾	Pump/Well ID No. ⁽¹⁾	CUP Pump Capacity (gpm) ⁽¹⁾	Total Annual Allocation (MGPY) ^{(2),(3)}	Tota Maximum Month Allocation (MGPM) ^{(2),(3)}	CUP Expiration Date ⁽²⁾	Total Annual Allocation (GPD) ^{(2),(3)}
06-03180-W	010302-13	GENERAL PERMIT	JOHN KNOX VILLAGE	Surficial Aquifer System	14.25	16	120	WELL	EXISTING	AIR CONDITIONING	105247	0	19.2494	2.4149	4/30/2021	52738
06-03180-W	010302-13	GENERAL PERMIT	JOHN KNOX VILLAGE	Surficial Aquifer System	14.25	16	120	WELL	EXISTING	AIR CONDITIONING	105248	0	19.2494	2.4149	4/30/2021	52738
06-03180-W	010302-13	GENERAL PERMIT	JOHN KNOX VILLAGE	Surficial Aquifer System	14.25	8	110	WELL	EXISTING	AIR CONDITIONING	105246	200	19.2494	2.4149	4/30/2021	52738
06-03180-W	010302-13	GENERAL PERMIT	JOHN KNOX VILLAGE	Surficial Aquifer System	14.25	8	110	WELL	EXISTING	AIR CONDITIONING	105244	200	19.2494	2.4149	4/30/2021	52738
06-06117-W	100816-10	GENERAL PERMIT	PINE DRIVE MANOR	Biscayne Aquifer	1	4	60	WELL	PENDING	AIR CONDITIONING	257675	150	34.992	2.916	10/15/2030	95868
06-04562-W	080808-3	GENERAL PERMIT	GARDEN ISLES APARTMENTS 2	Biscayne Aquifer	1	4	60	WELL	PENDING	AIR CONDITIONING	224585	65	9.125	0.76	4/4/2026	25000
06-06543-W	120821-14	GENERAL PERMIT	GARDEN ISLES	Surficial Aquifer System	1	2	60	WELL	PENDING	AIR CONDITIONING	263288	45	36.0036	2.9592	3/11/2027	98640
06-06543-W	120821-14	GENERAL PERMIT	GARDEN ISLES	Surficial Aquifer System	1	2	55	WELL	EXISTING	AIR CONDITIONING	263287	0	36.0036	2.9592	3/11/2027	98640
06-06543-W	120821-14	GENERAL PERMIT	GARDEN ISLES	Surficial Aquifer System	1	2	55	WELL	EXISTING	AIR CONDITIONING	263289	0	36.0036	2.9592	3/11/2027	98640
06-04562-W	080808-3	GENERAL PERMIT	GARDEN ISLES APARTMENTS 2	Biscayne Aquifer	1	3	100	WELL	PENDING	AIR CONDITIONING	190582	0	9.125	0.76	4/4/2026	25000
06-04562-W	080808-3	GENERAL PERMIT	GARDEN ISLES APARTMENTS 2	Biscayne Aquifer	1	3	100	WELL	PENDING	AIR CONDITIONING	190583	0	9.125	0.76	4/4/2026	25000
06-04929-W	061213-13	GENERAL PERMIT	GARDEN ISLES	Biscayne Aquifer	1	4	60	WELL	EXISTING	AIR CONDITIONING	196845	0	36.0036	2.9592	3/11/2027	98640
06-04929-W	061213-13	GENERAL PERMIT	GARDEN ISLES	Biscayne Aquifer	1	4	60	WELL	PENDING	AIR CONDITIONING	196843	68.5	36.0036	2.9592	3/11/2027	98640
06-04929-W	061213-13	GENERAL PERMIT	GARDEN ISLES	Biscayne Aquifer	1	4	60	WELL	EXISTING	AIR CONDITIONING	196841	0	36.0036	2.9592	3/11/2027	98640
06-04929-W	061213-13	GENERAL PERMIT	GARDEN ISLES	Biscayne Aquifer	1	4	60	WELL	PENDING	AIR CONDITIONING	196844	68.5	36.0036	2.9592	3/11/2027	98640
06-06090-W	100716-4	GENERAL PERMIT	LIGHTHOUSE BAY A/C SUPPLY WELL	Biscayne Aquifer	1	2	45	WELL	PENDING	AIR CONDITIONING	256667	40	21.024	1.751	10/23/2030	57600
06-06090-W	100716-4	GENERAL PERMIT	LIGHTHOUSE BAY A/C SUPPLY WELL	Biscayne Aquifer	1	2	40	WELL	EXISTING	AIR CONDITIONING	256670	40	21.024	1.751	10/23/2030	57600
06-06090-W	100716-4	GENERAL PERMIT	LIGHTHOUSE BAY A/C SUPPLY WELL	Biscayne Aquifer	1	2	40	WELL	EXISTING	AIR CONDITIONING	256668	40	21.024	1.751	10/23/2030	57600
06-07023-W	141105-1	GENERAL PERMIT	SIMONIZ CAR WASH - 1500 SOUTH FEDERAL HIGHWAY	Biscayne Aquifer	0.68	4	50	WELL	EXISTING	INDUSTRIAL	269667	60	2.0752	0.2022	11/7/2034	5685
06-06467-W	120330-4	INDIVIDUAL	PALMS GOLF COURSE AT PALM AIRE COUNTRY CLUB	Biscayne Aquifer	120	10	127	WELL	EXISTING	INDUSTRIAL	28401	606	163.3594	22.5747	5/14/2032	447560
06-04113-W	040506-15	GENERAL PERMIT	PALM AIRE COUNTRY CLUB #II	Biscayne Aquifer	1	2	45	WELL	PENDING	INDUSTRIAL	152360	35	0.073	0.006	7/2/2024	200
06-00098-W	080718-14	GENERAL PERMIT	GARDEN POINT CONDOMINIUM	Biscayne Aquifer	1	6	74	WELL	EXISTING	INDUSTRIAL	25562	140	73.58	6.1286	11/4/2028	201589
06-04539-W	051205-3	GENERAL PERMIT	MR SOUEEKY CAR WASH	Biscayne Aquifer	0.58	2	75	WELL	PENDING	INDUSTRIAL	189333	65	8.7127	0.1013	2/3/2026	23870
06-05318-W	190220-1	GENERAL PERMIT	POMPAÑO BEACH READY-MIX BATCH PLANT	Biscayne Aquifer	14.3	2	40	WELL	EXISTING	INDUSTRIAL	219119	200	31.025	2.584	2/5/2028	85000
06-05318-W	190220-1	GENERAL PERMIT	POMPAÑO BEACH READY-MIX BATCH PLANT	Biscayne Aquifer	14.3	4	80	WELL	EXISTING	INDUSTRIAL	219118	475	31.025	2.584	2/5/2028	85000
06-05318-W	190220-1	GENERAL PERMIT	POMPAÑO BEACH READY-MIX BATCH PLANT	Biscayne Aquifer	14.3	4	100	WELL	ABANDONED	INDUSTRIAL	219120	0	31.025	2.584	2/5/2028	85000
06-05318-W	190220-1	GENERAL PERMIT	POMPAÑO BEACH READY-MIX BATCH PLANT	Biscayne Aquifer	14.3	6	100	WELL	PENDING	INDUSTRIAL	281040	200	31.025	2.584	2/5/2028	85000
06-06817-W	121227-4	GENERAL PERMIT	S W S SHREDDER FACILITY	Biscayne Aquifer	2.843	4	50	WELL	PENDING	INDUSTRIAL	264181	50	0.9125	0.152	1/11/2033	2500
06-04568-W	191025-6	GENERAL PERMIT	LG L RECYCLING	Biscayne Aquifer	1	6	90	WELL	PENDING	INDUSTRIAL	222932	120	1.825	0.15	7/4/2028	5000
06-04347-W	170830-14	INDIVIDUAL	DELTA TRANSFER STATION	Off-site Canal(s)	40.4	0	0	PUMP	EXISTING	INDUSTRIAL	170277	150	22.4364	2.3168	3/18/2025	61470
06-03927-W	030924-7	GENERAL PERMIT	US CONCRETE PRODUCTS	Biscayne Aquifer	3.85	4	100	WELL	PENDING	INDUSTRIAL	139740	80	1.6425	0.1368	10/9/2023	4500
06-03927-W	030924-7	GENERAL PERMIT	US CONCRETE PRODUCTS	Biscayne Aquifer	3.85	2	120	WELL	EXISTING	INDUSTRIAL	139739	0	1.6425	0.1368	10/9/2023	4500
06-02210-W	160222-12	INDIVIDUAL	CEMEX - NORTH POMPAÑO READY-MIX AND BLOCK	Biscayne Aquifer	12.4	12	150	WELL	EXISTING	INDUSTRIAL	273393	200	18.25	2.736	6/1/2036	50000
06-05021-W	070326-3	GENERAL PERMIT	ASUMPTION CHURCH	Water Table Aquifer	1	2	20	WELL	PENDING	IRRIGATION	198763	80	2.4092	0.3501	7/1/2027	6601
06-05021-W	070326-3	GENERAL PERMIT	ASUMPTION CHURCH	Water Table Aquifer	1	2	20	WELL	PENDING	IRRIGATION	198764	80	2.4092	0.3501	7/1/2027	6601
06-05249-W	070925-12	GENERAL PERMIT	SAINT HENRY'S CATHOLIC CHURCH	SFWMD Canal (C-14)	1	0	0	PUMP	EXISTING	IRRIGATION	217257	50	1.2558	0.1673	11/24/2027	3441
06-05249-W	070925-12	GENERAL PERMIT	SAINT HENRY'S CATHOLIC CHURCH	SFWMD Canal (C-14)	1	0	0	PUMP	EXISTING	IRRIGATION	217255	50	1.2558	0.1673	11/24/2027	3441
06-05249-W	070925-12	GENERAL PERMIT	SAINT HENRY'S CATHOLIC CHURCH	SFWMD Canal (C-14)	1	0	0	PUMP	EXISTING	IRRIGATION	217256	50	1.2558	0.1673	11/24/2027	3441
06-07753-W	190111-1	GENERAL PERMIT	BOARDWALK APARTMENTS	Biscayne Aquifer	0.2	2	65	WELL	PENDING	IRRIGATION	279673	50	1.501	0.2101	7/24/2038	4112
06-07753-W	190111-1	GENERAL PERMIT	BOARDWALK APARTMENTS	Biscayne Aquifer	0.2	2	65	WELL	PENDING	IRRIGATION	280791	50	1.501	0.2101	7/24/2038	4112
06-07753-W	190111-1	GENERAL PERMIT	BOARDWALK APARTMENTS	Biscayne Aquifer	0.2	2	65	WELL	PENDING	IRRIGATION	280792	50	1.501	0.2101	7/24/2038	4112
06-07753-W	190111-1	GENERAL PERMIT	BOARDWALK APARTMENTS	Biscayne Aquifer	0.2	2	65	WELL	PENDING	IRRIGATION	280793	50	1.501	0.2101	7/24/2038	4112
06-07753-W	190111-1	GENERAL PERMIT	BOARDWALK APARTMENTS	Biscayne Aquifer	0.2	2	65	WELL	PENDING	IRRIGATION	279674	50	1.501	0.2101	7/24/2038	4112
06-07023-W	141105-1	GENERAL PERMIT	SIMONIZ CAR WASH - 1500 SOUTH FEDERAL HIGHWAY	Biscayne Aquifer	0.68	4	50	WELL	EXISTING	IRRIGATION	269667	60	2.0752	0.2022	11/7/2034	5685
06-03688-W	020925-2	GENERAL PERMIT	LAGUNA POINTE	Biscayne Aquifer	6.8	4	120	WELL	PENDING	IRRIGATION	126244	100	2.6534	0.3645	12/6/2022	7270
06-07693-W	180316-3	GENERAL PERMIT	PALM AIRE COUNTRY CLUB CONDOMINIUM NO 8	Off-site Canal(s)	1	0	0	PUMP	PENDING	IRRIGATION	278734	100	17.7064	2.4456	3/20/2038	48511
06-04909-W	120315-10	GENERAL PERMIT	CYPRESS BEND PROTECTIVE CORPORATION	SFWMD Canal (C-14)	15	0	0	PUMP	EXISTING	IRRIGATION	197243	150	20.4199	2.8218	6/17/2032	55945
06-07780-W	180924-16	GENERAL PERMIT	HOERBIGER - PLANT 3	Off-site Lake(s)	0.8	0	0	PUMP	PENDING	IRRIGATION	280027	186	1.0007	0.1401	9/26/2038	2742
06-04909-W	120315-10	GENERAL PERMIT	CYPRESS BEND PROTECTIVE CORPORATION	SFWMD Canal (C-14)	15	0	0	PUMP	EXISTING	IRRIGATION	197244	150	20.4199	2.8218	6/17/2032	55945
06-07779-W	180924-10	GENERAL PERMIT	HOERBIGER PLANT 1 & 2	Unnamed Canal	1.6	0	0	PUMP	EXISTING	IRRIGATION	280031	204	2.0014	0.2801	10/1/2038	5483
06-05112-W	070604-26	GENERAL PERMIT	ANDREW'S COMMERCENTER	Unnamed Canal	0.5	0	0	PUMP	EXISTING	IRRIGATION	214519	36	0.6279	0.0836	8/3/2027	1720
06-05112-W	070604-26	GENERAL PERMIT	ANDREW'S COMMERCENTER	Unnamed Canal	0.5	0	0	PUMP	EXISTING	IRRIGATION	214521	36	0.6279	0.0836	8/3/2027	1720
06-04909-W	120315-10	GENERAL PERMIT	CYPRESS BEND PROTECTIVE CORPORATION	On-site Lake(s)	15	0	0	PUMP	EXISTING	IRRIGATION	197242	150	20.4199	2.8218	6/17/2032	55945
06-04909-W	120315-10	GENERAL PERMIT	CYPRESS BEND PROTECTIVE CORPORATION	On-site Lake(s)	15	0	0	PUMP	EXISTING	IRRIGATION	197245	250	20.4199	2.8218	6/17/2032	55945
06-04022-W	031224-9	GENERAL PERMIT	POMPAÑO MARKETPLACE	Biscayne Aquifer	1.3	4	50	WELL	PENDING	IRRIGATION	145699	80	1.6325	0.2175	1/27/2024	4473
06-04408-W	090728-13	GENERAL PERMIT	ST COLEMAN'S CHURCH	Biscayne Aquifer	1	3	35	WELL	PENDING	IRRIGATION	230694	175	1.2558	0.1673	6/24/2025	3441
06-04909-W	120315-10	GENERAL PERMIT	CYPRESS BEND PROTECTIVE CORPORATION	On-site Lake(s)	15	0	0	PUMP	EXISTING	IRRIGATION	197246	250	20.4199	2.8218	6/17/2032	55945
06-04937-W	061218-16	GENERAL PERMIT	WORLD OF GRANITE	Biscayne Aquifer	0.5	2	40	WELL	PENDING	IRRIGATION	196486	100	0.6279	0.0836	3/26/2027	1720
06-06207-W	101207-14	GENERAL PERMIT	CAPTIVA COVE	On-site Lake(s) / Pond(s)	1	0	0	PUMP	PENDING	IRRIGATION	258369	180	7.7038	0.9854	12/23/2030	21106
06-04408-W	090728-13	GENERAL PERMIT	ST COLEMAN'S CHURCH	Biscayne Aquifer	1	2	35	WELL	EXISTING	IRRIGATION	174854	90	1.2558	0.1673	6/24/2025	3441
06-04909-W	120315-10	GENERAL PERMIT	CYPRESS BEND PROTECTIVE CORPORATION	On-site Lake(s)	15	0	0	PUMP	EXISTING	IRRIGATION	197236	200	20.4199	2.8218	6/17/2032	55945
06-03829-W	030502-11	GENERAL PERMIT	JENNINGS COMMERCIAL WAREHOUSE	Biscayne Aquifer	0.23	3	80	WELL	PENDING	IRRIGATION	133096	75	0.2542	0.0354	5/30/2023	696
06-04909-W	120315-10	GENERAL PERMIT	CYPRESS BEND PROTECTIVE CORPORATION	On-site Lake(s)	15	0	0	PUMP	EXISTING	IRRIGATION	197237	200	20.4199	2.8218	6/17/2032	55945
06-04909-W	120315-10	GENERAL PERMIT	CYPRESS BEND PROTECTIVE CORPORATION	On-site Lake(s)	15	0	0	PUMP	EXISTING	IRRIGATION	197241	150	20.4199	2.8218	6/17/2032	55945
06-05401-W	080215-3	GENERAL PERMIT	GATEWAY COMMERCE CENTER	Biscayne Aquifer	0.07	2	80	WELL	PENDING	IRRIGATION	220541	60	0.0879	0.0117	4/15/2028	241
06-04909-W	120315-10	GENERAL PERMIT	CYPRESS BEND PROTECTIVE CORPORATION	On-site Lake(s)	15	0	0	PUMP	EXISTING	IRRIGATION	197251	200	20.4199	2.8218	6/17/2032	55945
06-07489-W	170314-7	GENERAL PERMIT	CYPRESS ASSOCIATES	Biscayne Aquifer	0.43	2	50	WELL	PENDING	IRRIGATION	276190	40	0.3867	0.0574	3/14/2037	1059
06-04022-W	031224-9	GENERAL PERMIT	POMPAÑO MARKETPLACE	Biscayne Aquifer	1.3	4	50	WELL	PENDING	IRRIGATION	145701	80	1.6325	0.2175	1/27/2024	4473
06-04909-W	120315-10	GENERAL PERMIT	CYPRESS BEND PROTECTIVE CORPORATION	On-site Lake(s)	15	0	0	PUMP	EXISTING	IRRIGATION	197249	250	20.4199	2.8218	6/17/2032	55945
06-04200-W	190812-3	GENERAL PERMIT	SOUTHEASTERN FREIGHT-POMPAÑO	Biscayne Aquifer	6.02	4	80	WELL	EXISTING	IRRIGATION	158703	65	8.1994	1.1325	8/16/2039	22464
06-04909-W	120315-10	GENERAL PERMIT	CYPRESS BEND PROTECTIVE CORPORATION	On-site Lake(s)	15	0	0	PUMP	EXISTING	IRRIGATION	197247	200	20.4199	2.8218	6/17/2032	55945
06-04909-W	120315-10	GENERAL PERMIT	CYPRESS BEND PROTECTIVE CORPORATION	On-site Lake(s)	15	0	0	PUMP	EXISTING	IRRIGATION	197235	150	20.4199	2.8218	6/17/2032	55945
06-04177-W	040806-															

Permit Number ⁽¹⁾	Application Number ⁽¹⁾	Permit Type ⁽¹⁾	CUP User ⁽¹⁾	Source ⁽¹⁾	Acres Service ⁽¹⁾	Well Casing Diameter (ft) ⁽¹⁾	Well Depth (ft) ⁽¹⁾	Pump/Well ⁽¹⁾	Facility Status ⁽¹⁾	Water Use ⁽¹⁾	Pump/Well ID No. ⁽¹⁾	CUP Pump Capacity (gpm) ⁽¹⁾	Total Annual Allocation (MGPY) ^{(2),(3)}	Tota Maximum Month Allocation (MGPM) ^{(2),(3)}	CUP Expiration Date ⁽²⁾	Total Annual Allocation (GPD) ^{(2),(3)}
06-00193-W	170809-12	GENERAL PERMIT	ISLE CASINO RACING POMPANO PARK	Biscayne Aquifer	65	4	80	WELL	EXISTING	IRRIGATION	31660	200	79.4799	10.9194	9/14/2027	217753
06-04590-W	070108-24	GENERAL PERMIT	ORCHID GROVE	On-site Lake(s)	9.7	0	0	PUMP	PENDING	IRRIGATION	191332	400	13.2494	1.6947	4/22/2026	36300
06-04205-W	040921-11	GENERAL PERMIT	J D INTERNATIONAL LIGHTING	Surficial Aquifer System	1.89	4	80	WELL	PENDING	IRRIGATION	162937	65	2.3735	0.3162	11/15/2024	6503
06-03435-W	020204-3	GENERAL PERMIT	POMPANO BUSINESS PARK	On-site Lake(s) / Pond(s)	4	0	0	PUMP	EXISTING	IRRIGATION	116380	40	3.5283	0.4918	3/6/2022	9667
06-03180-W	010302-13	GENERAL PERMIT	JOHN KNOX VILLAGE	Surficial Aquifer System	14.25	8	110	WELL	EXISTING	IRRIGATION	105241	200	19.2494	2.4149	4/30/2021	52738
06-03180-W	010302-13	GENERAL PERMIT	JOHN KNOX VILLAGE	Surficial Aquifer System	14.25	8	110	WELL	EXISTING	IRRIGATION	105242	200	19.2494	2.4149	4/30/2021	52738
06-00193-W	170809-12	GENERAL PERMIT	ISLE CASINO RACING POMPANO PARK	Biscayne Aquifer	65	6	80	WELL	EXISTING	IRRIGATION	265933	200	79.4799	10.9194	9/14/2027	217753
06-03180-W	010302-13	GENERAL PERMIT	JOHN KNOX VILLAGE	On-site Lake(s) / Pond(s)	14.25	0	0	PUMP	EXISTING	IRRIGATION	105261	160	19.2494	2.4149	4/30/2021	52738
06-03180-W	010302-13	GENERAL PERMIT	JOHN KNOX VILLAGE	On-site Lake(s) / Pond(s)	14.25	0	0	PUMP	EXISTING	IRRIGATION	105262	160	19.2494	2.4149	4/30/2021	52738
06-03180-W	010302-13	GENERAL PERMIT	JOHN KNOX VILLAGE	On-site Lake(s) / Pond(s)	14.25	0	0	PUMP	EXISTING	IRRIGATION	105260	160	19.2494	2.4149	4/30/2021	52738
06-03180-W	010302-13	GENERAL PERMIT	JOHN KNOX VILLAGE	On-site Lake(s) / Pond(s)	14.25	0	0	PUMP	EXISTING	IRRIGATION	105258	160	19.2494	2.4149	4/30/2021	52738
06-03180-W	010302-13	GENERAL PERMIT	JOHN KNOX VILLAGE	On-site Lake(s) / Pond(s)	14.25	0	0	PUMP	EXISTING	IRRIGATION	105259	160	19.2494	2.4149	4/30/2021	52738
06-03180-W	010302-13	GENERAL PERMIT	JOHN KNOX VILLAGE	On-site Lake(s) / Pond(s)	14.25	0	0	PUMP	EXISTING	IRRIGATION	105257	160	19.2494	2.4149	4/30/2021	52738
06-00193-W	170809-12	GENERAL PERMIT	ISLE CASINO RACING POMPANO PARK	Biscayne Aquifer	65	4	80	WELL	EXISTING	IRRIGATION	31657	81	79.4799	10.9194	9/14/2027	217753
06-01747-W	150813-6	INDIVIDUAL	PINES AND SABALS	Biscayne Aquifer	48	10	90	WELL	ABANDONED	IRRIGATION	28402	0	65.3776	9.0299	5/7/2032	179117
06-03180-W	010302-13	GENERAL PERMIT	JOHN KNOX VILLAGE	On-site Lake(s) / Pond(s)	14.25	0	0	PUMP	EXISTING	IRRIGATION	105249	160	19.2494	2.4149	4/30/2021	52738
06-01914-W	111219-8	INDIVIDUAL	OAKS AND CYPRESS COURSES	On-site Lake(s)	260	0	0	PUMP	EXISTING	IRRIGATION	41036	300	355.1383	45.4247	2/15/2027	972982
06-01194-W	040420-3	INDIVIDUAL	PALM AIRE CONDO #5	SFWMD Canal (C-14)	15	0	0	PUMP	PENDING	IRRIGATION	151121	100	19.5154	2.6811	5/17/2024	53467
06-01194-W	040420-3	INDIVIDUAL	PALM AIRE CONDO #5	SFWMD Canal (C-14)	15	0	0	PUMP	PENDING	IRRIGATION	151118	350	19.5154	2.6811	5/17/2024	53467
06-01194-W	040420-3	INDIVIDUAL	PALM AIRE CONDO #5	SFWMD Canal (C-14)	15	0	0	PUMP	PENDING	IRRIGATION	151117	350	19.5154	2.6811	5/17/2024	53467
06-03639-W	091026-5	GENERAL PERMIT	PALM AIRE CONDOMINIUM 11	SFWMD Canal (C-14)	23.5	0	0	PUMP	EXISTING	IRRIGATION	128926	350	21.8273	2.7919	6/1/2030	59801
06-01309-W	061208-38	GENERAL PERMIT	CRYSTAL SUB MODIFICATION	Biscayne Aquifer	10.26	2	60	WELL	EXISTING	IRRIGATION	196423	50	24.5371	3	3/24/2027	67225
06-02345-W	170106-19	GENERAL PERMIT	FAIRVIEW POINTE AT PALM AIRE	On-site Lake(s)	13	0	0	PUMP	EXISTING	IRRIGATION	40070	125	17.7064	2.4456	1/10/2037	48511
06-00193-W	170809-12	GENERAL PERMIT	ISLE CASINO RACING POMPANO PARK	Biscayne Aquifer	65	2	80	WELL	EXISTING	IRRIGATION	265934	36	79.4799	10.9194	9/14/2027	217753
06-06479-W	120412-6	GENERAL PERMIT	V C A ANIMAL HOSPITAL	Biscayne Aquifer	0.2	2	80	WELL	EXISTING	IRRIGATION	262309	0	0.2723	0.0376	5/3/2032	746
06-06479-W	120412-6	GENERAL PERMIT	V C A ANIMAL HOSPITAL	Biscayne Aquifer	0.2	2	80	WELL	PENDING	IRRIGATION	262310	60	0.2723	0.0376	5/3/2032	746
06-07783-W	180928-10	GENERAL PERMIT	PALM AIRE 53	On-site Lake(s) / Pond(s)	1.25	0	0	PUMP	PENDING	IRRIGATION	280051	120	1.7025	0.2352	10/3/2038	4664
06-05927-W	091112-6	GENERAL PERMIT	AMERIGAS	Biscayne Aquifer	2.5	4	70	WELL	PENDING	IRRIGATION	253221	90	3.1395	0.4182	1/11/2030	8601
06-05460-W	080411-6	GENERAL PERMIT	FSR MATERIAL RECOVERY FACILITY	Biscayne Aquifer	1	6	100	WELL	PENDING	IRRIGATION	222481	120	0.9293	0.1238	6/10/2028	2546
06-05285-W	070911-2	GENERAL PERMIT	WAL MART SUPERCENTER STORE 2962	On-site Lake(s) / Pond(s)	8	0	0	PUMP	EXISTING	IRRIGATION	218036	120	10.0464	1.3384	12/24/2027	27524
06-06594-W	121113-3	GENERAL PERMIT	PALM AIRE COUNTRY CLUB APARTMENTS - BUILDING 52	Biscayne Aquifer	2.3	4	120	WELL	PENDING	IRRIGATION	263987	80	3.1311	0.4327	12/10/2032	8578
06-04104-W	040512-8	GENERAL PERMIT	CIP 04-876 AVONDALE PARK	Pompano Canal	1.52	0	0	PUMP	PENDING	IRRIGATION	151711	110	2.0762	0.2656	5/26/2024	5688
06-04104-W	040512-8	GENERAL PERMIT	CIP 04-876 AVONDALE PARK	Off-site Canal(s)	1.52	0	0	PUMP	PENDING	IRRIGATION	151711	110	2.0762	0.2656	5/26/2024	5688
06-07292-W	160307-15	GENERAL PERMIT	901 PINE DRIVE	Biscayne Aquifer	0.35	2	50	WELL	PENDING	IRRIGATION	273480	60	0.4767	0.0658	3/14/2036	1306
06-07769-W	180829-2	GENERAL PERMIT	AVONDALE PARKSIDE	Biscayne Aquifer	0.269	6	80	WELL	PENDING	IRRIGATION	279867	30	0.3677	0.0508	8/31/2038	1007
06-02987-W	011105-14	INDIVIDUAL	ATLANTIC BUSINESS CENTER	On-site Lake(s) / Pond(s)	17.8	0	0	PUMP	EXISTING	IRRIGATION	42520	158	22.3532	2.9779	9/19/2026	61242
06-02987-W	011105-14	INDIVIDUAL	ATLANTIC BUSINESS CENTER	On-site Lake(s)	17.8	0	0	PUMP	EXISTING	IRRIGATION	193585	350	22.3532	2.9779	9/19/2026	61242
06-02987-W	011105-14	INDIVIDUAL	ATLANTIC BUSINESS CENTER	On-site Lake(s)	17.8	0	0	PUMP	EXISTING	IRRIGATION	193586	75	22.3532	2.9779	9/19/2026	61242
06-03363-W	010730-7	GENERAL PERMIT	LOEHMANS PLAZA AT PALM AIRE	Biscayne Aquifer	0.14	2.5	0	WELL	EXISTING	IRRIGATION	113141	3450	0.1821	0.025	11/15/2021	490
06-01747-W	150813-6	INDIVIDUAL	PINES AND SABALS	Pompano Canal	48	0	0	PUMP	EXISTING	IRRIGATION	41536	750	65.3776	9.0299	5/7/2032	179117
06-01747-W	150813-6	INDIVIDUAL	PINES AND SABALS	SFWMD Canal (C-14)	48	0	0	PUMP	EXISTING	IRRIGATION	41536	750	65.3776	9.0299	5/7/2032	179117
06-04887-W	061020-26	GENERAL PERMIT	CYPRESS PARK CONDOMINIUM	Pompano Canal	2	0	0	PUMP	EXISTING	IRRIGATION	195686	220	2.7318	0.3494	2/17/2027	7484
06-03933-W	031002-5	GENERAL PERMIT	SOUTHTRUST BANK ATLANTIC BUSINESS CENTER	Pompano Canal	1	0	0	PUMP	PENDING	IRRIGATION	144323	40	0.3415	0.0437	1/5/2024	936
06-02987-W	011105-14	INDIVIDUAL	ATLANTIC BUSINESS CENTER	On-site Lake(s)	17.8	0	0	PUMP	EXISTING	IRRIGATION	193587	125	22.3532	2.9779	9/19/2026	61242
06-02987-W	011105-14	INDIVIDUAL	ATLANTIC BUSINESS CENTER	On-site Lake(s)	17.8	0	0	PUMP	EXISTING	IRRIGATION	193588	200	22.3532	2.9779	9/19/2026	61242
06-03562-W	020619-10	GENERAL PERMIT	ZID LIMITED IRRIGATION WELL	Biscayne Aquifer	6	2	90	WELL	PENDING	IRRIGATION	121092	40	0.3316	0.0462	8/9/2022	908
06-07307-W	160401-6	GENERAL PERMIT	ATLANTICO AT PALM AIRE	Surficial Aquifer System	9.99	6	120	WELL	PENDING	IRRIGATION	273631	150	4.6173	0.6377	4/6/2036	12650
06-04509-W	051021-9	INDIVIDUAL	PALM AIRE	Biscayne Aquifer	1	2	120	WELL	PENDING	IRRIGATION	187746	40	1.3659	0.1747	12/20/2025	3742
06-03315-W	010815-5	GENERAL PERMIT	SUNTRUST BANK - BROWARD	Biscayne Aquifer	7.5	2	60	WELL	EXISTING	IRRIGATION	110778	20	8.4479	1.237	9/7/2021	23145
06-03895-W	030731-17	GENERAL PERMIT	EAGLE POINTE	Surficial Aquifer System	3.2	4	100	WELL	PENDING	IRRIGATION	137141	100	3.7635	0.5246	8/27/2023	10311
06-06635-W	130122-16	GENERAL PERMIT	SILVERSTEIN DR OFFICE	Biscayne Aquifer	0.3	2	40	WELL	PENDING	IRRIGATION	264812	20	0.4084	0.0564	2/19/2033	1119
06-03885-W	030723-22	GENERAL PERMIT	MATTHEW DOUGLAS WEISSING, P.A.	Surficial Aquifer System	0.8	2	70	WELL	EXISTING	IRRIGATION	136707	34	0.8843	0.1233	8/21/2023	2423
06-06424-W	111219-2	GENERAL PERMIT	POMPANO MERCHANDISE MART I I	Biscayne Aquifer	1.25	2	100	WELL	EXISTING	IRRIGATION	261294	50	1.7017	0.2352	12/24/2031	4662
06-07382-W	160803-1	INDIVIDUAL	PALM AIRE - PHASE I I I	On-site Lake(s)	36.28	0	0	PUMP	PENDING	IRRIGATION	274544	75	20.6757	2.8557	8/16/2036	56646
06-07382-W	160803-1	INDIVIDUAL	PALM AIRE - PHASE I I I	On-site Lake(s)	36.28	0	0	PUMP	PENDING	IRRIGATION	274541	75	20.6757	2.8557	8/16/2036	56646
06-07721-W	180503-12	GENERAL PERMIT	LINCOLN PARK NORTH	Biscayne Aquifer	2	2	100	WELL	PENDING	IRRIGATION	279126	100	2.7241	0.3762	5/4/2038	7463
06-04539-W	051205-3	GENERAL PERMIT	MR SOQUEEY CAR WASH	Biscayne Aquifer	0.58	2	75	WELL	PENDING	IRRIGATION	189333	65	8.7127	0.1013	2/3/2026	23870
06-05931-W	091120-1	GENERAL PERMIT	SOCCER FIELD	Biscayne Aquifer	0.6	3	80	WELL	PENDING	IRRIGATION	253284	65	0.8195	0.1048	1/19/2030	2245
06-07382-W	160803-1	INDIVIDUAL	PALM AIRE - PHASE I I I	On-site Lake(s)	36.28	0	0	PUMP	PENDING	IRRIGATION	274546	75	20.6757	2.8557	8/16/2036	56646
06-07382-W	160803-1	INDIVIDUAL	PALM AIRE - PHASE I I I	On-site Lake(s)	36.28	0	0	PUMP	PENDING	IRRIGATION	274543	75	20.6757	2.8557	8/16/2036	56646
06-06424-W	111219-2	GENERAL PERMIT	POMPANO MERCHANDISE MART I I	Biscayne Aquifer	1.25	2	100	WELL	EXISTING	IRRIGATION	261293	60	1.7017	0.2352	12/24/2031	4662
06-06874-W	140310-11	GENERAL PERMIT	250 NORTH POWERLINE ROAD	Biscayne Aquifer	1	2	50	WELL	PENDING	IRRIGATION	267879	25	0.681	0.0941	3/25/2034	1866
06-06034-W	100517-13	GENERAL PERMIT	BOBCAT OF BROWARD	Biscayne Aquifer	1	2	100	WELL	EXISTING	IRRIGATION	255304	60	1.2558	0.1673	7/18/2030	3441
06-07126-W	150527-1	GENERAL PERMIT	RESIDENCES AT PALM AIRE	On-site Lake(s)	26.84	0	0	PUMP	PENDING	IRRIGATION	271057	250	12.5541	1.7657	6/4/2035	34395
06-07800-W	181030-6	GENERAL PERMIT	GENMYR	Biscayne Aquifer	0.51	2	70	WELL	PENDING	IRRIGATION	280241	38	0.1376	0.0193	1/11/2038	377
06-07523-W	170501-10	GENERAL PERMIT	1ST HAITIAN BAPTIST CHURCH	Biscayne Aquifer	0.5	2	100	WELL	PENDING	IRRIGATION	276589	35	0.6254	0.0875	5/2/2037	1713
06-07368-W	160708-4	GENERAL PERMIT	CITY VISTA MIXED USE DEVELOPMENT	Biscayne Aquifer	2.41	4	100	WELL	PENDING	IRRIGATION	274351	100	0.763	0.1068	7/13/2036	2090
06-06514-W	120604-2	GENERAL PERMIT	731 HAMMONDVILLE ROAD	Biscayne Aquifer	1.25	3	80	WELL	PENDING	IRRIGATION	262692	70	1.5631	0.2188	6/29/2032	4282
06-04592-W	060208-10	GENERAL PERMIT	HUNTERS MANOR PARK	Biscayne Aquifer	8.25	6	100	WELL	PENDING	IRRIGATION	191379	225	10.3603	1.3802	4/9/2026	28384
06-05140-W	070626-15	GENERAL PERMIT	ROYAL PALM COMMERCE PARK	Biscayne Aquifer	5.66	3	70	WELL	PENDING	IRRIGATION	214937	100	7.7311	0.9889	9/28/2027	21181
06-05134-W	060406-30	GENERAL PERMIT	ATLANTIC VOCATIONAL & POMPANO BEACH MIDDLE	Biscayne Aquifer	16.5	4	80	WELL	EXISTING	IRRIGATION	214815	150	20.1065	2.7917	8/4/2027	55086
06-07382-W	160803-1	INDIVIDUAL	PALM AIRE - PHASE I I I	On-site Lake(s)	36.28	0	0	PUMP	PENDING	IRRIGATION	274545	7				

Permit Number ⁽¹⁾	Application Number ⁽¹⁾	Permit Type ⁽¹⁾	CUP User ⁽¹⁾	Source ⁽¹⁾	Acres Service ⁽¹⁾	Well Casing Diameter (ft) ⁽¹⁾	Well Depth (ft) ⁽¹⁾	Pump/Well ⁽¹⁾	Facility Status ⁽¹⁾	Water Use ⁽¹⁾	Pump/Well ID No. ⁽¹⁾	CUP Pump Capacity (gpm) ⁽¹⁾	Total Annual Allocation (MGPY) ^{(2),(3)}	Tota Maximum Month Allocation (MGPM) ^{(2),(3)}	CUP Expiration Date ⁽²⁾	Total Annual Allocation (GPD) ^{(2),(3)}
06-01547-W	110620-17	GENERAL PERMIT	CHARLES DREW ELEMENTARY SCHOOL	Broward County WCD Canal System	4.5	0	0	PUMP	EXISTING	IRRIGATION	36490	150	5.6511	0.7528	7/13/2031	15482
06-04225-W	041014-5	GENERAL PERMIT	BUDGET	Surficial Aquifer System	2.19	3	60	WELL	PENDING	IRRIGATION	160421	100	2.7502	0.3664	11/1/2024	7535
06-01309-W	061208-38	GENERAL PERMIT	CRYSTAL SUB MODIFICATION	Biscayne Aquifer	10.26	2	60	WELL	EXISTING	IRRIGATION	196414	50	24.5371	3	3/24/2027	67225
06-06390-W	111108-9	GENERAL PERMIT	POMPANO SUB STATION	Biscayne Aquifer	1.1	2	90	WELL	EXISTING	IRRIGATION	260893	60	1.3756	0.1926	12/1/2031	3769
06-01287-W	100121-16	GENERAL PERMIT	BLANCHE ELY HIGH SCHOOL - STADIUM	Surficial Aquifer System	14.78	8	40	WELL	PENDING	IRRIGATION	253938	250	20.1882	2.5822	3/22/2030	55310
06-03532-W	020617-19	GENERAL PERMIT	JAMES A SCARRY	Biscayne Aquifer	2	3	88	WELL	PENDING	IRRIGATION	119840	150	2.2107	0.3082	8/2/2022	6057
06-05311-W	060406-31	GENERAL PERMIT	CROSS CREEK/CRESTHAVEN/CYPRESS ELEM/CRYSTAL LAKES MIDDLE	Biscayne Aquifer	17.25	3	80	WELL	EXISTING	IRRIGATION	218731	100	22.571	2.947	2/15/2028	61838
06-06653-W	130311-17	GENERAL PERMIT	ST JOSEPH HAITIAN MISSION	Biscayne Aquifer	5.53	2	75	WELL	EXISTING	IRRIGATION	265105	50	7.5281	1.0403	6/28/2033	20625
06-05228-W	070911-8	GENERAL PERMIT	GOLDEN ACRES	On-site Lake(s) / Pond(s)	13.6	0	0	PUMP	PENDING	IRRIGATION	216822	155	12.2979	1.9632	11/10/2027	33693
06-01287-W	100121-16	GENERAL PERMIT	BLANCHE ELY HIGH SCHOOL - STADIUM	Surficial Aquifer System	14.78	10	80	WELL	EXISTING	IRRIGATION	29647	350	20.1882	2.5822	3/22/2030	55310
06-01287-W	100121-16	GENERAL PERMIT	BLANCHE ELY HIGH SCHOOL - STADIUM	Surficial Aquifer System	14.78	6	60	WELL	EXISTING	IRRIGATION	29648	300	20.1882	2.5822	3/22/2030	55310
06-04020-W	040115-2	GENERAL PERMIT	ATLANTIC PALMS APARTMENTS	Biscayne Aquifer	2.65	4	140	WELL	PENDING	IRRIGATION	145477	130	3.6197	0.463	1/28/2024	9917
06-05228-W	070911-8	GENERAL PERMIT	GOLDEN ACRES	On-site Lake(s) / Pond(s)	13.6	0	0	PUMP	PENDING	IRRIGATION	216821	155	12.2979	1.9632	11/10/2027	33693
06-07361-W	160620-4	GENERAL PERMIT	COVERED CANOPY	Surficial Aquifer System	0.83	2	60	WELL	PENDING	IRRIGATION	274248	80	1.1305	0.1561	6/22/2036	3097
06-06924-W	140505-4	GENERAL PERMIT	VALENTI BUS PARCEL	Biscayne Aquifer	0.45	2	66	WELL	PENDING	IRRIGATION	268302	50	0.5629	0.0788	6/6/2034	1542
06-07687-W	180301-28	GENERAL PERMIT	RICK CASE HABITAT	Surficial Aquifer System	1.16	3	80	WELL	PENDING	IRRIGATION	278609	75	1.58	0.2182	3/2/2038	4329
06-07242-W	151221-7	GENERAL PERMIT	STROBES R US	Biscayne Aquifer	0.73	2	50	WELL	PENDING	IRRIGATION	272852	30	0.9943	0.1373	11/23/2035	2724
06-05038-W	171211-4	GENERAL PERMIT	TOP SELF STORAGE	Biscayne Aquifer	2.28	4	100	WELL	PENDING	IRRIGATION	278099	85	2.8519	0.3991	12/13/2037	7813
06-06501-W	120529-1	GENERAL PERMIT	AYCO GROUP L L C NEW DISTRIBUTION CENTER	Biscayne Aquifer	2.02	4	90	WELL	PENDING	IRRIGATION	262559	60	2.7499	0.38	6/27/2032	7534
06-04648-W	060406-29	GENERAL PERMIT	ATLANTIC WEST, MARGATE, FOREST HILLS, MARKHAM ELEM/MARGATE M	Surficial Aquifer System	17.6	4	80	WELL	EXISTING	IRRIGATION	191956	120	22.742	2.9862	7/31/2026	62307
06-04214-W	040930-13	GENERAL PERMIT	WAREHOUSE FOR WELLINGTON REALTY	Surficial Aquifer System	0.5	2	100	WELL	PENDING	IRRIGATION	159655	50	0.6279	0.0836	10/15/2024	1720
06-05450-W	080410-10	GENERAL PERMIT	ISLAMIC CENTER OF SOUTH FLORIDA	Biscayne Aquifer	2.29	3	80	WELL	PENDING	IRRIGATION	222137	150	2.8636	0.4009	11/9/2031	7845
06-06632-W	130130-15	GENERAL PERMIT	GOLD COAST PLAT	Biscayne Aquifer	0.39	2	75	WELL	PENDING	IRRIGATION	264779	60	0.4877	0.0683	2/22/2033	1336
06-07589-W	170823-5	GENERAL PERMIT	FRED STEVENS TREE COMPANY	Biscayne Aquifer	0.75	2	100	WELL	PENDING	IRRIGATION	277441	50	0.6254	0.0875	8/25/2037	1713
06-03535-W	020522-6	GENERAL PERMIT	POMPANO SPRINT METRO PCS	Biscayne Aquifer	1	2	60	WELL	PENDING	IRRIGATION	120342	40	0.588	0.082	7/12/2022	1611
06-03703-W	021008-2	GENERAL PERMIT	REGENCY GARDEN APARTMENTS	Biscayne Aquifer	4.6	4	90	WELL	PENDING	IRRIGATION	127011	120	5.41	0.7541	12/23/2022	14822
06-07659-W	180112-9	GENERAL PERMIT	FLEXSOL PACKAGING	Biscayne Aquifer	1	3	36	WELL	PENDING	IRRIGATION	278273	15	1.2509	0.1751	1/30/2038	3427
06-05189-W	170703-7	GENERAL PERMIT	OCEAN BAY STORAGE YARD	Biscayne Aquifer	0.7	2	110	WELL	PENDING	IRRIGATION	216154	45	0.8756	0.1225	7/7/2037	2399
06-07739-W	180606-2	GENERAL PERMIT	PCC 16TH STREET LOGISTICS	Biscayne Aquifer	2	3	110	WELL	PENDING	IRRIGATION	279359	100	2.5017	0.3501	6/8/2038	6854
06-04545-W	051208-4	GENERAL PERMIT	PENTA'S STORAGE YARD	Biscayne Aquifer	1	2	90	WELL	PENDING	IRRIGATION	189657	50	1.2558	0.1673	2/6/2026	3441
06-03825-W	03015-9	GENERAL PERMIT	POMPANO MANOR (LOT 5 STEEL CITY)	Biscayne Aquifer	0.26	2	70	WELL	PENDING	IRRIGATION	133004	40	0.2874	0.0401	7/14/2023	787
06-02550-W	180320-5	GENERAL PERMIT	NORTH BROWARD DETENTION CENTER	On-site Canal(s)	8.42	0	0	PUMP	EXISTING	IRRIGATION	41077	200	11.4683	1.584	3/29/2038	31420
06-05823-W	090526-9	GENERAL PERMIT	DELTA POMPANO SOUTH	Biscayne Aquifer	0.25	3	88	WELL	EXISTING	IRRIGATION	230410	50	1.2264	0.1178	7/25/2029	3360
06-07744-W	180619-2	GENERAL PERMIT	CAPITAL SCRAP METAL	Biscayne Aquifer	6	4	100	WELL	PENDING	IRRIGATION	279449	50	1.2509	0.1751	6/22/2038	3427
06-03447-W	020215-20	GENERAL PERMIT	DAVID ALLEY	Biscayne Aquifer	3	2	108	WELL	PENDING	IRRIGATION	116684	30	0.4506	0.066	3/12/2022	1235
06-03407-W	011116-22	GENERAL PERMIT	SANDERS PARK ELEMENTARY	Biscayne Aquifer	4	6	100	WELL	PENDING	IRRIGATION	115359	200	4.4214	0.6163	1/15/2022	12113
06-04098-W	050825-9	GENERAL PERMIT	CANAL POINTE PARK	Off-site Canal(s)	12.39	0	0	PUMP	EXISTING	IRRIGATION	151513	120	16.9237	2.1647	5/24/2024	46366
06-06708-W	130607-5	GENERAL PERMIT	ENTERPRISE TRUCK	Biscayne Aquifer	0.49	3	90	WELL	PENDING	IRRIGATION	265835	45	0.6127	0.0858	7/8/2033	1679
06-07749-W	180629-17	GENERAL PERMIT	GOLD COAST LAKE	On-site Lake(s)	9.51	0	0	PUMP	PENDING	IRRIGATION	279539	80	3.0896	0.4324	7/2/2038	8465
06-07831-W	190110-5	GENERAL PERMIT	RICHARD SEGAL	Biscayne Aquifer	1	3	100	WELL	PENDING	IRRIGATION	280768	120	0.3127	0.0438	1/15/2039	857
06-04098-W	050825-9	GENERAL PERMIT	CANAL POINTE PARK	Biscayne Aquifer	12.39	4	120	WELL	PENDING	IRRIGATION	181777	120	16.9237	2.1647	5/24/2024	46366
06-04420-W	050628-14	GENERAL PERMIT	POMPANO CENTER OF COMMERCE	On-site Lake(s)	8.95	0	0	PUMP	PENDING	IRRIGATION	177288	120	12.225	1.5637	11/22/2025	33493
06-03452-W	020123-18	GENERAL PERMIT	PORT CONSOLIDATED INC	Biscayne Aquifer	1.3	2	150	WELL	PENDING	IRRIGATION	116723	100	1.1709	0.1609	3/22/2022	3208
06-04061-W	040323-7	GENERAL PERMIT	EUROPEAN SINK	Biscayne Aquifer	0.4	2	40	WELL	PENDING	IRRIGATION	149259	45	0.3415	0.0437	4/14/2024	936
06-03460-W	170814-22	GENERAL PERMIT	OLD DOMINION FREIGHT	Surficial Aquifer System	2	4	114	WELL	EXISTING	IRRIGATION	117045	400	0.6399	0.0896	1/18/2022	1753
06-04098-W	050825-9	GENERAL PERMIT	CANAL POINTE PARK	Off-site Canal(s)	12.39	0	0	PUMP	EXISTING	IRRIGATION	151686	120	16.9237	2.1647	5/24/2024	46366
06-01132-W	090707-5	GENERAL PERMIT	NORTH AREA BUS FACILITY	Broward County WCD Canal System	1.04	0	0	PUMP	EXISTING	IRRIGATION	36271	85	1.306	0.174	11/30/2029	3578
06-05863-W	090820-5	GENERAL PERMIT	TRUCK STAGING	Biscayne Aquifer	2.71	2	50	WELL	EXISTING	IRRIGATION	231398	75	3.4032	0.4534	10/19/2029	9324
06-04347-W	170830-14	INDIVIDUAL	DELTA TRANSFER STATION	Off-site Canal(s)	40.4	0	0	PUMP	EXISTING	IRRIGATION	170278	100	22.4364	2.3168	3/18/2025	61470
06-05965-W	100120-4	GENERAL PERMIT	ANDREWS COMMERCIAL CENTER	Surficial Aquifer System	0.6	2	80	WELL	PENDING	IRRIGATION	253740	55	0.7228	0.105	3/21/2030	1980
06-06368-W	110907-4	GENERAL PERMIT	PINK PONY POMPANO	Broward County WCD Canal System	1	0	0	PUMP	EXISTING	IRRIGATION	260355	60	1.3613	0.1881	9/28/2031	3730
06-06634-W	130128-4	GENERAL PERMIT	NATMI TRUCK TERMINAL	Broward County WCD Canal System	1.2	0	0	PUMP	PENDING	IRRIGATION	264811	75	1.6336	0.2257	2/19/2033	4476
06-05290-W	071115-6	GENERAL PERMIT	WESTGATE CENTER	Off-site Canal(s)	2	0	0	PUMP	EXISTING	IRRIGATION	218161	100	2.5116	0.3346	12/3/2027	6881
06-04043-W	040213-3	GENERAL PERMIT	JMA INVESTMENT INC	Surficial Aquifer System	1.6	4	125	WELL	PENDING	IRRIGATION	147150	80	2.1855	0.2795	4/13/2024	5988
06-05304-W	071129-4	GENERAL PERMIT	SUNKISS NURSERY	Surficial Aquifer System	1.3	4	26	WELL	EXISTING	IRRIGATION	218591	125	1.1399	0.1519	1/28/2028	3123
06-04347-W	170830-14	INDIVIDUAL	DELTA TRANSFER STATION	Off-site Canal(s)	40.4	0	0	PUMP	PENDING	IRRIGATION	277494	200	22.4364	2.3168	3/18/2025	61470
06-00068-W	100614-11	INDIVIDUAL	FOREST LAWN NORTH	Biscayne Aquifer	34.5	6	100	WELL	EXISTING	IRRIGATION	14602	300	35.5138	4.5425	12/23/2030	97298
06-00068-W	100614-11	INDIVIDUAL	FOREST LAWN NORTH	Biscayne Aquifer	34.5	8	100	WELL	EXISTING	IRRIGATION	24453	500	35.5138	4.5425	12/23/2030	97298
06-01001-W	090414-5	GENERAL PERMIT	PUBLIC STORAGE	Biscayne Aquifer	0.5	4	55	WELL	EXISTING	IRRIGATION	7477	50	0.683	0.0874	7/26/2029	1871
06-05821-W	090630-7	GENERAL PERMIT	EXTRA SECURE SELF STORAGE	Biscayne Aquifer	1.5	3	180	WELL	PENDING	IRRIGATION	230342	60	1.2046	0.1751	10/7/2029	3300
06-04981-W	071214-4	GENERAL PERMIT	FLORIDA POWER AND LIGHT ANDREWS SUBSTATION	Biscayne Aquifer	10.88	4	60	WELL	EXISTING	IRRIGATION	197892	100	14.8611	1.9008	2/12/2028	40715
06-04096-W	040510-6	GENERAL PERMIT	COPANS AUTO CENTER	Biscayne Aquifer	1	2	89	WELL	PENDING	IRRIGATION	151249	14	0.0683	0.0087	7/9/2024	187
06-04875-W	061017-20	GENERAL PERMIT	HESS GAS STATION	Biscayne Aquifer	1	2	70	WELL	PENDING	IRRIGATION	195425	55	0.683	0.0874	12/16/2026	1871
06-06114-W	100810-6	GENERAL PERMIT	15TH AVE STORAGE (WAREHOUSES)	Biscayne Aquifer	0.12	3	70	WELL	PENDING	IRRIGATION	257580	100	0.1506	0.0228	10/9/2030	413
06-04249-W	041108-12	GENERAL PERMIT	SUNOCO GAS & GO	Biscayne Aquifer	1.5	2	100	WELL	PENDING	IRRIGATION	163233	55	0.519	0.0664	11/23/2024	1422
06-06679-W	130430-12	GENERAL PERMIT	RITZ SAFETY	Surficial Aquifer System	1.2	3	80	WELL	PENDING	IRRIGATION	265497	75	1.634	0.226	5/15/2033	4477
06-03973-W	031007-15	GENERAL PERMIT	1500 COPANS ROAD DEV	Surficial Aquifer System	2.13	3	105	WELL	PENDING	IRRIGATION	142778	125	0.7406	0.0947	11/26/2023	2029
06-03641-W	021002-2	GENERAL PERMIT	WESTVIEW COMMUNITY CEMETERY	Surficial Aquifer System	13	3	150	WELL	PENDING	IRRIGATION	123542	100	15.896	2.1839	11/4/2022	43551
06-03751-W	140310-22	GENERAL PERMIT	POMPANO RETAIL CENTER	Biscayne Aquifer	6.32	2	100	WELL	PENDING	IRRIGATION	129357	0	0.6355	0.0885	3/24/2034	1741
06-03751-W	140310-22	GENERAL PERMIT	POMPANO RETAIL CENTER	Biscayne Aquifer	6.32	2	100	WELL	PENDING	IRRIGATION	267876	78	0.6355	0.0885	3/24/2034	1741
06-00070-W	150526-20	INDIVIDUAL	POMPANO BEACH PUBLIC WATER SUPPLY	Surficial Aquifer System	13300	0	130	WELL	EXISTING	MONITOR	136333	0	7067	665.1	9/14/2025	19361644
06-00070-W	150526-20	INDIVIDUAL	POMPANO BEACH PUBLIC WATER SUPPLY	Surficial Aquifer System	13300	0	140	WELL	EXISTING	MONITOR	136332	0	7067	665.1	9/14/2025	19361644
06-00070-W	150526-20	INDIVIDUAL	POMPANO BEACH PUBLIC WATER SUPPLY	Surficial Aquifer System	13300	0	140	WELL	EXIST							

Permit Number ⁽¹⁾	Application Number ⁽¹⁾	Permit Type ⁽¹⁾	CUP User ⁽¹⁾	Source ⁽¹⁾	Acres Service ⁽¹⁾	Well Casing Diameter (ft) ⁽¹⁾	Well Depth (ft) ⁽¹⁾	Pump/Well ⁽¹⁾	Facility Status ⁽¹⁾	Water Use ⁽¹⁾	Pump/Well ID No. ⁽¹⁾	CUP Pump Capacity (gpm) ⁽¹⁾	Total Annual Allocation (MGPY) ^{(2),(3)}	Tota Maximum Month Allocation (MGPM) ^{(2),(3)}	CUP Expiration Date ⁽²⁾	Total Annual Allocation (GPD) ^{(2),(3)}
06-00070-W	150526-20	INDIVIDUAL	POMPANO BEACH PUBLIC WATER SUPPLY	Biscayne Aquifer	13300	16	153	WELL	EXISTING	PUBLIC WATER SUPPLY	177414	2100	7067	665.1	9/14/2025	19361644
06-00070-W	150526-20	INDIVIDUAL	POMPANO BEACH PUBLIC WATER SUPPLY	Biscayne Aquifer	13300	16	153	WELL	EXISTING	PUBLIC WATER SUPPLY	164569	2100	7067	665.1	9/14/2025	19361644
06-00070-W	150526-20	INDIVIDUAL	POMPANO BEACH PUBLIC WATER SUPPLY	Biscayne Aquifer	13300	16	153	WELL	EXISTING	PUBLIC WATER SUPPLY	164568	2100	7067	665.1	9/14/2025	19361644
06-00070-W	150526-20	INDIVIDUAL	POMPANO BEACH PUBLIC WATER SUPPLY	Biscayne Aquifer	13300	16	153	WELL	EXISTING	PUBLIC WATER SUPPLY	164567	2100	7067	665.1	9/14/2025	19361644
06-00070-W	150526-20	INDIVIDUAL	POMPANO BEACH PUBLIC WATER SUPPLY	Biscayne Aquifer	13300	16	150	WELL	EXISTING	PUBLIC WATER SUPPLY	2637	2400	7067	665.1	9/14/2025	19361644
06-00070-W	150526-20	INDIVIDUAL	POMPANO BEACH PUBLIC WATER SUPPLY	Biscayne Aquifer	13300	16	153	WELL	EXISTING	PUBLIC WATER SUPPLY	2642	2100	7067	665.1	9/14/2025	19361644
06-00070-W	150526-20	INDIVIDUAL	POMPANO BEACH PUBLIC WATER SUPPLY	Biscayne Aquifer	13300	16	130	WELL	EXISTING	PUBLIC WATER SUPPLY	2638	2400	7067	665.1	9/14/2025	19361644
06-00070-W	150526-20	INDIVIDUAL	POMPANO BEACH PUBLIC WATER SUPPLY	Biscayne Aquifer	13300	16	153	WELL	EXISTING	PUBLIC WATER SUPPLY	2641	1600	7067	665.1	9/14/2025	19361644
06-00070-W	150526-20	INDIVIDUAL	POMPANO BEACH PUBLIC WATER SUPPLY	Biscayne Aquifer	13300	16	90	WELL	EXISTING	PUBLIC WATER SUPPLY	2628	1500	7067	665.1	9/14/2025	19361644
06-00070-W	150526-20	INDIVIDUAL	POMPANO BEACH PUBLIC WATER SUPPLY	Biscayne Aquifer	13300	16	158	WELL	EXISTING	PUBLIC WATER SUPPLY	2639	2100	7067	665.1	9/14/2025	19361644
06-00070-W	150526-20	INDIVIDUAL	POMPANO BEACH PUBLIC WATER SUPPLY	Biscayne Aquifer	13300	16	154	WELL	EXISTING	PUBLIC WATER SUPPLY	2640	2100	7067	665.1	9/14/2025	19361644
06-00070-W	150526-20	INDIVIDUAL	POMPANO BEACH PUBLIC WATER SUPPLY	Biscayne Aquifer	13300	16	136	WELL	EXISTING	PUBLIC WATER SUPPLY	2622	1500	7067	665.1	9/14/2025	19361644
06-00070-W	150526-20	INDIVIDUAL	POMPANO BEACH PUBLIC WATER SUPPLY	Biscayne Aquifer	13300	16	131	WELL	EXISTING	PUBLIC WATER SUPPLY	2629	1500	7067	665.1	9/14/2025	19361644
06-00070-W	150526-20	INDIVIDUAL	POMPANO BEACH PUBLIC WATER SUPPLY	Surficial Aquifer System	13300	0	200	WELL	EXISTING	PUBLIC WATER SUPPLY	136326	0	7067	665.1	9/14/2025	19361644
06-00070-W	150526-20	INDIVIDUAL	POMPANO BEACH PUBLIC WATER SUPPLY	Biscayne Aquifer	13300	16	107	WELL	EXISTING	PUBLIC WATER SUPPLY	2623	1500	7067	665.1	9/14/2025	19361644
06-00070-W	150526-20	INDIVIDUAL	POMPANO BEACH PUBLIC WATER SUPPLY	Biscayne Aquifer	13300	16	113	WELL	EXISTING	PUBLIC WATER SUPPLY	2630	1800	7067	665.1	9/14/2025	19361644
06-00070-W	150526-20	INDIVIDUAL	POMPANO BEACH PUBLIC WATER SUPPLY	Biscayne Aquifer	13300	16	140	WELL	EXISTING	PUBLIC WATER SUPPLY	2624	1800	7067	665.1	9/14/2025	19361644
06-00070-W	150526-20	INDIVIDUAL	POMPANO BEACH PUBLIC WATER SUPPLY	Biscayne Aquifer	13300	16	127	WELL	EXISTING	PUBLIC WATER SUPPLY	2631	1500	7067	665.1	9/14/2025	19361644
06-00070-W	150526-20	INDIVIDUAL	POMPANO BEACH PUBLIC WATER SUPPLY	Biscayne Aquifer	13300	16	108	WELL	EXISTING	PUBLIC WATER SUPPLY	2625	1500	7067	665.1	9/14/2025	19361644
06-00070-W	150526-20	INDIVIDUAL	POMPANO BEACH PUBLIC WATER SUPPLY	Surficial Aquifer System	13300	0	200	WELL	EXISTING	PUBLIC WATER SUPPLY	136193	0	7067	665.1	9/14/2025	19361644
06-00070-W	150526-20	INDIVIDUAL	POMPANO BEACH PUBLIC WATER SUPPLY	Biscayne Aquifer	13300	16	123	WELL	EXISTING	PUBLIC WATER SUPPLY	2632	1500	7067	665.1	9/14/2025	19361644
06-00070-W	150526-20	INDIVIDUAL	POMPANO BEACH PUBLIC WATER SUPPLY	Biscayne Aquifer	13300	14	156	WELL	EXISTING	PUBLIC WATER SUPPLY	2626	2200	7067	665.1	9/14/2025	19361644
06-00070-W	150526-20	INDIVIDUAL	POMPANO BEACH PUBLIC WATER SUPPLY	Biscayne Aquifer	13300	16	115	WELL	EXISTING	PUBLIC WATER SUPPLY	2633	1800	7067	665.1	9/14/2025	19361644
06-00070-W	150526-20	INDIVIDUAL	POMPANO BEACH PUBLIC WATER SUPPLY	Biscayne Aquifer	13300	16	90	WELL	EXISTING	PUBLIC WATER SUPPLY	2627	1500	7067	665.1	9/14/2025	19361644
06-00070-W	150526-20	INDIVIDUAL	POMPANO BEACH PUBLIC WATER SUPPLY	Biscayne Aquifer	13300	16	114	WELL	EXISTING	PUBLIC WATER SUPPLY	2634	1500	7067	665.1	9/14/2025	19361644
06-00070-W	150526-20	INDIVIDUAL	POMPANO BEACH PUBLIC WATER SUPPLY	Surficial Aquifer System	13300	0	200	WELL	EXISTING	PUBLIC WATER SUPPLY	136306	0	7067	665.1	9/14/2025	19361644
06-00070-W	150526-20	INDIVIDUAL	POMPANO BEACH PUBLIC WATER SUPPLY	Biscayne Aquifer	13300	18	130	WELL	EXISTING	PUBLIC WATER SUPPLY	2636	2000	7067	665.1	9/14/2025	19361644
06-00070-W	150526-20	INDIVIDUAL	POMPANO BEACH PUBLIC WATER SUPPLY	Biscayne Aquifer	13300	18	140	WELL	EXISTING	PUBLIC WATER SUPPLY	2635	2000	7067	665.1	9/14/2025	19361644

Notes:
(1) South Florida Water Management District - Water Use Regulation Facility Site, Environmental Resource Regulation (ERR), GIS Section. SPWMD Water Supply Permitted Facility Site (Wells, Pumps, Culverts) Shapefile.
(2) SPWMD Allocation information provided by the City of Pompano Beach via email on 4/20/2020.
(3) Total allocation information is based on the total allocation issued to the CUP user as stated in the permit.

Appendix C

CITY OF POMPANO BEACH CONSUMPTIVE USE PERMIT



FORM #0269
Rev. 5/03

**SOUTH FLORIDA WATER MANAGEMENT DISTRICT
WATER USE PERMIT NO. RE-ISSUE 06-00070-W**

(NON - ASSIGNABLE)

Date Issued: 14-SEP-2005

Expiration Date: September 14, 2025

Authorizing: THE CONTINUATION OF AN EXISTING USE OF GROUNDWATER FROM THE BISCAYNE
AQUIFER FOR PUBLIC WATER SUPPLY USE WITH AN ANNUAL ALLOCATION OF 7067
MILLION GALLONS.

Located In: Broward County,

S21-23, 25-28, 32-36/T48S/R42E
S19, 20, 29-32/T48S/R43E
S1-8, 11, 12/T49S/R42E
S6.7/T49S/R43E

Issued To: CITY OF POMPANO BEACH
(POMPANO BEACH PWS)
1201 NE 5TH AVENUE, UTILITIES DEPARTMENT
POMPANO BEACH, FL 33061

This Permit is issued pursuant to Application No. 040302-8, dated March 2, 2004, for the Use of Water as specified above and subject to the Special Conditions set forth below. Permittee agrees to hold and save the South Florida Water Management District and its successors harmless from any and all damages, claims or liabilities which may arise by reason of the construction, maintenance or use of activities authorized by this permit. Said application, including all plan and specifications attached thereto, is by reference made a part hereof.

Upon written notice to the permittee, this permit may be temporarily modified, or restricted under a Declaration of Water Shortage or a Declaration of Emergency due to Water Shortage in accordance with provisions of Chapter 373, Fla. Statutes, and applicable rules and regulations of the South Florida Water Management District.

This Permit may be permanently or temporarily revoked, in whole or in part, for the violation of the conditions of the permit or for the violation of any provision of the Water Resources Act and regulations thereunder.

This Permit does not convey to the permittee any property rights nor any privileges other than those specified herein, nor relieve the permittee from complying with any law, regulation, or requirement affecting the rights of other bodies or agencies.

Limiting Conditions are as follows:

SEE PAGES 2 - 10 OF 10 (28 LIMITING CONDITIONS).

South Florida Water Management
District, by its Governing Board

On _____ ORIGINAL SIGNED BY: _____
By _____ ELIZABETH VEGUILLA _____
DEPUTY CLERK

LIMITING CONDITIONS

- 1 . This permit shall expire on September 14, 2025.
- 2 . Application for a permit modification may be made at any time.
- 3 . Water use classification:

Public water supply

- 4 . Source classification is:

Ground Water from:
Biscayne Aquifer

- 5 . Annual allocation shall not exceed 7067 MG.

Maximum monthly allocation shall not exceed 665.1 MG.

The stipulated annual allocation of 7,067 MG and maximum monthly allocation of 665.1 MG are authorized through August 10, 2010. After August 10, 2009, the annual allocation shall not exceed 6,478 MG and the maximum month allocation shall not 610 MG unless the permit is modified.

The maximum monthly allocation shall not exceed 186 MG from the Airport Wellfield from November 1st through May 31st of each year.

The maximum monthly allocation shall not exceed 279 MG from the Airport Wellfield from June 1st through October 31st of each year.

The stipulated annual allocation of 7,067 MG and maximum monthly allocation of 665.1 MG are authorized through August 10, 2010. After August 10, 2009, the annual allocation shall not exceed 6,478 MG and the maximum month allocation shall not 610 MG unless the permit is modified.

The maximum monthly allocation shall not exceed 186 MG from the Airport Wellfield from November 1st through May 31st of each year.

The maximum monthly allocation shall not exceed 279 MG from the Airport Wellfield from June 1st through October 31st of each year.

- 6 . Pursuant to Rule 40E-1.6105, F.A.C., Notification of Transfer of Interest in Real Property, within 30 days of any transfer of interest or control of the real property at which any permitted facility, system, consumptive use, or activity is located, the permittee must notify the District, in writing, of the transfer giving the name and address of the new owner or person in control and providing a copy of the instrument effectuating the transfer, as set forth in Rule 40E-1.6107, F.A.C.

Pursuant to Rule 40E-1.6107 (4), until transfer is approved by the District, the permittee shall be liable for compliance with the permit. The permittee transferring the permit shall remain liable for all actions that are required as well as all violations of the permit which occurred prior to the transfer of the permit.

Failure to comply with this or any other condition of this permit constitutes a violation and pursuant to Rule 40E-1.609, Suspension, Revocation and Modification of Permits, the District may suspend or

revoke the permit.

This Permit is issued to:
City of Pompano Beach

City of Pompano Beach

7 . Withdrawal Facilities:

Ground Water - Existing:

1 - 14" X 156' X 2200 GPM Well Cased To 100 Feet
1 - 16" X 107' X 1500 GPM Well With Unknown Cased Depth
1 - 16" X 108' X 1500 GPM Well With Unknown Cased Depth
1 - 16" X 113' X 1800 GPM Well Cased To 93 Feet
1 - 16" X 114' X 1500 GPM Well Cased To 114 Feet
1 - 16" X 115' X 1800 GPM Well Cased To 115 Feet
1 - 16" X 123' X 1500 GPM Well Cased To 90 Feet
1 - 16" X 127' X 1500 GPM Well Cased To 88 Feet
1 - 16" X 130' X 2400 GPM Well Cased To 72 Feet
1 - 16" X 131' X 1500 GPM Well Cased To 97 Feet
1 - 16" X 136' X 1500 GPM Well With Unknown Cased Depth
1 - 16" X 140' X 1800 GPM Well With Unknown Cased Depth
1 - 16" X 150' X 2400 GPM Well Cased To 76 Feet
1 - 16" X 153' X 1600 GPM Well Cased To 80 Feet
1 - 16" X 153' X 2100 GPM Well Cased To 79 Feet
1 - 16" X 154' X 2100 GPM Well Cased To 80 Feet
1 - 16" X 158' X 2100 GPM Well Cased To 78 Feet
1 - 18" X 130' X 2000 GPM Well Cased To 113.5 Feet
1 - 18" X 140' X 2000 GPM Well Cased To 115 Feet
2 - 16" X 90' X 1500 GPM Wells Cased To 90 Feet
4 - 16" X 153' X 2100 GPM Wells Cased To 80 Feet

- 8 . Permittee shall mitigate interference with existing legal uses that was caused in whole or in part by the permittee's withdrawals, consistent with the approved mitigation plan. As necessary to offset the interference, mitigation will include pumpage reduction, replacement of the impacted individual's equipment, relocation of wells, change in withdrawal source, or other means.

Interference to an existing legal use is defined as an impact that occurs under hydrologic conditions equal to or less severe than a 1 in 10 year drought event that results in the:

(1) Inability to withdraw water consistent with provisions of the permit, such as when remedial structural or operational actions not materially authorized by existing permits must be taken to address the interference; or

(2) Change in the quality of water pursuant to primary State Drinking Water Standards to the extent that the water can no longer be used for its authorized purpose, or such change is imminent.

- 9 . Permittee shall mitigate harm to existing off-site land uses caused by the permittee's withdrawals, as determined through reference to the conditions for permit issuance. When harm occurs, or is imminent, the District will require the permittee to modify withdrawal rates or mitigate the harm. Harm as determined through reference to the

conditions for permit issuance, includes:

(1) Significant reduction in water levels on the property to the extent that the designed function of the water body and related surface water management improvements are damaged, not including aesthetic values. The designed function of a water body is identified in the original permit or other governmental authorization issued for the construction of the water body. In cases where a permit was not required, the designed function shall be determined based on the purpose for the original construction of the water body (e.g. fill for construction, mining, drainage canal, etc.)

(2) Damage to agriculture, including damage resulting from reduction in soil moisture resulting from consumptive use; or

(3) Land collapse or subsidence caused by reduction in water levels associated with consumptive use.

10. Permittee shall mitigate harm to the natural resources caused by the permittee's withdrawals, as determined through reference to the conditions for permit issuance. When harm occurs, or is imminent, the District will require the permittee to modify withdrawal rates or mitigate the harm. Harm, as determined through reference to the conditions for permit issuance includes:

(1) Reduction in ground or surface water levels that results in harmful lateral movement of the fresh water/salt water interface,

(2) Reduction in water levels that harm the hydroperiod of wetlands,

(3) Significant reduction in water levels or hydroperiod in a naturally occurring water body such as a lake or pond,

(4) Harmful movement of contaminants in violation of state water quality standards, or

(5) Harm to the natural system including damage to habitat for rare or endangered species.

11. If any condition of the permit is violated, the permit shall be subject to review and possible modification, enforcement action, or revocation.
12. Authorized representatives of the District shall be permitted to enter, inspect, and observe the permitted system to determine compliance with special conditions.
13. The Permittee is advised that this permit does not relieve any person from the requirement to obtain all necessary federal, state, local and special district authorizations.
14. The permit does not convey any property right to the Permittee, nor any rights and privileges other than those specified in the Permit and Chapter 40E-2, Florida Administrative Code.
15. Permittee shall submit all data as required by the implementation schedule for each of the limiting conditions to: S.F.W.M.D., Supervising Hydrogeologist - Post-Permit Compliance, Water Use Regulation Dept. (4320), P.O. Box 24680, West Palm Beach, FL 33416-

4680.

16. In the event of a declared water shortage, water withdrawal reductions will be ordered by the District in accordance with the Water Shortage Plan, Chapter 40E-21, F.A.C. The Permittee is advised that during a water shortage, pumpage reports shall be submitted as required by Chapter 40E-21, F.A.C.
17. Prior to the use of any proposed water withdrawal facility authorized under this permit, unless otherwise specified, the Permittee shall equip each facility with a District-approved operating water use accounting system and submit a report of calibration to the District, pursuant to Section 4.1, Basis of Review for Water Use Permit Applications.

In addition, the Permittee shall submit a report of recalibration for the water use accounting system for each water withdrawal facility (existing and proposed) authorized under this permit every five years from each previous calibration, continuing at five-year increments.
18. Monthly withdrawals for each withdrawal facility shall be submitted to the District quarterly. The water accounting method and means of calibration shall be stated on each report.
19. The Permittee shall notify the District within 30 days of any change in service area boundary. If the Permittee will not serve a new demand within the service area for which the annual allocation was calculated, the annual allocation may then be subject to modification and reduction.
20. Permittee shall implement the wellfield operating plan described in District staff report prepared in support of recommendation for permit issuance.
21. Permittee shall determine unaccounted-for distribution system losses. Losses shall be determined for the entire distribution system on a monthly basis. Permittee shall define the manner in which unaccounted-for losses are calculated. Data collection shall begin within six months of Permit issuance. Loss reporting shall be submitted to the District on a yearly basis from the date of Permit issuance.
22. Permittee shall maintain an accurate flow meter at the intake of the water treatment plant for the purpose of measuring daily inflow of water.
23. It has been determined that this project relies, in part on the waters from the Central and Southern Project, and as such is considered to be an indirect withdrawal from an MFL water body under recovery (Everglades). The Lower East Coast Regional Water Supply Plan (May 2000), which is the recovery plan for the Everglades, incorporates a series of water resource development projects and operational changes that are to be completed over the duration of the permit and beyond. If the recovery plan is modified and it is determined that this project is inconsistent with the approved recovery plan, the Permittee shall be required to modify the permit consistent with the provisions of Chapter 373, Florida Statutes.
24. The Water Conservation Plan required by Section 2.6.1 of the Basis of Review for Water Use Permit Applications within the South Florida Water Management District, must be implemented in accordance with the

approved implementation schedule.

25. Public water utilities that control, either directly or indirectly, a wastewater treatment plant, and which have determined pursuant to Section 403.064, F.S., that use of reclaimed water is feasible, must provide the District with annual updates of the following information: (1) the status of distribution system construction, including location and capacity of lines; (2) a summary of uncommitted supplies for the next year; (3) copies of any new or amended local mandatory reclaimed water reuse zone ordinances; and (4) a list of end-users who have contracted to receive reclaimed water and the agreed upon quantity of water to be delivered.
26. Every five years from the date of permit issuance, the permittee shall submit a water use compliance report for review and approval by District Staff, which addresses the following:
 1. The results of a water conservation audit that documents the efficiency of water use on the project site using data produced from an onsite evaluation conducted. In the event that the audit indicates additional water conservation is appropriate or the per capita use rate authorized in the permit is exceeded, the permittee shall propose and implement specific actions to reduce the water use to acceptable levels within timeframes proposed by the permittee and approved by the District.
 2. A comparison of the permitted allocation and the allocation that would apply to the project based on current District allocation rules and updated population and per capita use rates. In the event the permit allocation is greater than the allocation provided for under District rule, the permittee shall apply for a letter modification to reduce the allocation consistent with District rules and the updated population and per capita use rates to the extent they are considered by the District to be indicative of long term trends in the population and per capita use rates over the permit duration. In the event that the permit allocation is less than allowable under District rule, the permittee shall apply for a modification of the permit to increase the allocation if the permittee intends to utilize an additional allocation, or modify its operation to comply with the existing conditions of the permit.
27. The Permittee shall continue to submit monitoring data in accordance with the approved water quality monitoring program for this project. Chloride and water level monitoring shall be collected monthly and submitted to the District quarterly

Wells SWI1, SWI2, SWI3, SWI4, SWI5, SWI6, SWI9, SWI10, PRW1 and PRW8

Chloride and water level monitoring shall be collected monthly and submitted to the District quarterly

Wells SWI1, SWI2, SWI3, SWI4, SWI5, SWI6, SWI9, SWI10, PRW1 and PRW8
28. The City has worked with Staff to implement an alternative water supply project (reuse dual distribution system) which is integral to preventing saltwater intrusion in the area. The implementation of this system is a requirement of this permit and as such is considered consistent with the objectives of the Lower East Coast Regional Water Supply Plan and the MFL recovery plan for the Everglades.

The City has worked with Staff to implement an alternative water supply project (reuse dual distribution system) which is integral to preventing saltwater intrusion in the area. The implementation of this system is a requirement of this permit and as such is considered consistent with the objectives of the Lower East Coast Regional Water Supply Plan and the MFL recovery plan for the Everglades.



SOUTH FLORIDA WATER MANAGEMENT DISTRICT

3301 Gun Club Road, West Palm Beach, Florida 33406 • (561) 686-8800 • FL WATS 1-800-432-2045 • TDD (561) 697-2574
Mailing Address: P.O. Box 24680, West Palm Beach, FL 33416-4680 • www.sfwmd.gov

September 7, 2005

City of Pompano Beach
1201 Ne 5th Avenue
Utilities Department
Pompano Beach, FL 33061

Subject: Application No. **040302-8, Pompano Beach PWS**
Broward County, S21-23, 25-28, 32-36/T48S/R42E
S19, 20, 29-32/T48S/R42E
S1-8, 11, 12/T49S/R42E S6,7/T49S/R43E

Enclosed is a copy of the South Florida Water Management District's staff report covering the permit application referenced therein. It is requested that you read this staff report thoroughly and understand its contents. The recommendations as stated in the staff report will be presented to our Governing Board for consideration on **Wednesday September 14, 2005**.

Should you wish to object to the staff recommendation or file a petition, please provide written objections, petitions and/or waivers (refer to the attached "Notice of Rights") to:

Elizabeth Veguilla, Deputy Clerk
South Florida Water Management District
Post Office Box 24680
West Palm Beach, Florida 33416-4680

The "Notice of Rights" addresses the procedures to be followed if you desire a public hearing or other review of the proposed agency action. You are advised, however, to be prepared to defend your position regarding the permit application when it is considered by the Governing Board for final agency action, even if you agree with the staff recommendation, as the Governing Board may take final agency action which differs materially from the proposed agency action.

Please contact the District if you have any questions concerning this matter.

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a "Notice of Rights" has been mailed to the addressee this 7th day of September 2005 in accordance with Section 120.60 (3), Florida Statutes.

Sincerely,

A handwritten signature in black ink, appearing to read "Keith R. Smith".

Keith R. Smith, P.G., Deputy Director
Water Supply Department

KS/lj

CERTIFIED #7003 0500 0002 0067 4880

RETURN RECEIPT REQUESTED

GOVERNING BOARD

Kevin McCarty, Chair
Irela M. Bagué, Vice-Chair
Pamela Brooks-Thomas

Alice J. Carlson
Michael Collins
Nicolás J. Gutiérrez, Jr., Esq.

Lennart E. Lindahl, P.E.
Harkley R. Thornton
Malcolm S. Wade, Jr.

EXECUTIVE OFFICE

Carol Ann Wehle, Executive Director

NOTICE OF RIGHTS

Section 120.569(1), Fla. Stat. (1999), requires that "each notice shall inform the recipient of any administrative hearing or judicial review that is available under this section, s. 120.57, or s. 120.68; shall indicate the procedure which must be followed to obtain the hearing or judicial review, and shall state the time limits which apply." Please note that this Notice of Rights is not intended to provide legal advice. Not all the legal proceedings detailed below may be an applicable or appropriate remedy. You may wish to consult an attorney regarding your legal rights.

Petition for Administrative Proceedings

1. A person whose substantial interests are affected by the South Florida Water Management District's (SFWMD) action has the right to request an administrative hearing on that action. The affected person may request either a formal or an informal hearing, as set forth below. A point of entry into administrative proceedings is governed by Rules 28-106.111 and 40E-1.511, Fla. Admin. Code, (also published as an exception to the Uniform Rules of Procedure as Rule 40E-0.109), as set forth below. Petitions are deemed filed upon receipt of the original documents by the SFWMD Clerk.

a. Formal Administrative Hearing: If a genuine issue(s) of material fact is in dispute, the affected person seeking a formal hearing on a SFWMD decision which does or may determine their substantial interests shall file a petition for hearing pursuant to Sections 120.569 and 120.57(1), Fla. Stat. or for mediation pursuant to Section 120.573, Fla. Stat. within 21 days, except as provided in subsections c. and d. below, of either written notice through mail or posting or publication of notice that the SFWMD has or intends to take final agency action. Petitions must substantially comply with the requirements of Rule 28-106.201(2), Fla. Admin. Code, a copy of the which is attached to this Notice of Rights.

b. Informal Administrative Hearing: If there are no issues of material fact in dispute, the affected person seeking an informal hearing on a SFWMD decision which does or may determine their substantial interests shall file a petition for hearing pursuant to Sections 120.569 and 120.57(2), Fla. Stat. or for mediation pursuant to Section 120.573, Fla. Stat. within 21 days, except as provided in subsections c. and d. below, of either written notice through mail or posting or publication of notice that the SFWMD has or intends to take final agency action. Petitions must substantially comply with the requirements of Rule 28-106.301(2), Fla. Admin. Code, a copy of the which is attached to this Notice of Rights.

c. Administrative Complaint and Order:
If a Respondent objects to a SFWMD Administrative Complaint and Order, pursuant to Section 373.119, Fla. Stat. (1997), the person named in the Administrative Complaint and Order may file a petition for a hearing no later than 14 days after the date such order is served. Petitions must substantially comply with the requirements of either subsection a. or b. above.

d. State Lands Environmental Resource Permit: Pursuant to Section 373.427, Fla. Stat., and Rule 40E-1.511(3), Fla. Admin. Code (also published as an exception to the Uniform Rules of Procedure as Rule 40E-0.109(2)(c)), a petition objecting to the SFWMD's agency action regarding consolidated applications for Environmental Resource Permits and Use of Sovereign Submerged Lands (SLERPs), must be filed within 14 days of the notice of consolidated intent to grant or deny the SLERP. Petitions must substantially comply with the requirements of either subsection a. or b. above.

e. Emergency Authorization and Order:
A person whose substantial interests are affected by a SFWMD Emergency Authorization and Order, has a right to file a petition under Sections 120.569, 120.57(1), and 120.57(2), Fla. Stat., as provided in subsections a. and b. above. However, the person, or the agent of the person responsible for causing or contributing to the emergency conditions shall take whatever action necessary to cause immediate compliance with the terms of the Emergency Authorization and Order.

f. Order for Emergency Action: A person whose substantial interests are affected by a SFWMD Order for Emergency Action has a right to file a petition pursuant to Rules 28-107.005 and 40E-1.611, Fla. Admin. Code, copies of which are attached to this Notice of Rights, and Section 373.119(3), Fla. Stat., for a hearing on the Order. Any subsequent agency action or proposed agency action to initiate a formal revocation proceeding shall be separately noticed pursuant to section g. below.

g. Permit Suspension, Revocation, Annulment, and Withdrawal: If the SFWMD issues an administrative complaint to suspend, revoke, annul, or withdraw a permit, the permittee may request a hearing to be conducted in accordance with Sections 120.569 and 120.57, Fla. Stat., within 21 days of either written notice through mail or posting or publication of notice that the SFWMD has or intends to take final agency action. Petitions must substantially comply with the requirements of Rule 28-107.004(3), Fla. Admin. Code, a copy of the which is attached to this Notice of Rights.

2. Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the SFWMD's final action may be different from the position taken by it previously. Persons whose substantial interests may be affected by

any such final decision of the SFWMD shall have, pursuant to Rule 40E-1.511(2), Fla. Admin. Code (also published as an exception to the Uniform Rules of Procedure as Rule 40E-0.109(2)(c)), an additional 21 days from the date of receipt of notice of said decision to request an administrative hearing. However, the scope of the administrative hearing shall be limited to the substantial deviation.

3. Pursuant to Rule 40E-1.511(4), Fla. Admin. Code, substantially affected persons entitled to a hearing pursuant to Section 120.57(1), Fla. Stat., may waive their right to such a hearing and request an informal hearing before the Governing Board pursuant to Section 120.57(2), Fla. Stat., which may be granted at the option of the Governing Board.

4. Pursuant to Rule 28-106.111(3), Fla. Admin. Code, persons may file with the SFWMD a request for extension of time for filing a petition. The SFWMD, for good cause shown, may grant the extension. The request for extension must contain a certificate that the petitioner has consulted with all other parties, if any, concerning the extension and that the SFWMD and all other parties agree to the extension.

CIRCUIT COURT

5. Pursuant to Section 373.617, Fla. Stat., any substantially affected person who claims that final agency action of the SFWMD relating to permit decisions constitutes an unconstitutional taking of property without just compensation may seek judicial review of the action in circuit court by filing a civil action in the circuit court in the judicial circuit in which the affected property is located within 90 days of the rendering of the SFWMD's final agency action.

6. Pursuant to Section 403.412, Fla. Stat., any citizen of Florida may bring an action for injunctive relief against the SFWMD to compel the SFWMD to enforce the laws of Chapter 373, Fla. Stat., and Title 40E, Fla. Admin. Code. The complaining party must file with the SFWMD Clerk a verified complaint setting forth the facts upon which the complaint is based and the manner in which the complaining party is affected. If the SFWMD does not take appropriate action on the complaint within 30 days of receipt, the complaining party may then file a civil suit for injunctive relief in the 15th Judicial Circuit in and for Palm Beach County or circuit court in the county where the cause of action allegedly occurred.

7. Pursuant to Section 373.433, Fla. Stat., a private citizen of Florida may file suit in circuit court to require the abatement of any stormwater management system, dam, impoundment, reservoir, appurtenant work or works that violate the provisions of Chapter 373, Fla. Stat.

DISTRICT COURT OF APPEAL

8. Pursuant to Section 120.68, Fla. Stat., a party who is adversely affected by final SFWMD action may seek judicial review of the SFWMD's final decision by filing a notice of appeal pursuant to Florida Rule of Appellate Procedure 9.110 in the Fourth District Court of Appeal or in the appellate district where a party resides and filing a second copy of the notice with the SFWMD Clerk within 30 days of rendering of the final SFWMD action.

LAND AND WATER ADJUDICATORY COMMISSION

9. A party to a "proceeding below" may seek review by the Land and Water Adjudicatory Commission (FLAWAC) of SFWMD's final agency action to determine if such action is consistent with the provisions and purposes of Chapter 373, Fla. Stat. Pursuant to Section 373.114, Fla. Stat., and Rules 42-2.013 and 42-2.0132, Fla. Admin. Code, a request for review of (a) an order or rule of the SFWMD must be filed with FLAWAC within 20 days after rendition of the order or adoption of the rule sought to be reviewed; (b) an order of the Department of Environmental Protection (DEP) requiring amendment or repeal of a SFWMD rule must be filed with FLAWAC within 30 days of rendition of the DEP's order, and (c) a SFWMD order entered pursuant to a formal administrative hearing under Section 120.57(1), Fla. Stat., must be filed no later than 20 days after rendition of the SFWMD's final order. Simultaneous with filing, a copy of the request for review must be served on the DEP Secretary, any person named in the SFWMD or DEP final order, and all parties to the proceeding below. A copy of Rule 42-2.013, Fla. Admin. Code is attached to this Notice of Rights.

PRIVATE PROPERTY RIGHTS PROTECTION ACT

10. A property owner who alleges a specific action of the SFWMD has inordinately burdened an existing use of the real property, or a vested right to a specific use of the real property, may file a claim in the circuit court where the real property is located within 1 year of the SFWMD action pursuant to the procedures set forth in Subsection 70.001(4)(a), Fla. Stat.

LAND USE AND ENVIRONMENTAL DISPUTE RESOLUTION

11. A property owner who alleges that a SFWMD development order (as that term is defined in Section 70.51(2)(a), Fla. Stat. to include permits) or SFWMD enforcement action is unreasonable, or unfairly burdens the use of the real property, may file a request for relief with the SFWMD within 30 days of receipt of the SFWMD's order or notice of agency action pursuant to the procedures set forth in Subsections 70.51(4) and (6), Fla. Stat.

MEDIATION

12. A person whose substantial interests are, or may be, affected by the SFWMD's action may choose mediation as an alternative remedy under Section 120.573, Fla. Stat. Pursuant to Rule 28-106.111(2), Fla. Admin. Code, the petition for mediation shall be filed within 21 days of either written notice through mail or posting or

publication of notice that the SFWMD has or intends to take final agency action. Choosing mediation will not affect the right to an administrative hearing if mediation does not result in settlement.

Pursuant to Rule 28-106.402, Fla. Admin. Code, the contents of the petition for mediation shall contain the following information:

- (1) the name, address, and telephone number of the person requesting mediation and that person's representative, if any;
- (2) a statement of the preliminary agency action;
- (3) an explanation of how the person's substantial interests will be affected by the agency determination; and
- (4) a statement of relief sought.

As provided in Section 120.573, Fla. Stat. (1997), the timely agreement of all the parties to mediate will toll the time limitations imposed by Sections 120.569 and 120.57, Fla. Stat., for requesting and holding an administrative hearing. Unless otherwise agreed by the parties, the mediation must be concluded within 60 days of the execution of the agreement. If mediation results in settlement of the dispute, the SFWMD must enter a final order incorporating the agreement of the parties. Persons whose substantial interest will be affected by such a modified agency decision have a right to petition for hearing within 21 days of receipt of the final order in accordance with the requirements of Sections 120.569 and 120.57, Fla. Stat., and SFWMD Rule 28-106.201(2), Fla. Admin. Code. If mediation terminates without settlement of the dispute, the SFWMD shall notify all parties in writing that the administrative hearing process under Sections 120.569 and 120.57, Fla. Stat., remain available for disposition of the dispute, and the notice will specify the deadlines that then will apply for challenging the agency action.

VARIANCES AND WAIVERS

13. A person who is subject to regulation pursuant to a SFWMD rule and believes the application of that rule will create a substantial hardship or will violate principles of fairness (as those terms are defined in Subsection 120.542(2), Fla. Stat.) and can demonstrate that the purpose of the underlying statute will be or has been achieved by other means, may file a petition with the SFWMD Clerk requesting a variance from or waiver of the SFWMD rule. Applying for a variance or waiver does not substitute or extend the time for filing a petition for an administrative hearing or exercising any other right that a person may have concerning the SFWMD's action. Pursuant to Rule 28-104.002(2), Fla. Admin. Code, the petition must include the following information:

- (a) the caption shall read:
Petition for (Variance from) or (Waiver of) Rule (Citation)
- (b) The name, address, telephone number and any facsimile number of the petitioner;

(c) The name, address telephone number and any facsimile number of the attorney or qualified representative of the petitioner, (if any);

(d) the applicable rule or portion of the rule;

(e) the citation to the statute the rule is implementing;

(f) the type of action requested;

(g) the specific facts that demonstrate a substantial hardship or violation of principles of fairness that would justify a waiver or variance for the petitioner;

(h) the reason why the variance or the waiver requested would serve the purposes of the underlying statute; and

(i) a statement of whether the variance or waiver is permanent or temporary. If the variance or waiver is temporary, the petition shall include the dates indicating the duration of the requested variance or waiver.

A person requesting an emergency variance from or waiver of a SFWMD rule must clearly so state in the caption of the petition. In addition to the requirements of Section 120.542(5), Fla. Stat. pursuant to Rule 28-104.004(2), Fla. Admin. Code, the petition must also include:

a) the specific facts that make the situation an emergency; and

b) the specific facts to show that the petitioner will suffer immediate adverse effect unless the variance or waiver is issued by the SFWMD more expeditiously than the applicable timeframes set forth in Section 120.542, Fla. Stat.

WAIVER OF RIGHTS

14. Failure to observe the relevant time frames prescribed above will constitute a waiver of such right.

28-106.201 INITIATION OF PROCEEDINGS (INVOLVING DISPUTED ISSUES OF MATERIAL FACT)

(2) All petitions filed under these rules shall contain:

(a) The name and address of each agency affected and each agency's file or identification number, if known;

(b) The name, address, and telephone number of the petitioner; the name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding, and an explanation of how the petitioner's substantial interests will be affected by the agency determination;

(c) A statement of when and how the petitioner received notice of the agency decision;

(d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate;

(e) A concise statement of the ultimate facts alleged, as well as the rules and statutes which entitle the petitioner to relief; and

(f) A demand for relief.

28-106.301 INITIATION OF PROCEEDINGS
(NOT INVOLVING DISPUTED ISSUES OF MATERIAL FACT)

- (2) All petitions filed under these rules shall contain:
- (a) The name and address of each agency affected and each agency's file or identification number, if known;
 - (b) The name, address, and telephone number of the petitioner; the name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding, and an explanation of how the petitioner's substantial interests will be affected by the agency determination;
 - (c) A statement of when and how the petitioner received notice of the agency decision;
 - (d) A concise statement of the ultimate facts alleged, as well as the rules and statutes which entitle the petitioner to relief; and
 - (e) A demand for relief.

28-107.004 SUSPENSION, REVOCATION, ANNULMENT, OR WITHDRAWAL

- (3) Requests for hearing filed in accordance with this rule shall include:
- (a) The name and address of the party making the request, for purposes of service;
 - (b) A statement that the party is requesting a hearing involving disputed issues of material fact, or a hearing not involving disputed issues of material fact; and
 - (c) A reference to the notice, order to show cause, administrative complaint, or other communication that the party has received from the agency.

42-2.013 REQUEST FOR REVIEW PURSUANT TO SECTION 373.114 OR 373.217

(1) In any proceeding arising under Chapter 373, F.S., review by the Florida Land and Water Adjudicatory Commission may be initiated by the Department or a party by filing a request for such review with the Secretary of the Commission and serving a copy on any person named in the rule or order, and on all parties to the proceeding which resulted in the order sought to be reviewed. A certificate of service showing completion of service as required by this subsection shall be a requirement for a determination of sufficiency under Rule 42-2.0132. Failure to file the request with the Commission within the time period provided in Rule 42-2.0132 shall result in dismissal of the request for review.

(2) The request for review shall identify the rule or order requested to be reviewed, the proceeding in which the rule or order was entered and the nature of the rule or order. A copy of the rule or order sought to be reviewed shall be attached. The request for review shall state with particularity:

- (a) How the order or rule conflicts with the requirements, provisions and purposes of Chapter 373, F.S., or rules duly adopted thereunder;

(b) How the rule or order sought to be reviewed affects the interests of the party seeking review;

(c) The oral or written statement, sworn or unsworn, which was submitted to the agency concerning the matter to be reviewed and the date and location of the statement, if the individual or entity requesting the review has not participated in a proceeding previously instituted pursuant to Chapter 120, F.S., on the order for which review is sought;

(d) If review of an order is being sought, whether and how the activity authorized by the order would substantially affect natural resources of statewide or regional significance, or whether the order raises issues of policy, statutory interpretation, or rule interpretation that have regional or statewide significance from a standpoint of agency precedent, and all the factual bases in the record which the petitioner claims support such determination(s); and

(e) The action requested to be taken by the Commission as a result of the review, whether to rescind or modify the order, or remand the proceeding to the water management district for further action, or to require the water management district to initiate rulemaking to adopt, amend or repeal a rule.

28-107.005 EMERGENCY ACTION

- (1) If the agency finds that immediate serious danger to the public health, safety, or welfare requires emergency action, the agency shall summarily suspend, limit, or restrict a license.
- (2) the 14-day notice requirement of Section 120.569(2)(b), F. S., does not apply and shall not be construed to prevent a hearing at the earliest time practicable upon request of an aggrieved party.

- (3) Unless otherwise provided by law, within 20 days after emergency action taken pursuant to paragraph (1) of this rule, the agency shall initiate a formal suspension or revocation proceeding in compliance with Sections 120.569, 120.57, and 120.60, F.S.

40E-1.611 EMERGENCY ACTION

- (1) An emergency exists when immediate action is necessary to protect public health, safety or welfare; the health of animals, fish or aquatic life; the works of the District; a public water supply, or recreational, commercial, industrial, agricultural or other reasonable uses of land and water resources.
- (2) The Executive Director may employ the resources of the District to take whatever remedial action necessary to alleviate the emergency condition without the issuance of an emergency order, or in the event an emergency order has been issued, after the expiration of the requisite time for compliance with that order.

Last Date for Governing Board Action:
September 14, 2005

Water Use Staff Review Summary

Application Number: 040302-8
Permit Number: 06-00070-W
Project Name: POMPANO BEACH PWS
Water Use Permit Status: MODIFICATION/RENEWAL
Environmental Resource Permit Status: NOT APPLICABLE.
Right Of Way Permit Status: NOT APPLICABLE



Location: BROWARD COUNTY, S21-23,25-28,32-36/T48S/R42E
S19,20,29-32/T48S/R43E
S1-8,11,12/T49S/R42E
S6.7/T49S/R43E

Applicant's Name and Address: CITY OF POMPANO BEACH
1201 NE 5TH AVENUE
UTILITIES DEPARTMENT
POMPANO BEACH, FL 33061

Purpose:

The purpose of this application is to renew the water use permit for public water supply for the City of Pompano Beach serving 97,294 persons in the year 2010 with an average per capita use rate of 199 gallons per day and a maximum monthly to average monthly pumping ratio 1.13. Withdrawals are from the Biscayne Aquifer via 25 existing withdrawal facilities. The location of the service area and wellfields are shown in Exhibits 1-5.

To meet the demand of the projected increase in population, staff recommends an annual allocation of 7067 MG with a monthly allocation of 665 MG through August 10, 2010. Unless otherwise modified, the annual allocation will drop to 6478 MG on August 11, 2010 through August 10, 2025 with a corresponding maximum monthly allocation of 610 MG. The maximum monthly allocation from the Eastern (Airport) wellfield will be limited to 186 MG from November 1st through May 31st of each year and 279 MG from June 1st through October 31st of each year throughout the life of the permit.

The applicant has provided supporting documentation that the proposed use complies with Chapter 373, including District rules governing the issuance of permits for consumptive uses. District staff recommends approval of the application, subject to 28 limiting conditions, with duration of 20 years for the allocation serving the demands of the population existing at the time of permit renewal, and additional allocation, with duration of 5 years, to meet the projected increased demands of the population through August 2010.

Staff Recommendations

Date Of Issuance: September 14, 2005
Expiration Date: September 14, 2025
Water Use Classification: Public Water Supply
Sources: **Ground Water from:** Biscayne Aquifer

Recommended Allocation:

Annual Allocation: 7,067 Million Gallons (MG)
Maximum Monthly Allocation: 665.1 Million Gallons (MG)

Existing Withdrawal Facilities - Ground Water

Source: Biscayne Aquifer

1 - 14" X 156' X 2200 GPM Well Cased to 100 Feet
1 - 16" X 107' X 1500 GPM Well With Unknown Cased Depth
1 - 16" X 108' X 1500 GPM Well With Unknown Cased Depth
1 - 16" X 113' X 1800 GPM Well Cased to 93 Feet
1 - 16" X 114' X 1500 GPM Well Cased to 114 Feet
1 - 16" X 115' X 1800 GPM Well Cased to 115 Feet
1 - 16" X 123' X 1500 GPM Well Cased to 90 Feet
1 - 16" X 127' X 1500 GPM Well Cased to 88 Feet
1 - 16" X 130' X 2400 GPM Well Cased to 72 Feet
1 - 16" X 131' X 1500 GPM Well Cased to 97 Feet
1 - 16" X 136' X 1500 GPM Well With Unknown Cased Depth
1 - 16" X 140' X 1800 GPM Well With Unknown Cased Depth
1 - 16" X 150' X 2400 GPM Well Cased to 76 Feet
1 - 16" X 153' X 1600 GPM Well Cased to 80 Feet
1 - 16" X 153' X 2100 GPM Well Cased to 79 Feet
1 - 16" X 154' X 2100 GPM Well Cased to 80 Feet
1 - 16" X 158' X 2100 GPM Well Cased to 78 Feet
1 - 18" X 130' X 2000 GPM Well Cased to 113.5 Feet
1 - 18" X 140' X 2000 GPM Well Cased to 115 Feet
2 - 16" X 90' X 1500 GPM Wells Cased to 90 Feet
4 - 16" X 153' X 2100 GPM Wells Cased to 80 Feet

Rated Capacity

<u>Source</u>	<u>Status Code</u>	<u>GPM</u>	<u>MGM</u>	<u>MGY</u>
Biscayne Aquifer	E	46,200	2,022.5	24,283
Totals:		46,200	2,022.5	24,283

Project Description

The project is located in Broward County and consists of two wellfields [Eastern (Airport) and Western (Palm Aire)]. Water Use Permit No. 06-00070-W was last renewed in March 11, 1997. The current application requests a duration of 20 years for the City's 2005 population of 89,192 in the amount of 6478 MGY (17.7 MGD) with a maximum month allocation of 610 MGM (20.1 MGD) and a 5-year duration for 7,067 MG annually and maximum monthly allocation of 665 MG to meet the demands for the projected 2010 population of 97,294 people. A per capita use rate of 199 is used to determine project use and represents past use and the projected reductions in demands resulting from the City's water conservation efforts.

The City of Pompano is not requesting an increase in withdrawals from the Eastern Wellfield (Airport) which is limited to 186 MG from November 1st through May 31st of each year and 279 MG from June 1st through October 31st of each year throughout the life of the permit. The additional water recommended throughout the permit duration is to be obtained from only the Western Wellfield (Palm Aire). The City also is proposing to expand the scope of the existing reuse program. Under this program, the City will provide irrigation water to individual homes along the Intracoastal Canal which historically have used potable Utility water for irrigation. This program is expected to benefit the City by shifting existing capacity away from irrigation demands and make these flows available for future users.

HYDROGEOLOGY

The saturated thickness of the Biscayne aquifer is estimated to be 300 feet in the project area (SFWMD Technical Publication 92-05, A Three-Dimensional finite Difference Ground Water Flow Model of the Surficial Aquifer System, Broward County, Florida). The water elevation within the Surficial Aquifer System has been approximately 2.5 feet NGVD or greater in the vicinity of the Eastern Wellfield (Airport) and is estimated to be between 4 and 5 feet NGVD in the Palm Aire Wellfield. These water levels reflect, in part, historical pumpage from the above referenced wellfields. The elevation of the water table in the area is largely controlled by recharge from precipitation, the effects of wellfield pumpage, evapotranspiration and the stages maintained in the C-14 and Pompano Canals.

GROUNDWATER MODELING

The applicant modified the Broward County Groundwater Model, which was developed by SFWMD for the Lower East Coast Water Supply Planning process for individual and cumulative impact analysis. A series of scenarios were modeled to evaluate the potential for adverse impacts from the project withdrawals on wetlands, existing legal users, contamination movement, and deliveries from the SFWMD regional canal system. Model scenarios were designed based on the current permit and estimation of future water demands for the City of Pompano Beach. Six USGS monitor wells near the Pompano Beach wellfields (G853, G-1213, G-1315, G-1316, G-2147, and G-2443), were used in the model calibration. At all six locations, the model output is in agreement with local USGS water level data.

In addition to this modeling, District staff ran the SFWMM model, version 3.7 to evaluate direct and indirect impacts on the Everglades. The model runs are based on the current permit and estimation of future needs for the City of Pompano.

Impact Assessments

Water Resource Availability

Biscayne Aquifer-Eastern Wellfield (Airport)

Land surface elevation at the Eastern Wellfield (Airport) is approximately 18 feet NGVD. The saturated thickness of the Biscayne aquifer is approximately 300 feet in the project area. Withdrawals at the Eastern Wellfield (Airport) were previously limited to 186 MG from November 1st through May 31st of each year and 279 MG from June 1st through October 31st of each year. Since the withdrawals from the Eastern Wellfield (Airport) have been reduced, the dry season water level of the Surficial Aquifer System has been approximately 2.5 feet NGVD or greater. Based on the modeling results, less than

0.1 foot of additional drawdown is anticipated to occur within the Eastern Wellfield (Airport) as a result of the increase in withdrawals from the Western Wellfield (Palm Aire). This drawdown is not anticipated to significantly change the dry season water levels within the vicinity of the Eastern Wellfield (Airport). The potential for harm to occur to the water resource availability as result of the withdrawal of the recommended 5 and 20 year allocations is considered to be minimal.

Biscayne Aquifer-Western Wellfield(Palm-Aire)

Land surface elevation at the Western Wellfield (Palm Aire) is approximately 15 feet NGVD. Historic water levels in monitoring well G-2443 are approximately 5 feet NGVD or 10 feet below land surface. Dry season water levels in monitoring well G-1316 are approximately 7.5 feet NGVD or 7.5 feet below land surface. Considering the results obtained from the submitted modeling effort, the previously discussed thickness of the Surficial Aquifer System, and dry season water levels, the potential for harm to occur to the water resource availability as a result of the withdrawal of the recommended 5 and 20 year allocations is considered to be minimal.

Existing Legal Users

Biscayne Aquifer-Eastern Wellfield (Airport)

At the Eastern Wellfield (Airport), the nearest existing legal user is "Goodyear tire and Rubber Company", Water Use Permit No. 06-00336-W. The permit is for landscape irrigation from one well. This user is located within the area anticipated to have significant drawdown influence associated with the withdrawals of the Eastern Wellfield (Airport). Based on the recent modeling results, the estimated drawdown due at the Goodyear site is estimated to be less than 2 feet. The applicant is not requesting any changes to the permitted withdrawals from the Eastern Wellfield (Airport), which is currently limited to 186 MG from November 1st through May 31st of each year and 279 MG from June 1st through October 31st of each year. The potential for harm to occur to existing legal users as result of the withdrawal of the recommended 5 and 30 year allocations is considered to be minimal.

Biscayne Aquifer-Western Wellfield(Palm-Aire)

The nearest existing legal user to the Western Wellfield (Palm Aire) are the Palms, Pines and Sabal Golf Courses (Water Use Permit No. 06-01747-W). The wellfield is located in the north and central portion of this project. The north and central portions of the course are irrigated through direct withdrawals from the SFWMD C-14 Canal. The southern portion of the project is irrigated through a combination of withdrawals from groundwater wells and on-site lakes. Based on modeling results, the estimated cumulative drawdown at these withdrawal facilities is approximately 1 foot or less at the projected 2025 withdrawal rates. The potential for harm to occur to existing legal users as a result of the withdrawal of the recommended allocation is considered minimal.

Legal Domestic Users

Biscayne Aquifer-Eastern Wellfield (Airport)

At the Eastern Wellfield (Airport), the previous staff report indicated that the nearest potential residential use to the Eastern Wellfield (Airport) is located approximately 300 feet to the north. Staff is unaware of any complaints from domestic users in the vicinity of the Eastern Wellfield (Airport) indicating a loss in well service. The applicant is not requesting any changes to the permitted withdrawals from the Eastern Wellfield (Airport). The potential for harm to occur to existing legal users as a result of the withdrawal of the recommended 5 and 20 year allocations is considered to be minimal.

Biscayne Aquifer-Western Wellfield(Palm-Aire)

Within the previous evaluation, it was indicated that an aerial map indicated that residential homes are located within approximately 200 feet of the Western Wellfield (Palm Aire). Historic water levels in monitoring well G-2443 are approximately 5 feet NGVD or 10 feet below land surface. Dry season water levels in monitoring well G-1316 are approximately 7.5 feet NGVD or 7.5 feet below land surface.

Considering the results obtained from the modeling effort, when comparing the drawdown of the currently permitted allocation and the drawdown associated with the withdrawal of the requested allocation for the projected year 2010, water levels are anticipated to be less than 20 feet below land surface. This is expected to be within the withdrawal capability of a centrifugal pump. The potential for harm to occur to existing legal domestic users as a result of the withdrawal of the recommended 5 and 20 year allocations is considered to be minimal.

Saline Water Intrusion

Biscayne Aquifer-Eastern Wellfield (Airport)

Water quality data collected since the 1970s have shown the saline interface occurs adjacent to the Eastern Wellfield (Airport). During the 1980's, several water wells recorded elevated chlorides within the area of influence of the Eastern Wellfield (Airport).

Due to the potential for saline water intrusion at the Airport wellfield, the City of Pompano Beach received a water use permit renewal/modification and entered into a Consent Agreement with SFWMD in 1999. The permit required the long term operational plan for the Airport wellfield (279 M/month from June 1 to October 31 and 186 MG/month from November 1 to May 31), while the Consent Agreement authorized an "interim" operational plan during which time the membrane water treatment plant was being constructed and pumpage could be shifted inland. Both of these operational plans incorporated reductions in the historical withdrawal rates from the Eastern Wellfield (Airport). The monitoring data (chlorides and conductivity) shows either decreasing or stable conductivity trends, since the pumpage at the Eastern Wellfield (Airport) has been decreased. Staff considers the continuation of the current pumpage constraints on the Eastern Wellfield (Airport) will prevent inland movement of the saline interface (Limiting Condition No. 5). The potential for significant saline intrusion or upconing to occur as a result of the withdrawal of the recommended 5 and 20-year allocations is considered minimal.

Biscayne Aquifer-Western Wellfield(Palm-Aire)

Drawdown at the Western Wellfield (Palm Aire) was evaluated to determine the potential for saline water intrusion as a result of increased withdrawal rates. The 0.1 foot drawdown contours caused by the Western Wellfield (Palm Aire) in all the modeling scenarios do not reach the Eastern Wellfield (Airport) or the salt water front (Exhibits 14A-14C). The Palm Aire Wellfield is located approximately 3 miles west of G-57, the eastward salinity structure on the Pompano Canal. Structures S-37A and S-37B are located on the Cypress Creek Canal (C-14) and have optimum headwater stages of 3.5 feet NGVD and 7.5 feet NGVD respectively. The potential for significant saline intrusion or upconing to occur as a result of the withdrawal of the recommended 5 and 20 year allocations is considered to be minimal.

Wetlands

Biscayne Aquifer-Eastern Wellfield (Airport)

The applicant is not requesting any changes to the permitted withdrawals from its Eastern wellfield (Airport). The potential for harm to wetlands as a result of the withdrawal of the recommended 5 and 20 year allocations is considered to be minimal.

Biscayne Aquifer-Western Wellfield(Palm-Aire)

The nearest wetlands are depicted in Exhibit No. 14D. The nearest wetlands to Western Wellfield (Palm Aire) are located at the Fern Forest Nature Center, south of C-14 and west of the Turnpike, approximately 1000 feet southwest of the Palm Aire wellfield. Fern Forest is surrounded by drainage canals. The control elevations of the drainage canals are by design for flood protection and are substantially lower than land surface elevation. The drainage function of the canals control the water levels at Fern Forest and are a major factor in the hydroperiod of the environmental features. The Fern Forest is a historically drained system, which is artificially hydrated by permitted landscape irrigation withdrawals from the C-14 Canal (water use permit No. 06-00960-W). Based on the previous wetland evaluation, the greatest drawdown in the groundwater level due to the cumulative use (including a

maximum daily use of 17 MGD from the Palm Aire Wellfield) was estimated to be 0.8 foot at the southern portion of Fern Forest. Based on calculations submitted by the applicant (Exhibit 15), the increased pumpage from the Western Wellfield (Palm Aire) does not have a significant effect on seepage from Fern Forest (<10,000 GPD at the requested 2010 Palm Aire withdrawal rate). This small amount of seepage (<1% of the permitted allocation) is consistent with the minimal additional drawdown(<0.1 foot) at Fern Forest caused by the increase of the Western Wellfield (Palm Aire) withdrawals in all of the model scenarios.

In addition, a wetland (as identified in the National Wetland Inventory) is located south of the Palm Aire Country Club and the SFWMD C-14 Canal. Based on the submitted modeling results, this identified wetland is located outside of the area of influence (0.1 foot drawdown contour) of the City of Pompano's Western and Eastern wellfields in the (current permit and the estimated 2010 demands) withdrawal scenarios. The cumulative use scenario shows that the drawdown at the wetland does not change, as a result of the requested increase in withdrawals at the Western Wellfield (Palm Aire).

The potential for harm to these wetlands as a result of the recommended 5 year and 20 year allocations is considered to be minimal.

Source Of Pollution

Biscayne Aquifer-Eastern Wellfield (Airport)

Two historic landfills, the Pompano Air Dump and the Pompano Beach Dump, were identified in the vicinity of the Airport wellfield during the last permit renewal. The Pompano Air Dump is located approximately 1500 feet south of Airport Well No. 9. The Pompano Beach Dump (also known as the Old Copans Road Dump) is located approximately 3500 feet west of Airport Well No. 16. In addition, a gasoline station (Marathon - Broward County Environmental Protection Department site No. 1356) was identified near Airport well No. 6. The applicant has indicated that according to the Broward County Environmental Protection Department files, remediation began at the Marathon station in April 2003 and the monitoring data to the east of the site indicate that the contamination has not migrated off-site towards the wellfield. No increase in withdrawals are being requested from the Airport Wellfield. The potential for movement of contaminants, if present, from known pollution sources as a result of the withdrawals of the recommended 5 and 20 year allocations is considered to be minimal.

Biscayne Aquifer-Western Wellfield(Palm-Aire)

Within the previous evaluation of the Western Wellfield (Palm Aire), a gasoline station (Citgo - Broward County Environmental Protection Department site No. 1870) was identified north of the Western Wellfield (Palm Aire) well No. 20. As per the EPD files, remediation began at the Citgo station in April 2003 and the monitoring data along the southern boundary of the site indicate that the contamination has not migrated off-site towards the wellfield. The City of Pompano has constructed the four new production wells south of the C-14 Canal and reduced the pumpage in the northern portion of the wellfield. Based on the results obtained from the modeling effort, drawdown in the vicinity of the gasoline station is essentially the same with the year 2025 projected demands as was permitted in 1999. The potential for movement of contaminants, if present from known pollution sources as a result of the withdrawals of the recommended 5 and 20 year allocations is considered to be minimal.

Other Impacts

Biscayne Aquifer-Western Wellfield(Palm-Aire)

Existing Land Uses

Staff have investigated potential drawdown impacts from the Western Wellfield (Palm Aire) on the water hazards that are incorporated into the Palm Aire Golf Course and has relayed these concerns to the City of Pompano Beach. The City of Pompano Beach has met with Staff from the District and Staff from Broward County Environmental Protection Department. Broward County Environmental Protection

Department has had divers inspect culverts, which provide recharge to the Western Wellfield (Palm Aire) from the SFWMD C-14 Canal, and has concluded that the culvert system is in disrepair and is not providing recharge to the wellfield via the golf course lake system and is the primary reason for the historically low lake levels in the golf course. The District has recently provided funding to Broward County for improvements to the Northern County Recharge System, which provides recharge to public water supply wellfield in northern Broward County and reduces the potential for saline intrusion. The city is requesting the repair of these culverts be prioritized in order to provide recharge to the wellfield. This work is being scheduled for initiation by August 2005 and should be completed in September 2005.

Additional Information

Minimum Flows and Levels

BISCAYNE AQUIFER - The Biscayne Aquifer is an MFL water body covered under a prevention strategy set forth in Chapter 40E-8, F.A.C. The Biscayne Aquifer MFL is defined as the water level, which results in movement of the saltwater interface landward to the extent the water quality of an established withdrawal point is insufficient to serve as a water supply source. Consumptive use permit criteria for MFLs are located in Section 3.9 of the Basis of Review. The applicant has demonstrated that no additional drawdown is anticipated to occur at the saline water interface and will not result in movement of the saltwater interface. Therefore, the recommended 5 year and 20 year allocations are consistent with the Biscayne Aquifer MFL Prevention Plan.

EVERGLADES MFL- The Everglades, including Water Conservation Areas 2B, 3A and 3B is an MFL water body covered under a recovery strategy set forth in Chapter 40E-8, F.A.C. Chapter 40E-8.021(6) defines a direct withdrawal from an MFL water body as a ground water withdrawal that causes a water table drawdown greater than 0.1 feet, using a model accepted by the District, at any location beneath an MFL surface water body, up through a 1-in-10 year drought.

The applicant demonstrated that drawdown resulting from the recommended allocations does not extend to the Everglades. Therefore, the requested allocation is not a direct withdrawal from an MFL water body. However, since the withdrawal has the ability to induce seepage from regional canals that derive water supply from the Everglades, the project is considered an indirect withdrawal from an MFL water body under a recovery strategy. Impacts from the indirect withdrawal from an MFL water body were evaluated against the criteria contained in Section 3.9.1 of the Basis of Review which requires users to demonstrate the requested allocation is consistent with the MFL recovery plan contained in the applicable Regional Water Supply Plan (Lower East Coast Regional Water Supply Plan 2000). The Everglades MFL Recovery Plan as described in the LECRWSP contemplated limited growth in consumptive use prior to and consistent with the scheduled deployment of CERP and specified water resource development projects contained in the plan.

As an aid to determine if a requested allocation is consistent with the recovery plan, a series of CUP/CERP guiding principles were developed through the Water Resource Advisory Committee and received concurrence from the Governing Board. The guiding principles included an analysis where the District's SFWMM model, Version 3.7 was run with all wellfields including Pompano Beach pumping their October 2003 allocation plus 20 percent (unless limited by permit criteria). The resulting Everglades's hydropattern responses were compared with the LEC Regional Water Supply Plan (May 2000) incremental model run for years 2005, 2010, 2015 and 2020. The results were consistent with the LEC Water Supply Plan and the basis of the Minimum Flows and Levels recovery plan. The amount of water simulated for Pompano Beach in the MFL evaluation was 7906 MGY which is slightly more than the recommended allocation here. As a result, staff considers the recommended allocation to be consistent with the MFL recovery plan for the Everglades.

BACKGROUND

The first water use permit for the City of Pompano Beach was issued on July 8, 1976 with an expiration

Additional Information

date of July 8, 1979. Within the permit, the City of Pompano Beach was allowed to withdraw water from the City's original Eastern wellfield (Airport). As the water demands for the City of Pompano Beach grew, the increased water withdrawals began to move the saltwater interface westward towards the wellfield. By the late 1970's, the City began to look westward for another wellfield which would be located away from the saltwater interface. The Western wellfield was located in the Palm Aire golf course and was originally permitted on December 10, 1981.

During the droughts of the 1980's, and despite the efforts of the City of Pompano Beach, the saline interface continued to move closer to the Airport Wellfield. During the drought of 1989/1990, the volume of water from the Palm Aire Wellfield was increased in order to reduce the demands on the Eastern Wellfield (Airport).

On February 14, 1991, the District issued the City a one-year permit. The permit was conditioned to require the City to evaluate their long term water supply situation and come up with a capital and operational plan to meet their future demands without causing saltwater intrusion or other harm to existing users or the water resources. This permit was allowed to expire on February 14, 1992 and a water application for a new permit was submitted on June 19, 1992. The long term water supply plan was not submitted with the June 19, 1992 application. In February 1997, the application remained incomplete and the District issued a Notice of Violation to the City for withdrawals of water without a permit.

Due to previous treatment constraints of the existing lime softening plant, the City of Pompano Beach was limited on how much water could be obtained from the Western Wellfield and how much reduction in water demands could occur within the Eastern Wellfield. Within the issuance of the March 11, 1999 permit, withdrawals from the Eastern Wellfield were limited to a maximum monthly allocation of 186 MG from November 1st through May 31st of each year and 279 MG from June 1st through October 31st of each year throughout the life of the permit. The recommended increase in withdrawals were to be obtained from the Western Wellfield using a new membrane softening treatment system. In order to provide time to construct the membrane softening treatment plant, resolve the enforcement action of February 1997, and protect the water resources and existing legal users from harm, the City of Pompano Beach and the District entered into a Consent Agreement concurrently with the issuance of that permit. The Consent Agreement provided for a 3 year interim operation plan that included extensive resource and water use monitoring, specific pumpage limits, mandatory pumpage cutback triggers and stipulated penalties for noncompliance.

EXISTING FACILITIES

The City of Pompano Beach total existing withdrawal capacity is 66.5 MGD from 25 wells whose locations are shown on Exhibits 3, 4, and 5. There are 15 wells at the Eastern Wellfield and 10 wells at the Western Wellfield. Pertinent well data for the supply wells are included in this report as Exhibit 6.

The City owns and operates one treatment plant. The rated capacity of the lime softening portion of the plant is 40 MGD and the rated capacity of the new membrane portion is 10 MGD. The City of Pompano has 13 MG of storage capacity, with 2.0 MG at the treatment plant, two 5.0 MG and one 1.0 MG above ground storage tank.

PROPOSED FACILITIES

There are no proposed withdrawal facilities.

INTERCONNECTS

The Eastern and Western wellfields are interconnected and the water from both of these wellfields is treated in one water treatment plant. The City has emergency interconnects with the Broward County 2A

Additional Information

system (06-00142-W) and the City of Fort Lauderdale (06-00123-W).

POPULATION PROJECTIONS

The City of Pompano Beach is requesting to increase the permitted allocation to meet the projected demands of the increasing population within the service area. Population estimates were developed by the City of Pompano Beach's Planning Department, based on projections by the Broward County Planning services Division. The population included in this application reflects projections made by the County utilizing the 2000 Census data. The County's Population Forecasting Model has been approved by the Department of Community Affairs (DCA) and adopted as part of the County's Comprehensive Plan. The population information is based on permanent resident population forecasts at 5 year intervals for each traffic analysis zone (TAZ) in the City of Pompano Beach's utility service area.

PER CAPITA USE RATE

The average per capita use rate and maximum average month ratio were calculated at 199 GPD and 1.13 respectively. Based on the last three years, an average to month ratio of 1.13 was calculated (Exhibit 17). For a 5 year period from 1999 through 2004 (excluding 2001 drought year because of the abnormally low withdrawals that year in response to the water shortage restrictions imposed by the District), an average per capita use rate of 210 gallons/person/day was calculated. However, the City's average per capita use rate for the last 3 years is 199 gallons/person/day. These years are thought to be representative of future demands because of the implementation of the Conservation Plan including the dual distribution program described below and shown on Exhibits 16A and 16B. During the next five years, the City will begin implementation of the dual distribution reuse water system (additional 1.6 MGD of distribution capacity, of which potentially 50% of the constructed capacity will be utilized on an average annual basis due to changing seasonal irrigation demands) and will begin to fully utilize the additional 5 MGD of constructed membrane treatment (1.25 MGD of treatment losses at full utilization). Pursuant to Limiting Condition No. 28, by the year 2010, the increase reuse water utilization should offset the increased membrane treatment and the City anticipates no change in the overall per capita use rate. Beyond 2010, further increases in reuse water utilization should result in a decrease in the per capita use rate. The recommended allocations within this staff report are based on a per capita use rate of 199 gallons/person/day and an average maximum:average month ratio of 1.13.

RECOMMENDED ALLOCATIONS AND PERMIT DURATION

The applicant requested a permit duration of 20 years pursuant to Chapter 373.236 F.S. In part, this statute provides for the issuance of 20-year duration permits if there is sufficient data to provide reasonable assurances that the conditions of permit issuance will be met for the duration of the permit. The conditions of issuance are contained in District Rule 40E-2.301 with specific criteria for a 20-year permit duration defined in the Basis of Review for Water Use Permit Applications, Section 1.7.2. Based on the reasonable assurances provided by the applicant as described in the Impact Evaluation Section of the Staff Report, Staff recommends that a 20 year duration permit should be issued, with an allocation necessary to meet the demands of the current population of 89,192 persons at the approved per capita use rate of 199 GPD. Staff recommends a 5-year duration for the allocation needed to meet the demands of the projected 2010 population, an increase of 8,102 persons from the year 2005. Pursuant to Limiting Condition No. 5, after August 10, 2010, the annual allocation shall not exceed 6,478 MG and the maximum monthly allocation shall not exceed 610 MG. The 5-year annual allocation shall not exceed 7,067 MG and the 5-year maximum monthly allocation shall not exceed 665 MGM. The 5-year allocation shall expire August 10, 2010, unless a modification or renewal is approved consistent with District rules and updated population and per capita use rates to the extent they are considered by the District to be indicative of long-term trends in the population and per capita use rates over the permit duration.

WELLFIELD PROTECTION ORDINANCE

Additional Information

The City's wellfields are protected under the Broward County Wellfield - Protection Ordinance. Wellfield Protection Ordinance-Chapter 27-12 of the County Environmental Regulations, Pollution Control, contains the wellfield protection requirements.

WATER CONSERVATION PLAN

The applicants water conservation plan, addressing the mandatory elements of the plan, is as follows:

Permanent Irrigation Ordinance - An ordinance for the limitation of lawn and ornamental irrigation hours is adopted in the City's Code of Ordinances Section 50.14 (Restrictions of Irrigation).

Xeriscape Landscape Ordinance - Adopted in the City's Code of Ordinances Section 155.127 (Landscaping - General Requirements).

Ultra -Low Volume Plumbing Standards - The South Florida Building Code (SFBC) contains flow restriction requirements. Section 6 of the Broward County Code prohibits a City from enacting standards different from the SFBC. The City's Building Department enforces the SFBC requirements.

Water Conservation Rate Structure - Adopted in the City's Code of Ordinances Section 50.03 (Water Tariff).

Leak Detection - The City has active leak detection and meter replacement programs. The average unaccounted for water loss in 2003 was 7.8%.

Rain Sensor Device - The requirement of rain sensor override for new lawn sprinkler systems is adopted in the City's Code of Ordinances Section 155.127 (Landscaping - General Requirements).

Public Information Program - Water conservation information is distributed with the water bills and is also available in the City Hall and Utilities buildings. The City also provides speakers on water conservation practices.

Reclaimed Water - The City has constructed a reclaimed water facility at the municipal golf course, which is located to the east of the airport wellfield. The facility treats wastewater generated by the Broward County North Regional Wastewater Treatment Plant, which would otherwise be disposed through the County's ocean outfall. Reuse water utilization decreased the potential for saline water intrusion by providing aquifer recharge between the saline water front and the wellfield. The reclaimed water is used to irrigate two City golf courses, a community park, and road medians on Federal Highway and Copans Road. In 2003, an average of 1.3 MGD of reclaimed water was utilized. In order to further the City's water conservation efforts and reduce the City's overall per capita use rate, the City will be expanding its reuse water program by developing a dual distribution delivery system in predominately residential areas east of U.S. Highway 1. The City has developed a phased implementation approach for the dual distribution system and currently anticipates constructing an additional 1.6 MGD of distribution capacity by 2010 and another 1.6 MGD of capacity by 2015. The proposed schedule is of course contingent on funding and wastewater permitting issues.

Pursuant to Limiting Condition No. 28, the implementation of this system is a requirement of this permit and as such is considered consistent with the objectives of the Lower East Coast Regional Water Supply Plan and the MFL recovery plan for the Everglades.

COMPLIANCE REPORTS

Pursuant to Limiting Condition No. 22, the permittee shall maintain accurate flow measurements at the intake of the water treatment plant for measuring daily inflow of water. Pursuant to Limiting Condition No.

Additional Information

26, every five years from the date of permit issuance, the permittee shall submit a water compliance report for review and approval by District Staff. Pursuant to Limiting Condition No. 27, the permittee shall continue to submit chloride and water level data that shall be collected monthly and submitted to the District quarterly in accordance with the approved water quality monitoring program.

WATER USE ACCOUNTING

The City has equipped all of the wells with flow meters. The flow meters were last calibrated in August 2003. As part of the Western treatment plant upgrade, the City has installed upgraded flow meters with totalizers on all wells. Pursuant to Limiting Condition No. 18, monthly withdrawals for each withdrawal facility shall be submitted to the District quarterly. The water accounting method and means of calibration shall be stated on each report.

Recommendations

Project Name: POMPANO BEACH PWS
Application Number: 040302-8
Permit Number: 06-00070-W
Date Of Issuance: September 14, 2005



Recommendations:

Staff recommends renewal of water use permit for public water supply for the service area Pompano Beach serving 97,294 persons in the year 2010 with an average per capita use rate of 199 gallons per day and a maximum daily to average daily pumping ratio 1.13. Withdrawals are from Biscayne Aquifer via 25 existing withdrawal facilities. The use is reasonable-beneficial, will not interfere with any presently existing legal use of water and is consistent with the public interest. The use is further subject to 28 limiting conditions.

Application Reviewer: Jeffery Scott **Date:** 8/18/05
Jeffery Scott

Supervisor: James Harmon **Date:** 8/19/05
James Harmon, P.G.

Water Use Division: Wm. Scott Burns **Date:** 9/2/05
Wm. Scott Burns, P.G.

Limiting Conditions

1. This permit shall expire on September 14, 2025.
2. Application for a permit modification may be made at any time.
3. Water use classification:

Public water supply

4. Source classification is:

Ground Water from:
Biscayne Aquifer

5. Annual allocation shall not exceed 7067 MG.

Maximum monthly allocation shall not exceed 665.1 MG.

The stipulated annual allocation of 7,067 MG and maximum monthly allocation of 665.1 MG are authorized through August 10, 2010. After August 10, 2009, the annual allocation shall not exceed 6,478 MG and the maximum month allocation shall not 610 MG unless the permit is modified.

The maximum monthly allocation shall not exceed 186 MG from the Airport Wellfield from November 1st through May 31st of each year.

The maximum monthly allocation shall not exceed 279 MG from the Airport Wellfield from June 1st through October 31st of each year.

6. Pursuant to Rule 40E-1.6105, F.A.C., Notification of Transfer of Interest in Real Property, within 30 days of any transfer of interest or control of the real property at which any permitted facility, system, consumptive use, or activity is located, the permittee must notify the District, in writing, of the transfer giving the name and address of the new owner or person in control and providing a copy of the instrument effectuating the transfer, as set forth in Rule 40E-1.6107, F.A.C.

Pursuant to Rule 40E-1.6107 (4), until transfer is approved by the District, the permittee shall be liable for compliance with the permit. The permittee transferring the permit shall remain liable for all actions that are required as well as all violations of the permit which occurred prior to the transfer of the permit.

Failure to comply with this or any other condition of this permit constitutes a violation and pursuant to Rule 40E-1.609, Suspension, Revocation and Modification of Permits, the District may suspend or revoke the permit.

This Permit is issued to:
City of Pompano Beach

7. Withdrawal Facilities:

Ground Water - Existing:

- 1 - 14" X 156' X 2200 GPM Well Cased To 100 Feet
- 1 - 16" X 107' X 1500 GPM Well With Unknown Cased Depth
- 1 - 16" X 108' X 1500 GPM Well With Unknown Cased Depth
- 1 - 16" X 113' X 1800 GPM Well Cased To 93 Feet
- 1 - 16" X 114' X 1500 GPM Well Cased To 114 Feet
- 1 - 16" X 115' X 1800 GPM Well Cased To 115 Feet
- 1 - 16" X 123' X 1500 GPM Well Cased To 90 Feet
- 1 - 16" X 127' X 1500 GPM Well Cased To 88 Feet

Limiting Conditions

- 1 - 16" X 130' X 2400 GPM Well Cased To 72 Feet
- 1 - 16" X 131' X 1500 GPM Well Cased To 97 Feet
- 1 - 16" X 136' X 1500 GPM Well With Unknown Cased Depth
- 1 - 16" X 140' X 1800 GPM Well With Unknown Cased Depth
- 1 - 16" X 150' X 2400 GPM Well Cased To 76 Feet
- 1 - 16" X 153' X 1600 GPM Well Cased To 80 Feet
- 1 - 16" X 153' X 2100 GPM Well Cased To 79 Feet
- 1 - 16" X 154' X 2100 GPM Well Cased To 80 Feet
- 1 - 16" X 158' X 2100 GPM Well Cased To 78 Feet
- 1 - 18" X 130' X 2000 GPM Well Cased To 113.5 Feet
- 1 - 18" X 140' X 2000 GPM Well Cased To 115 Feet
- 2 - 16" X 90' X 1500 GPM Wells Cased To 90 Feet
- 4 - 16" X 153' X 2100 GPM Wells Cased To 80 Feet

8. Permittee shall mitigate interference with existing legal uses that was caused in whole or in part by the permittee's withdrawals, consistent with the approved mitigation plan. As necessary to offset the interference, mitigation will include pumpage reduction, replacement of the impacted individual's equipment, relocation of wells, change in withdrawal source, or other means.

Interference to an existing legal use is defined as an impact that occurs under hydrologic conditions equal to or less severe than a 1 in 10 year drought event that results in the:

(1) Inability to withdraw water consistent with provisions of the permit, such as when remedial structural or operational actions not materially authorized by existing permits must be taken to address the interference; or

(2) Change in the quality of water pursuant to primary State Drinking Water Standards to the extent that the water can no longer be used for its authorized purpose, or such change is imminent.

9. Permittee shall mitigate harm to existing off-site land uses caused by the permittee's withdrawals, as determined through reference to the conditions for permit issuance. When harm occurs, or is imminent, the District will require the permittee to modify withdrawal rates or mitigate the harm. Harm as determined through reference to the conditions for permit issuance, includes:

(1) Significant reduction in water levels on the property to the extent that the designed function of the water body and related surface water management improvements are damaged, not including aesthetic values. The designed function of a water body is identified in the original permit or other governmental authorization issued for the construction of the water body. In cases where a permit was not required, the designed function shall be determined based on the purpose for the original construction of the water body (e.g. fill for construction, mining, drainage canal, etc.)

(2) Damage to agriculture, including damage resulting from reduction in soil moisture resulting from consumptive use; or

(3) Land collapse or subsidence caused by reduction in water levels associated with consumptive use

10. Permittee shall mitigate harm to the natural resources caused by the permittee's withdrawals, as determined through reference to the conditions for permit issuance. When harm occurs, or is imminent, the District will require the permittee to modify withdrawal rates or mitigate the harm. Harm, as determined through reference to the conditions for permit issuance includes:

(1) Reduction in ground or surface water levels that results in harmful lateral movement of the fresh

Limiting Conditions

water/salt water interface,

- (2) Reduction in water levels that harm the hydroperiod of wetlands,
 - (3) Significant reduction in water levels or hydroperiod in a naturally occurring water body such as a lake or pond,
 - (4) Harmful movement of contaminants in violation of state water quality standards, or
 - (5) Harm to the natural system including damage to habitat for rare or endangered species.
11. If any condition of the permit is violated, the permit shall be subject to review and possible modification, enforcement action, or revocation.
 12. Authorized representatives of the District shall be permitted to enter, inspect, and observe the permitted system to determine compliance with special conditions.
 13. The Permittee is advised that this permit does not relieve any person from the requirement to obtain all necessary federal, state, local and special district authorizations.
 14. The permit does not convey any property right to the Permittee, nor any rights and privileges other than those specified in the Permit and Chapter 40E-2, Florida Administrative Code.
 15. Permittee shall submit all data as required by the implementation schedule for each of the limiting conditions to: S.F.W.M.D., Supervising Hydrogeologist - Post-Permit Compliance, Water Use Regulation Dept. (4320), P.O. Box 24680, West Palm Beach, FL 33416-4680.
 16. In the event of a declared water shortage, water withdrawal reductions will be ordered by the District in accordance with the Water Shortage Plan, Chapter 40E-21, F.A.C. The Permittee is advised that during a water shortage, pumpage reports shall be submitted as required by Chapter 40E-21, F.A.C.
 17. Prior to the use of any proposed water withdrawal facility authorized under this permit, unless otherwise specified, the Permittee shall equip each facility with a District-approved operating water use accounting system and submit a report of calibration to the District, pursuant to Section 4.1, Basis of Review for Water Use Permit Applications.

In addition, the Permittee shall submit a report of recalibration for the water use accounting system for each water withdrawal facility (existing and proposed) authorized under this permit every five years from each previous calibration, continuing at five-year increments.

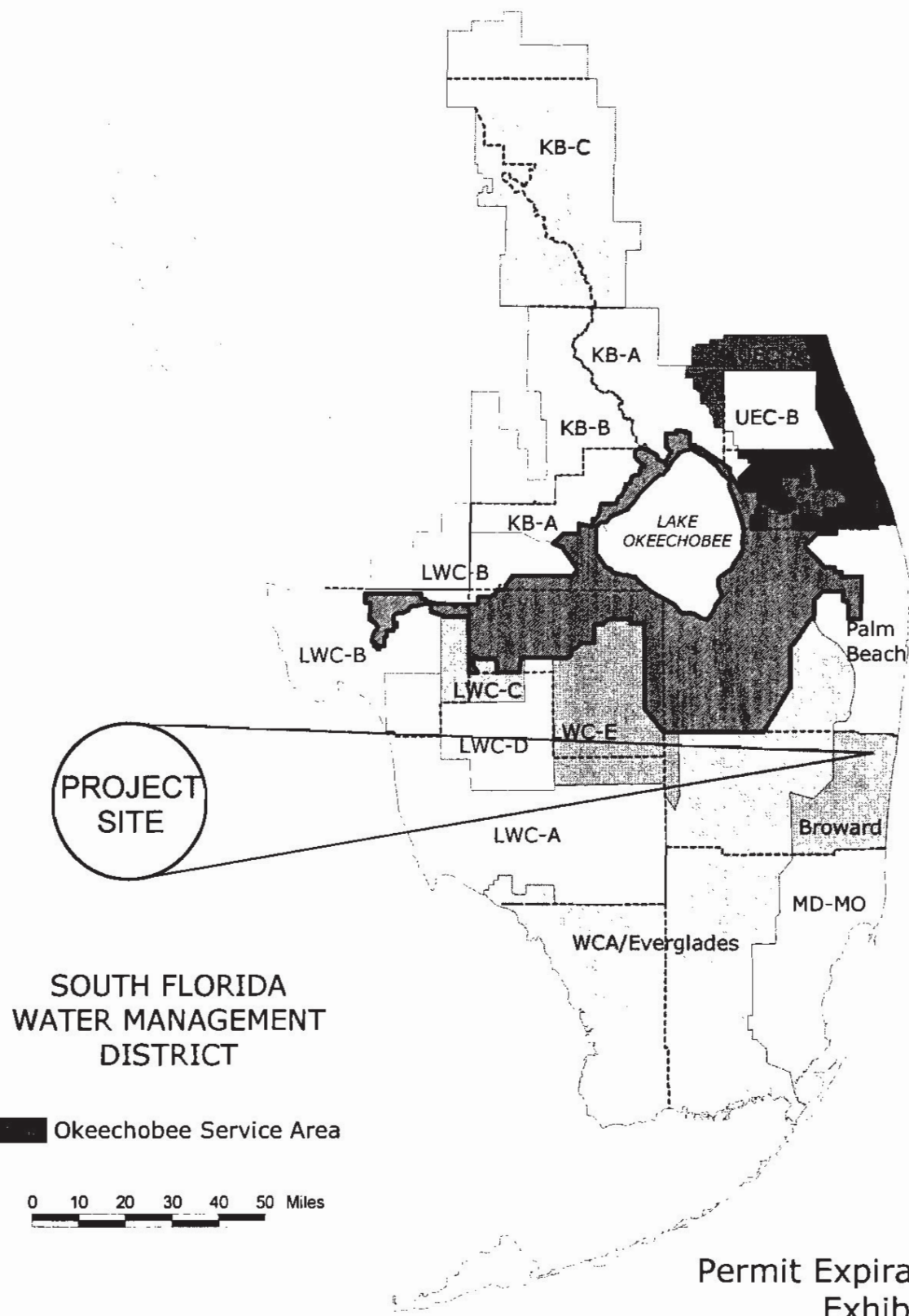
18. Monthly withdrawals for each withdrawal facility shall be submitted to the District quarterly. The water accounting method and means of calibration shall be stated on each report.
19. The Permittee shall notify the District within 30 days of any change in service area boundary. If the Permittee will not serve a new demand within the service area for which the annual allocation was calculated, the annual allocation may then be subject to modification and reduction.
20. Permittee shall implement the wellfield operating plan described in District staff report prepared in support of recommendation for permit issuance.
21. Permittee shall determine unaccounted-for distribution system losses. Losses shall be determined for the entire distribution system on a monthly basis. Permittee shall define the manner in which unaccounted-for losses are calculated. Data collection shall begin within six months of Permit issuance. Loss reporting shall be submitted to the District on a yearly basis from the date of Permit issuance.
22. Permittee shall maintain an accurate flow meter at the intake of the water treatment plant for the purpose of measuring daily inflow of water.
23. It has been determined that this project relies, in part on the waters from the Central and Southern

Limiting Conditions

Project, and as such is considered to be an indirect withdrawal from an MFL water body under recovery (Everglades). The Lower East Coast Regional Water Supply Plan (May 2000), which is the recovery plan for the Everglades, incorporates a series of water resource development projects and operational changes that are to be completed over the duration of the permit and beyond. If the recovery plan is modified and it is determined that this project is inconsistent with the approved recovery plan, the Permittee shall be required to modify the permit consistent with the provisions of Chapter 373, Florida Statutes.

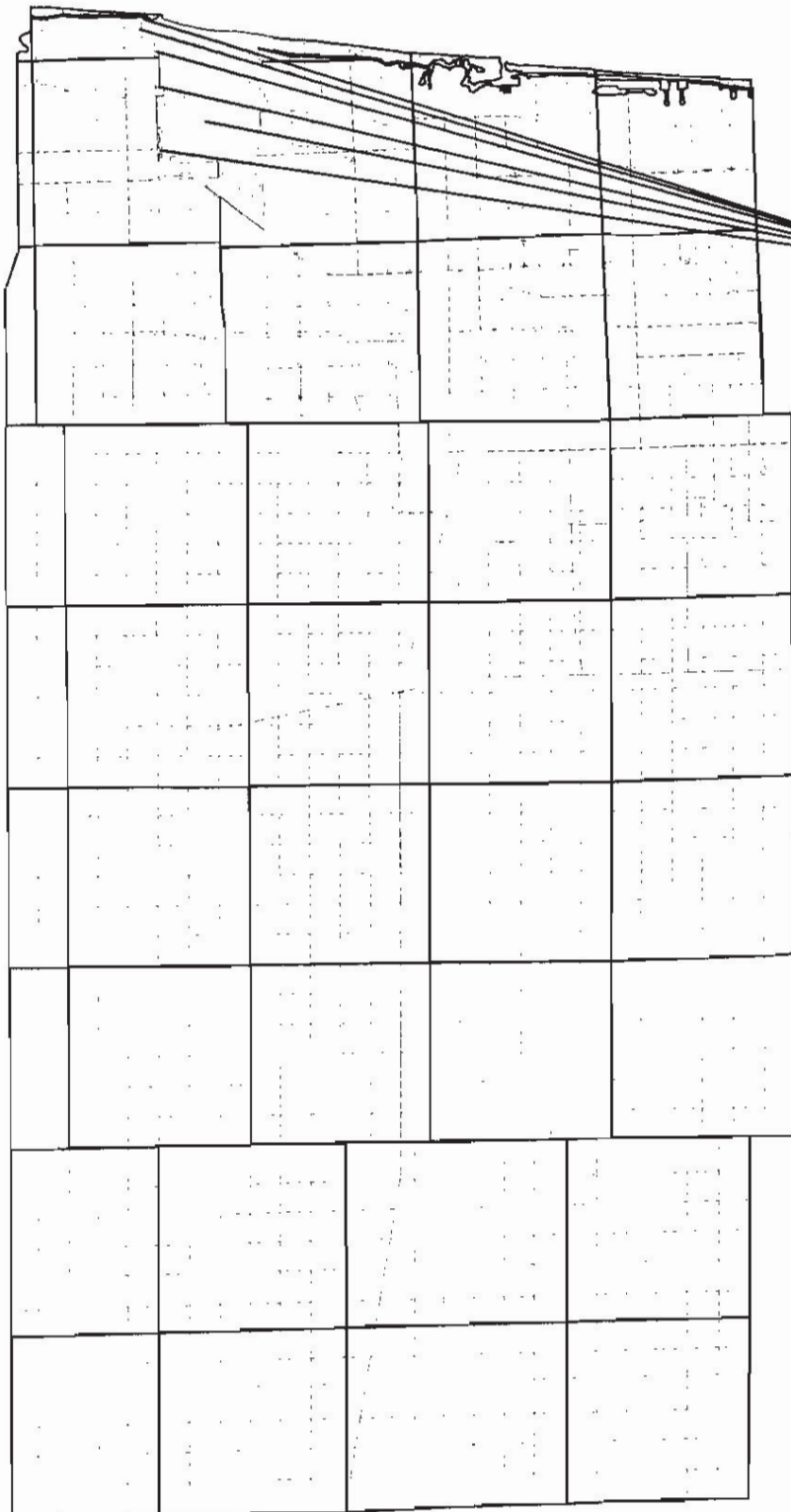
24. The Water Conservation Plan required by Section 2.6.1 of the Basis of Review for Water Use Permit Applications within the South Florida Water Management District, must be implemented in accordance with the approved implementation schedule.
25. Public water utilities that control, either directly or indirectly, a wastewater treatment plant, and which have determined pursuant to Section 403.064, F.S., that use of reclaimed water is feasible, must provide the District with annual updates of the following information: (1) the status of distribution system construction, including location and capacity of lines; (2) a summary of uncommitted supplies for the next year; (3) copies of any new or amended local mandatory reclaimed water reuse zone ordinances; and (4) a list of end-users who have contracted to receive reclaimed water and the agreed upon quantity of water to be delivered.
26. Every five years from the date of permit issuance, the permittee shall submit a water use compliance report for review and approval by District Staff, which addresses the following:
 1. The results of a water conservation audit that documents the efficiency of water use on the project site using data produced from an onsite evaluation conducted. In the event that the audit indicates additional water conservation is appropriate or the per capita use rate authorized in the permit is exceeded, the permittee shall propose and implement specific actions to reduce the water use to acceptable levels within timeframes proposed by the permittee and approved by the District.
 2. A comparison of the permitted allocation and the allocation that would apply to the project based on current District allocation rules and updated population and per capita use rates. In the event the permit allocation is greater than the allocation provided for under District rule, the permittee shall apply for a letter modification to reduce the allocation consistent with District rules and the updated population and per capita use rates to the extent they are considered by the District to be indicative of long term trends in the population and per capita use rates over the permit duration. In the event that the permit allocation is less than allowable under District rule, the permittee shall apply for a modification of the permit to increase the allocation if the permittee intends to utilize an additional allocation, or modify its operation to comply with the existing conditions of the permit.
27. The Permittee shall continue to submit monitoring data in accordance with the approved water quality monitoring program for this project. Chloride and water level monitoring shall be collected monthly and submitted to the District quarterly

Wells SWI1, SWI2, SWI3, SWI4, SWI5, SWI6, SWI9, SWI10, PRW1 and PRW8
28. The City has worked with Staff to implement an alternative water supply project (reuse dual distribution system) which is integral to preventing saltwater intrusion in the area. The implementation of this system is a requirement of this permit and as such is considered consistent with the objectives of the Lower East Coast Regional Water Supply Plan and the MFL recovery plan for the Everglades.



R35 R36 R37 R38 R39 R40 R41 R42

T48 T49 T50 T51



BROWARD COUNTY

FLORIDA

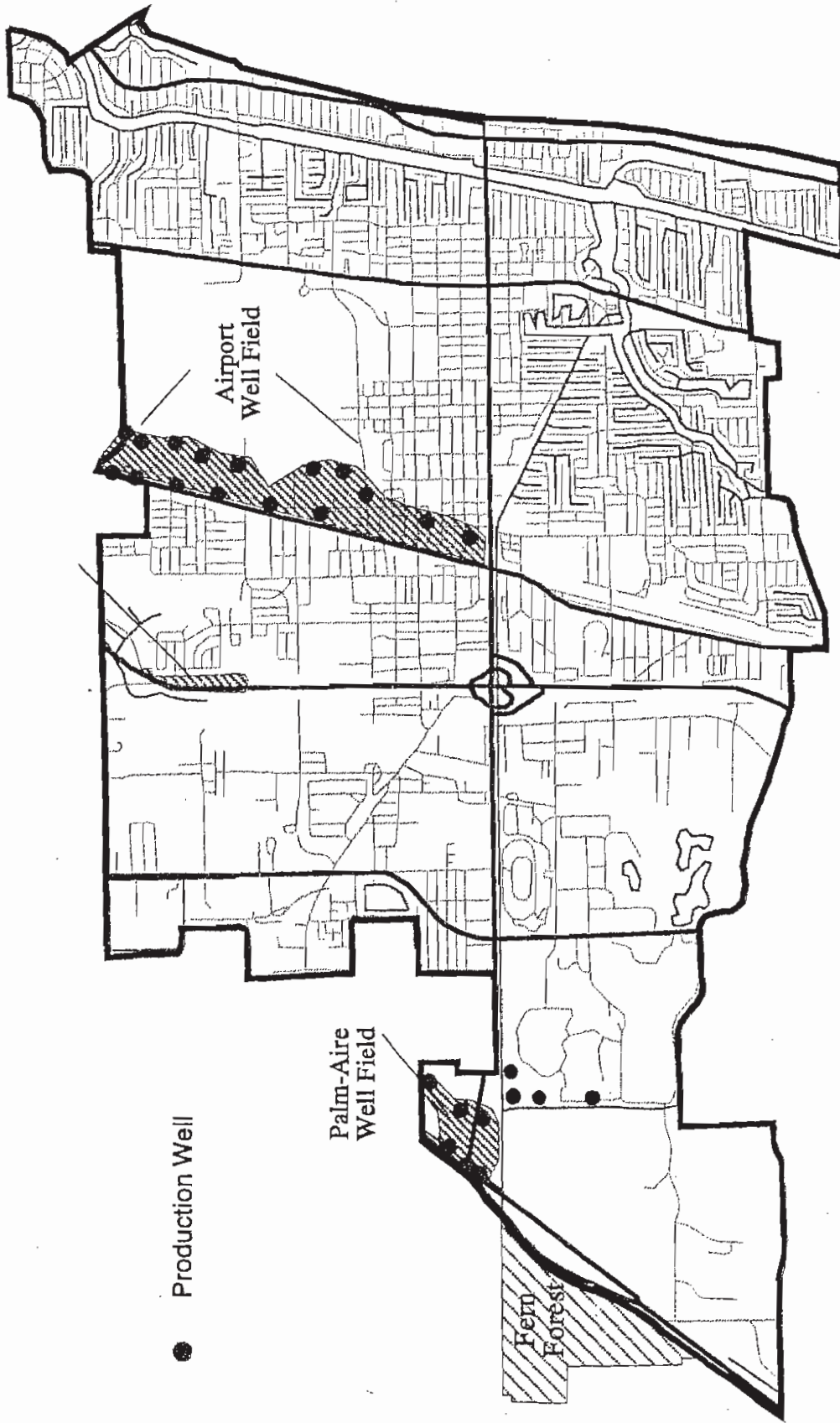
App # 040302-8

Permit # 06-00070-W

Project: POMPANO BEACH PWS

**PROJECT
SITE**





Pompano Beach Service Area



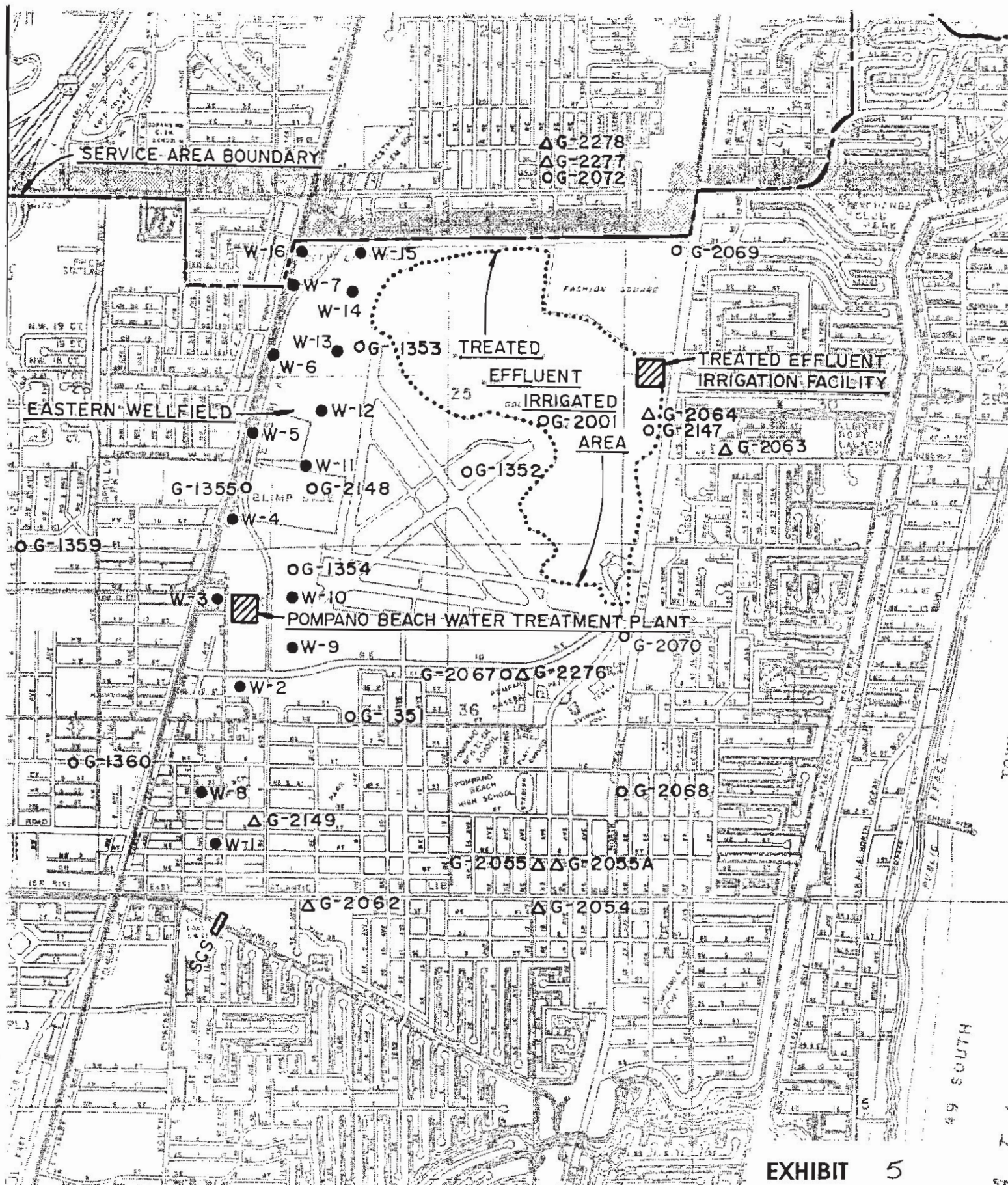


TABLE - A
Description Of Wells.

Application Number: 040302-8

Well ID	2622	2623	2624	2625	2626	2627
Name	2	3	4	5	6	7
Map Designator	2	3	4	5	6	7
FLUWID Number						
Well Field	Eastern Wellfield	Eastern Wellfield	Eastern Wellfield	Eastern Wellfield	Eastern Wellfield	Eastern Wellfield
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	16	16	16	16	14	16
Total Depth(feet)	136	107	140	108	156	90
Cased Depth(feet)	0	0	0	0	100	90
Facility Elev. (ft. NGVD)						
Screened Interval						
From	0	0	0	0	0	0
To	0	0	0	0	0	0
Pumped Or Flowing	P	P	P	P	P	P
Pump Type	turbine	turbine	turbine	turbine	turbine	turbine
Pump Int. Elev. Feet (NGVD)						
Feet (BLS)	0	0	0	0	0	0
Pump Capacity(GPM)	1500	1500	1800	1500	2200	1500
Year Drilled	1952	1950	1955	1958	1958	1960
Planar Location						
Source	Migrate	Migrate	Migrate	Migrate	Migrate	Migrate
Feet East	944389	944009	944235	944534	944841	946078
Feet North	694082	695366	696635	697956	699103	700030
Accounting Method	unspecified	unspecified	unspecified	unspecified	unspecified	unspecified
Use Status	Primary	Primary	Primary	Primary	Primary	Primary
Water Use Type	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply
Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer

TABLE - A
Description Of Wells.

Application Number: 040302-8

Well ID	2628	2629	2630	2631	2632	2633
Name	8	9	10	11	12	13
Map Designator	8	9	10	11	12	13
FLUWID Number						
Well Field	Eastern Wellfield	Eastern Wellfield	Eastern Wellfield	Eastern Wellfield	Eastern Wellfield	Eastern Wellfield
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	16	16	16	16	16	16
Total Depth(feet)	90	131	113	127	123	115
Cased Depth(feet)	90	97	93	88	90	115
Facility Elev. (ft. NGVD)						
Screened Interval						
From	0	0	0	0	0	0
To	0	0	0	0	0	0
Pumped Or Flowing	P	P	P	P	P	P
Pump Type	turbine	turbine	turbine	turbine	turbine	turbine
Pump Int. Elev. Feet (NGVD)						
Feet (BLS)	0	0	0	0	0	0
Pump Capacity(GPM)	1500	1500	1800	1500	1500	1800
Year Drilled	1961	1963	1961	1964	1967	1968
Planar Location						
Source	Migrate	Migrate	Migrate	Migrate	Migrate	Migrate
Feet East	943783	945193	945174	945316	945607	945848
Feet North	692534	694727	695455	697455	698264	699132
Accounting Method	unspecified	unspecified	unspecified	unspecified	unspecified	unspecified
Use Status	Primary	Primary	Primary	Primary	Primary	Primary
Water Use Type	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply
Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer

TABLE - A
Description Of Wells.

Application Number: 040302-8

Well ID	2634	2635	2636	2637	2638	2639
Name	14	15	16	17	18	19
Map Designator	14	15	16	17	18	19
FLUWID Number						
Well Field	Eastern Wellfield	Eastern Wellfield	Eastern Wellfield	Eastern Wellfield	Western Wellfield(Palm-aire)	Western Wellfield(Palm-aire)
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	16	18	18	16	16	16
Total Depth(feet)	114	140	130	150	130	158
Cased Depth(feet)	114	115	113.5	76	72	78
Facility Elev. (ft. NGVD)						
Screened Interval	0	0	0	0	0	0
From						
To	0	0	0	0	0	0
Pumped Or Flowing	P	P	P	P	P	P
Pump Type	turbine	turbine	turbine	turbine	turbine	turbine
Pump Int. Elev. Feet (NGVD)						
Feet (BLS)	0	0	0	0	0	0
Pump Capacity(GPM)	1500	2000	2000	2400	2400	2100
Year Drilled	1969	1972	1972	1984	1984	1984
Planar Location						
Source	Migrate	Migrate	Migrate	Migrate	Migrate	Migrate
Feet East	946090	946212	945289	926558	926899	927255
Feet North	700068	700643	700613	690628	691010	691456
Accounting Method	unspecified	unspecified	unspecified	unspecified	unspecified	unspecified
Use Status	Primary	Primary	Primary	Primary	Primary	Primary
Water Use Type	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply
Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer

TABLE - A
Description Of Wells.

Application Number: 040302-8

Well ID Name	2640	2641	2642	164567	164568	164569
Map Designator	20	21	22	23	24	25
FLUWID Number	20	21	22	23	24	25
Well Field	Western Wellfield(Palm-aire)	Western Wellfield(Palm-aire)	Western Wellfield(Palm-aire)	Western Wellfield(Palm-aire)	Western Wellfield(Palm-aire)	Western Wellfield(Palm-aire)
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	16	16	16	16	16	16
Total Depth(feet)	154	153	153	153	153	153
Cased Depth(feet)	80	80	79	80	80	80
Facility Elev. (ft. NGVD)						
Screened Interval From	0	0	0			
To	0	0	0			
Pumped Or Flowing	P	P	P	P	P	P
Pump Type	turbine	turbine	turbine	turbine	turbine	turbine
Pump Int. Elev. Feet (NGVD)						
Feet (BLS)	0	0	0	0	0	0
Pump Capacity(GPM)	2100	1600	2100	2100	2100	2100
Year Drilled	1984	1984	1984			
Planar Location Source	Migrate	Migrate	Migrate	Migrate	Migrate	Migrate
Feet East	928822	928065	927928	929216	928329	928140
Feet North	691954	691418	690859	690308	690289	689250
Accounting Method	unspecified	unspecified	unspecified	unspecified	unspecified	unspecified
Use Status	Primary	Primary	Primary	Primary	Primary	Primary
Water Use Type	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply
Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer

TABLE - A
Description Of Wells.

Application Number: 040302-8

Well ID	177414	136299	136193	136303	136302	136307
Name	26	SW1-S	SW1D	SW2-S	SW2-D	SW4-S
Map Designator	26	MW-1	MW-1	MW-2	MW-2	MW-4
FLUWID Number						
Well Field	Western Wellfield(Palm-aire)					
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	16					
Total Depth(feet)	153	120	200	120	180	120
Cased Depth(feet)	80					
Facility Elev. (ft. NGVD)						
Screened Interval From To						
Pumped Or Flowing	P					
Pump Type	turbine					
Pump Int. Elev. Feet (NGVD)		none	none	none	none	none
Feet (BLS)	0					
Pump Capacity(GPM)	2100	0	0	0	0	0
Year Drilled						
Planar Location Source	Migrate					
Feet East	928140	947553.43	947553.43	946184.35	946184.35	949589.5
Feet North	688023	698253.31	698253.98	693443.98	693443.98	700570.22
Accounting Method	unspecified	none	none	none	none	none
Use Status	Primary	Monitor	Monitor	Monitor	Monitor	Monitor
Water Use Type	Public Water Supply	Monitor	Monitor	Monitor	Monitor	Monitor
Aquifer	Biscayne Aquifer	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System

Exhibit No: 6

TABLE - A
Description Of Wells.

Application Number: 040302-8

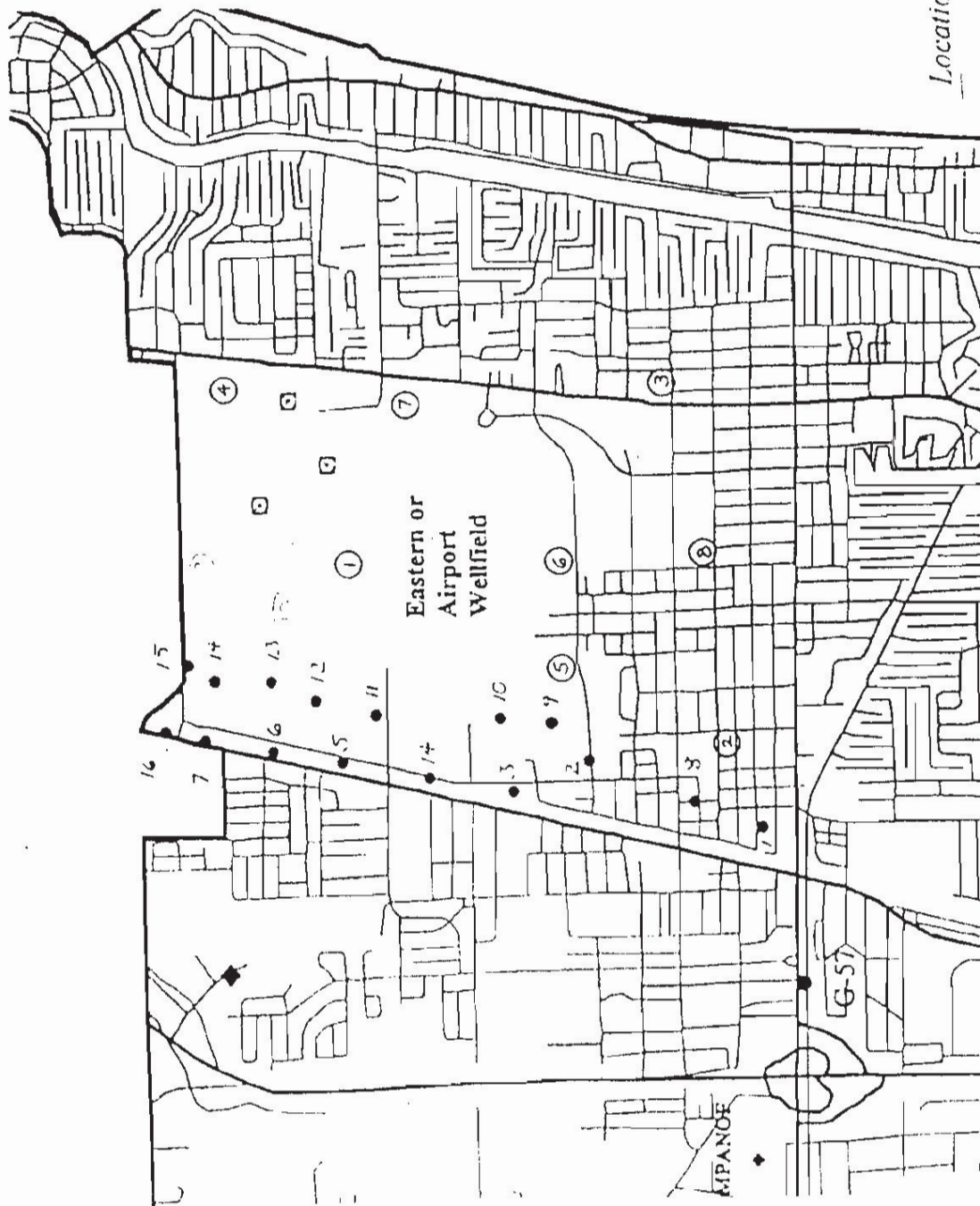
Well ID	136306	136325	136308	136327	136326	136333
Name	SW14-D	SW15-S	SW15-D	SW16-S	SW16-D	SW19-S
Map Designator	MW-4	MW-5	MW-5	MW-6	MW-6	MW-9
FLUWID Number						
Well Field						
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)						
Total Depth(feet)	200	120	200	120	200	130
Cased Depth(feet)						
Facility Elev. (ft. NGVD)						
Screened Interval From To						
Pumped Or Flowing						
Pump Type	none	none	none	none	none	none
Pump Int. Elev. Feet (NGVD)						
Feet (BLS)						
Pump Capacity(GPM)	0	0	0	0	0	0
Year Drilled						
Planar Location Source						
Feet East	949589.5	946184.35	946184.35	947869.37	947869.37	
Feet North	700570.22	694742.85	694742.85	695023.69	695023.69	
Accounting Method	none	none	none	none	none	none
Use Status	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Water Use Type	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Aquifer	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System

Exhibit No: 6

TABLE - A
Description Of Wells.

Application Number: 040302-8

Well ID	136332	136301	136300	136319	136320
Name	SW19-D	SW10-S	SW10-D	PRW1	PRW8
Map Designator	MW-9	MW-10	MW-10	PRW1	PRW8
FLUWID Number					
Well Field					
Existing/Proposed	E	E	E	E	E
Well Diameter(Inches)					
Total Depth(feet)	140	130	140		
Cased Depth(feet)					
Facility Elev. (ft. NGVD)					
Screened Interval					
From					
To					
Pumped Or Flowing					
Pump Type	none	none	none	none	none
Pump Int. Elev. Feet (NGVD)					
Feet (BLS)					
Pump Capacity(GPM)	0	0	0	0	0
Year Drilled					
Planar Location					
Source					
Feet East					
Feet North					
Accounting Method	none	none	none	none	none
Use Status	Monitor	Monitor	Monitor	Monitor	Monitor
Water Use Type	Monitor	Monitor	Monitor	Monitor	Monitor
Aquifer	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System



LEGEND

- Production Well
- ③ Monitor Well

Location of Saltwater Monitoring Wells

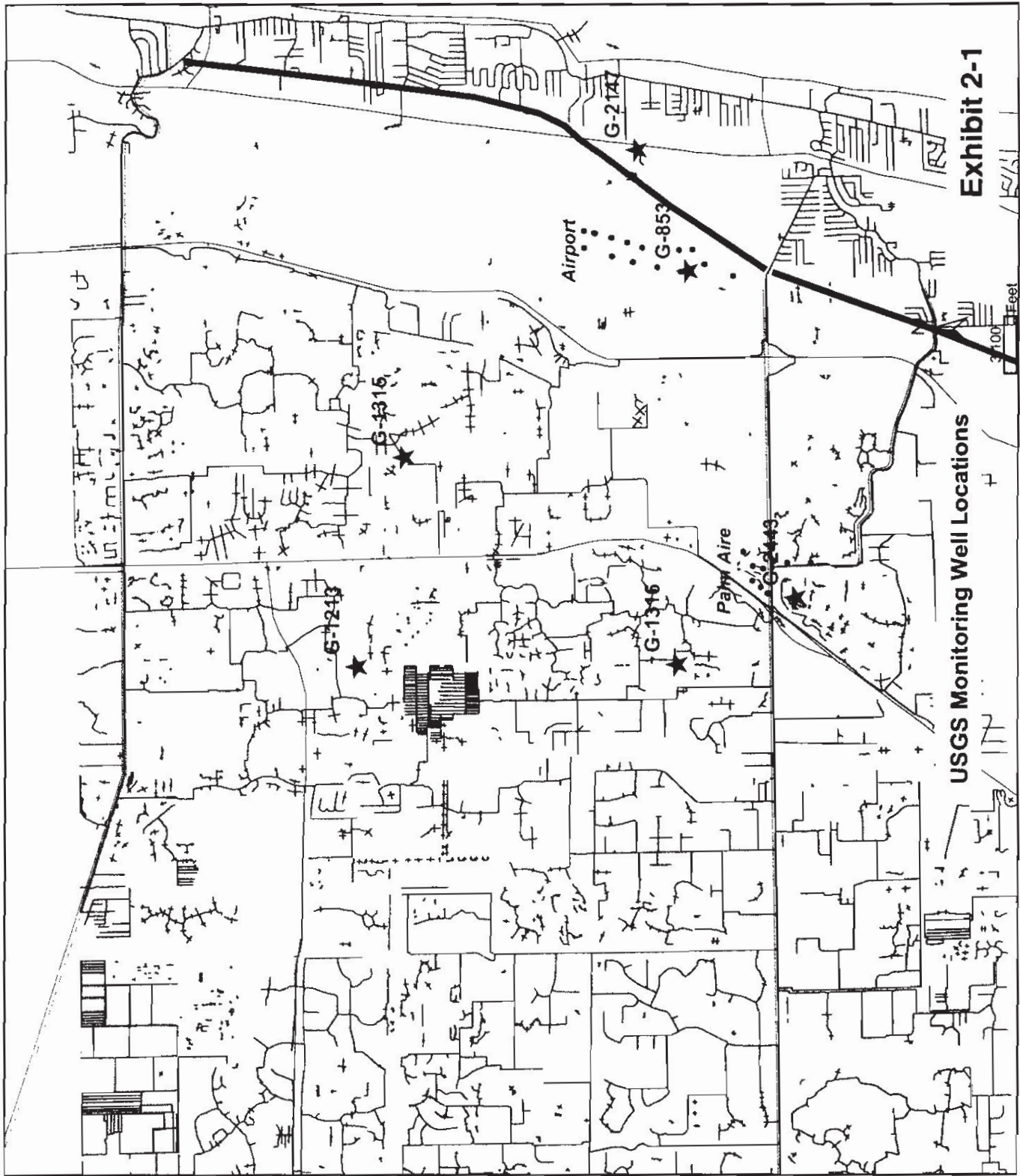
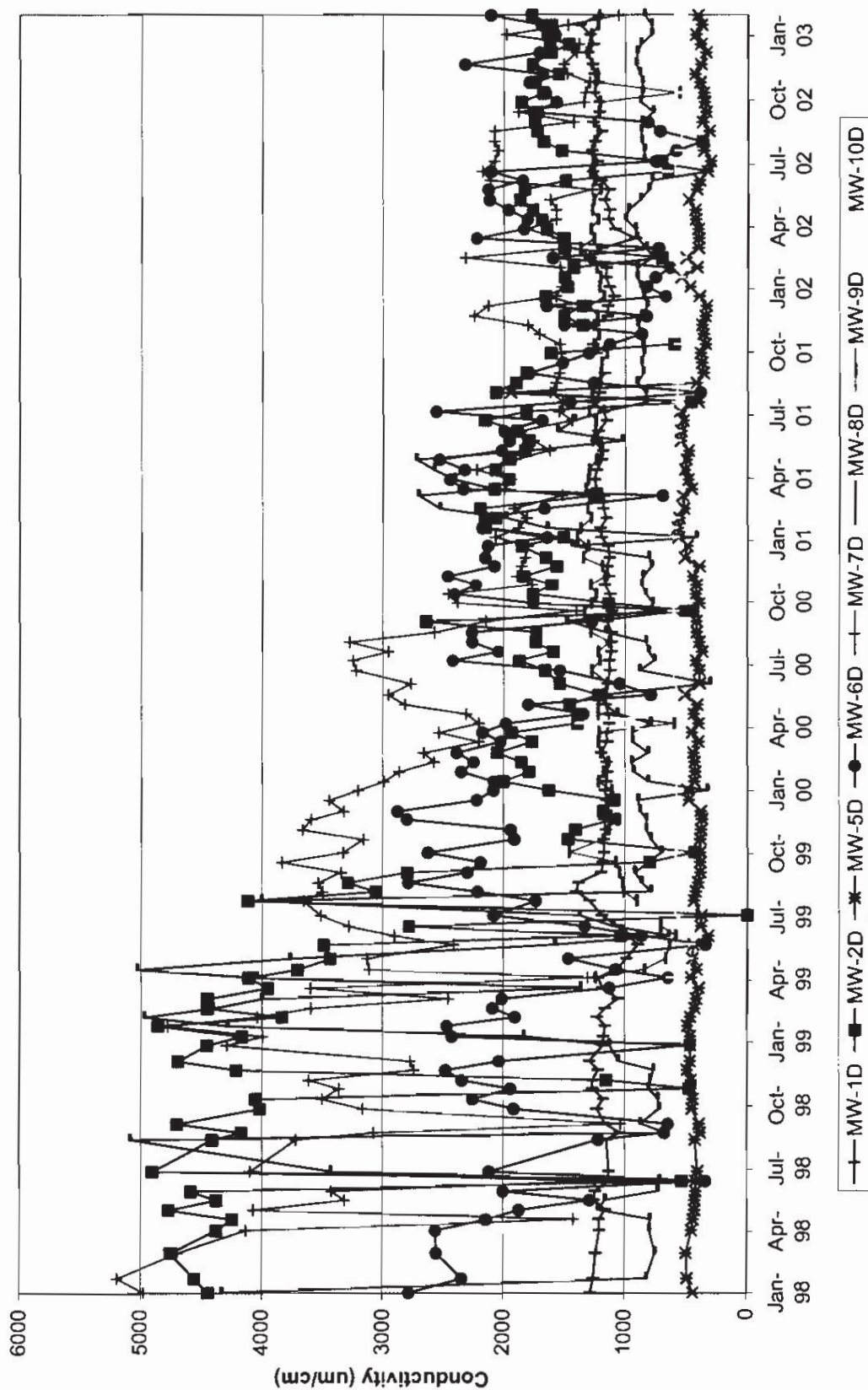


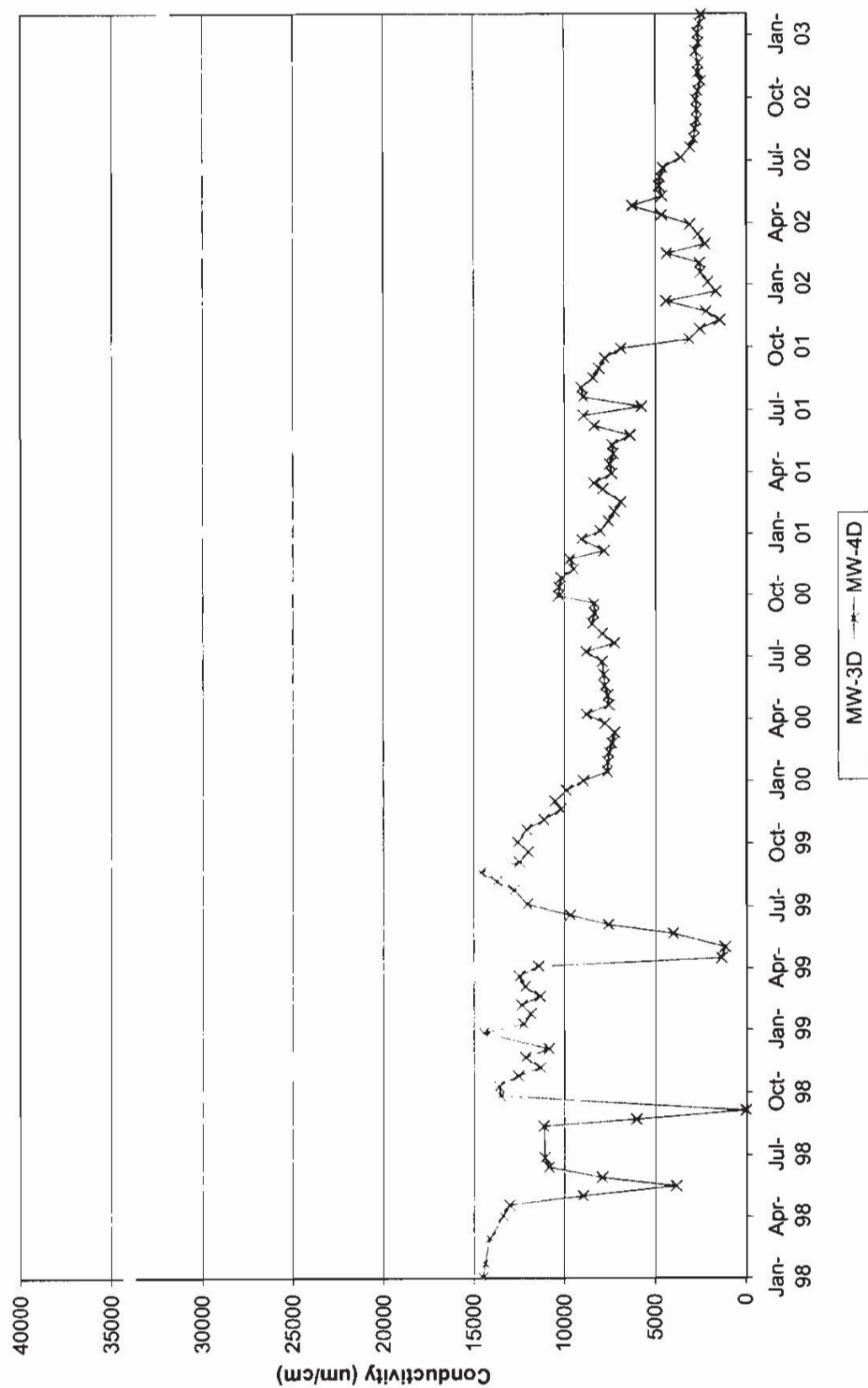
Exhibit 2-1

USGS Monitoring Well Locations

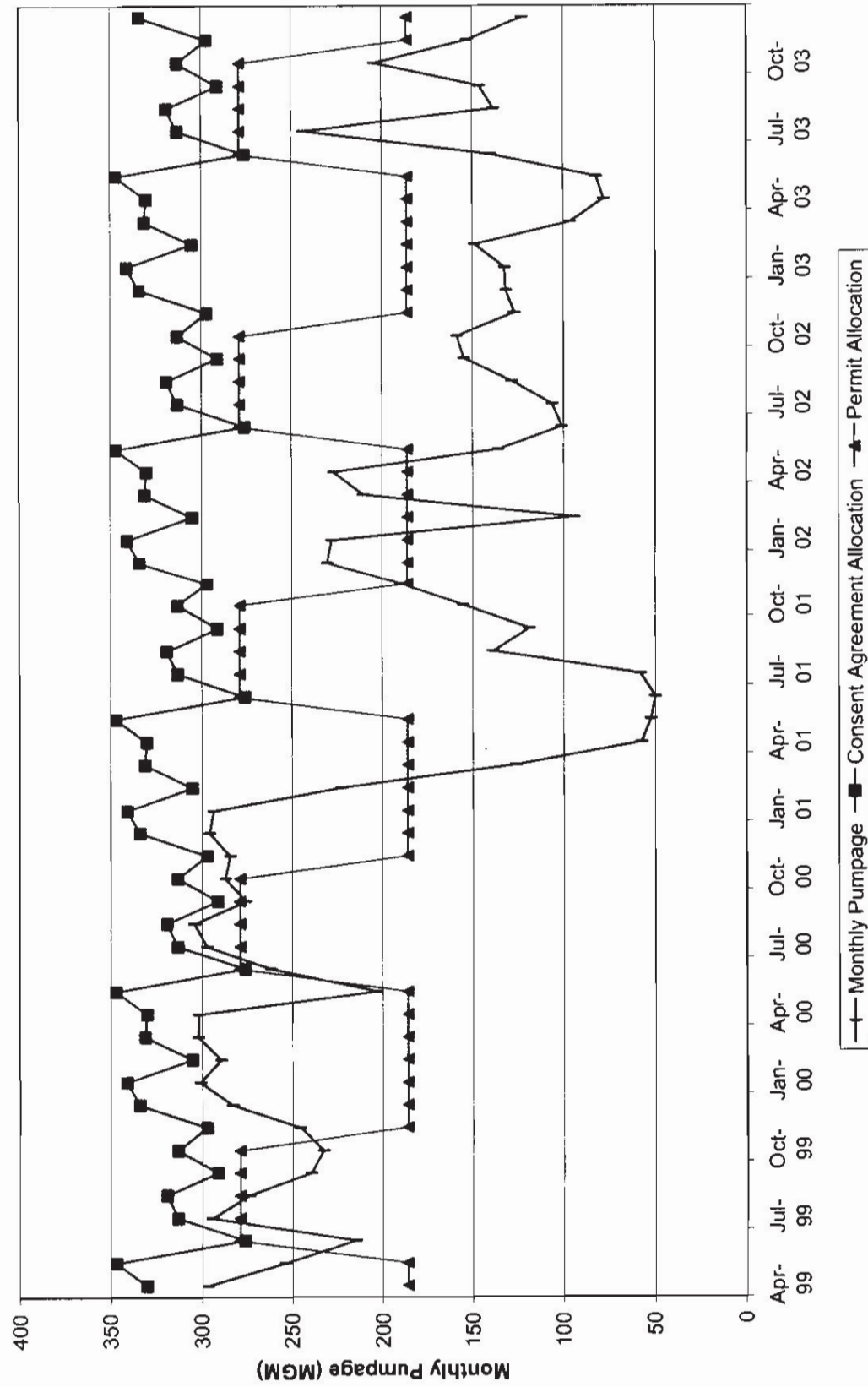
Pompano Beach Airport Wellfield Monitoring Wells



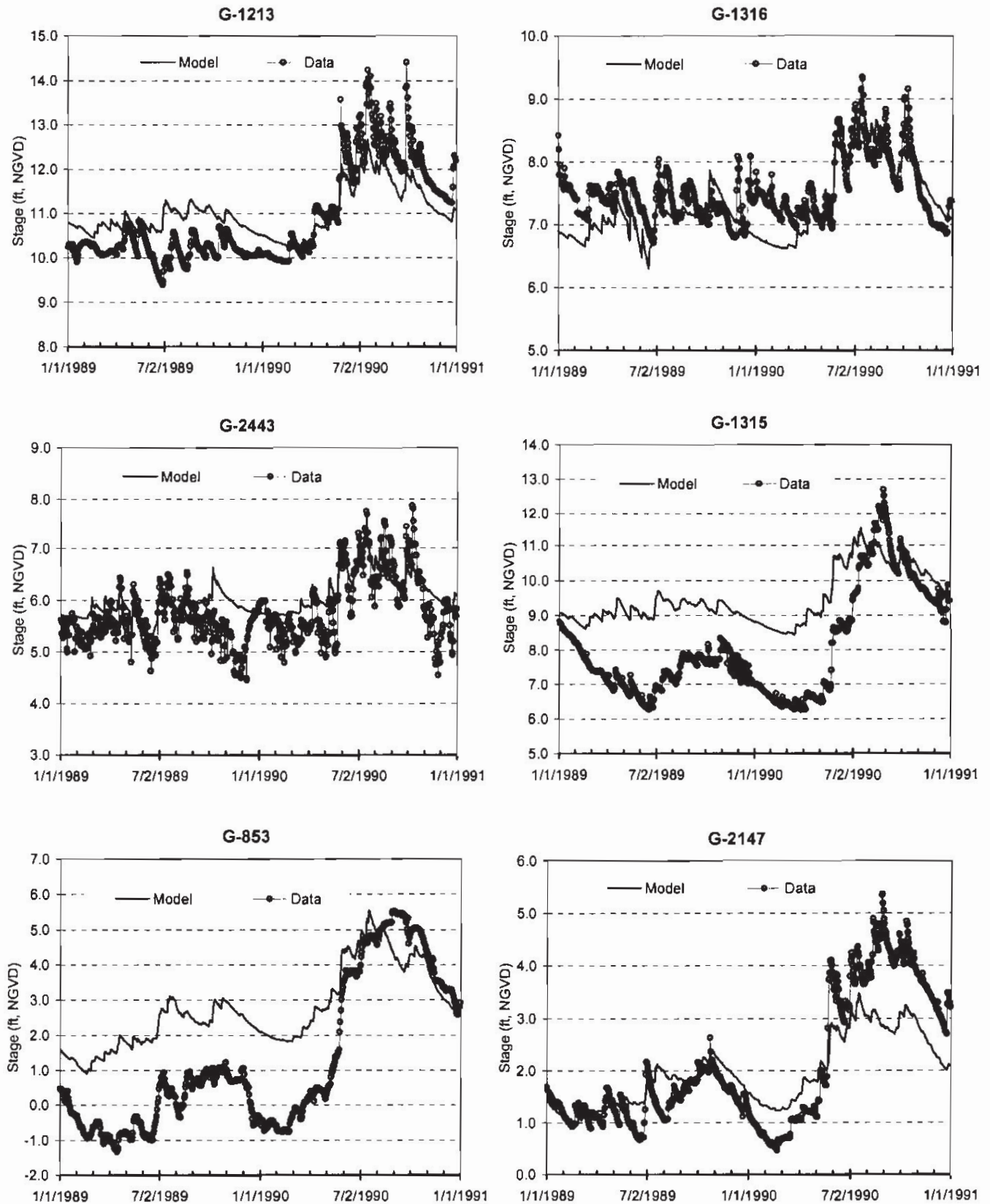
Pompano Beach Airport Wellfield Monitoring Wells



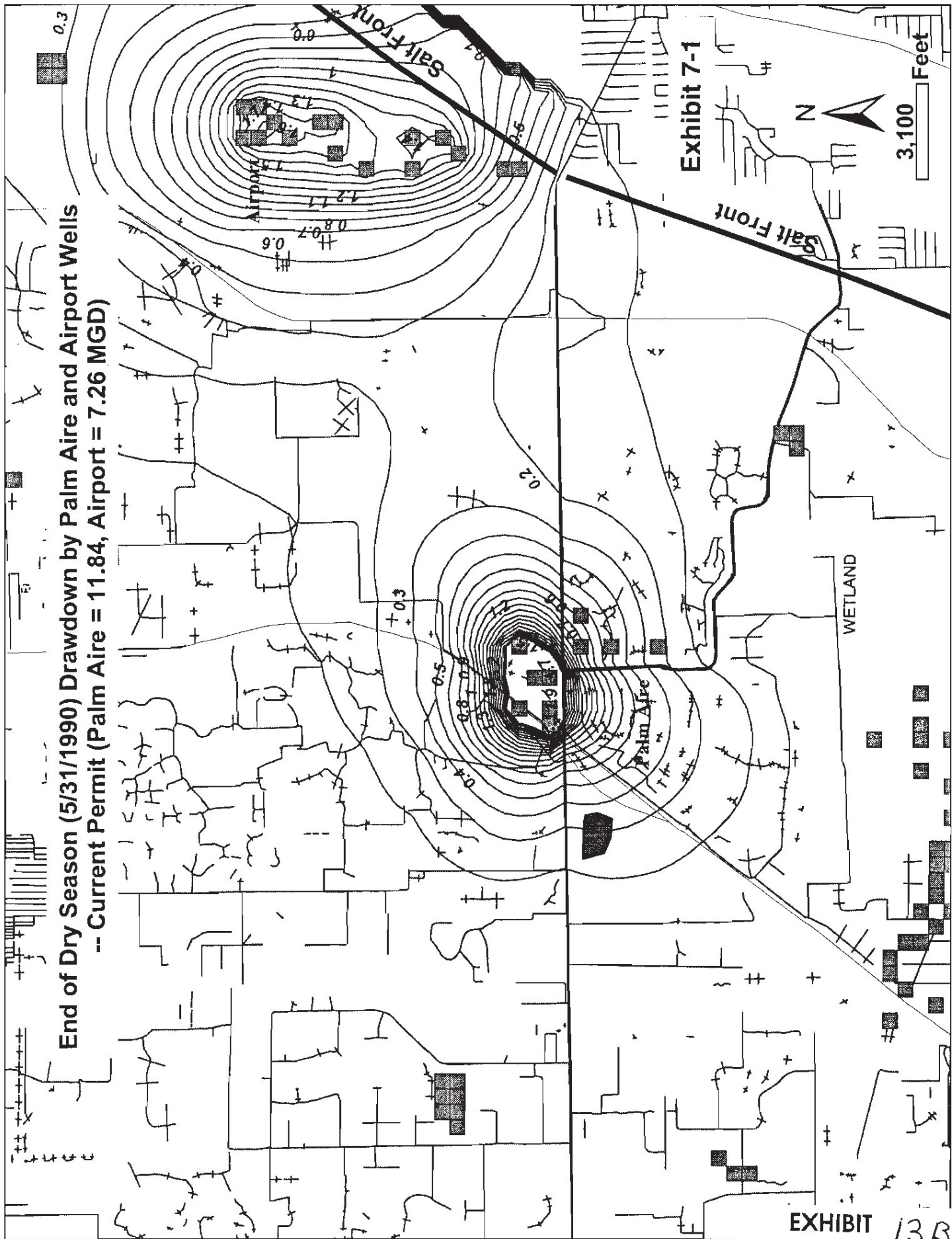
Pompano Beach Airport Wellfield Pumpage



Model Calibration Plots for Pompano Beach Wellfields



-- Current Permit (Palm Aire = 11.84, Airport = 7.26 MGD)



End of Dry Season (5/31/1990) Drawdown by Palm Aire and Airport Wells
-- 2009 Demand (Palm Aire = 16.10, Airport = 7.26 MGD)

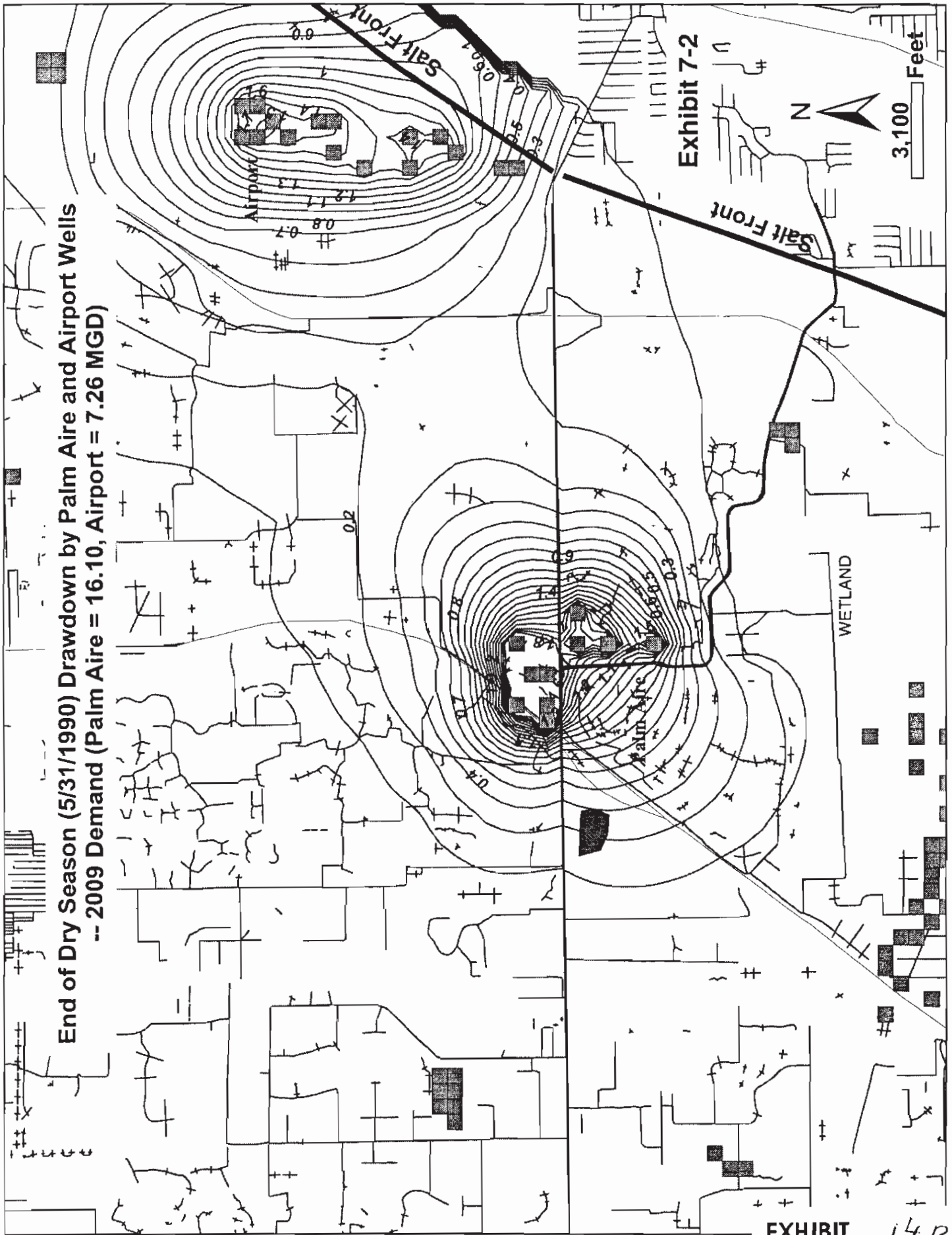
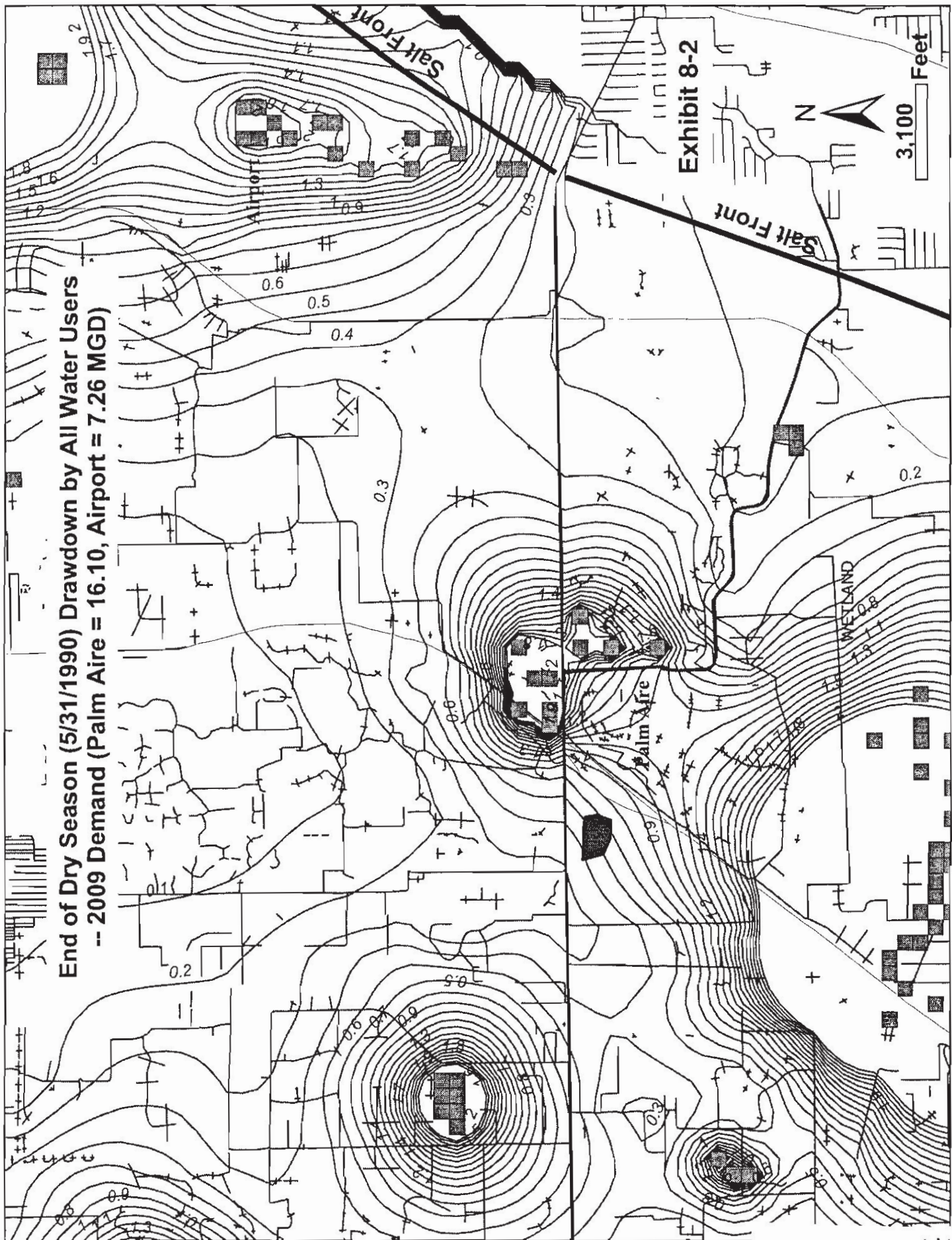


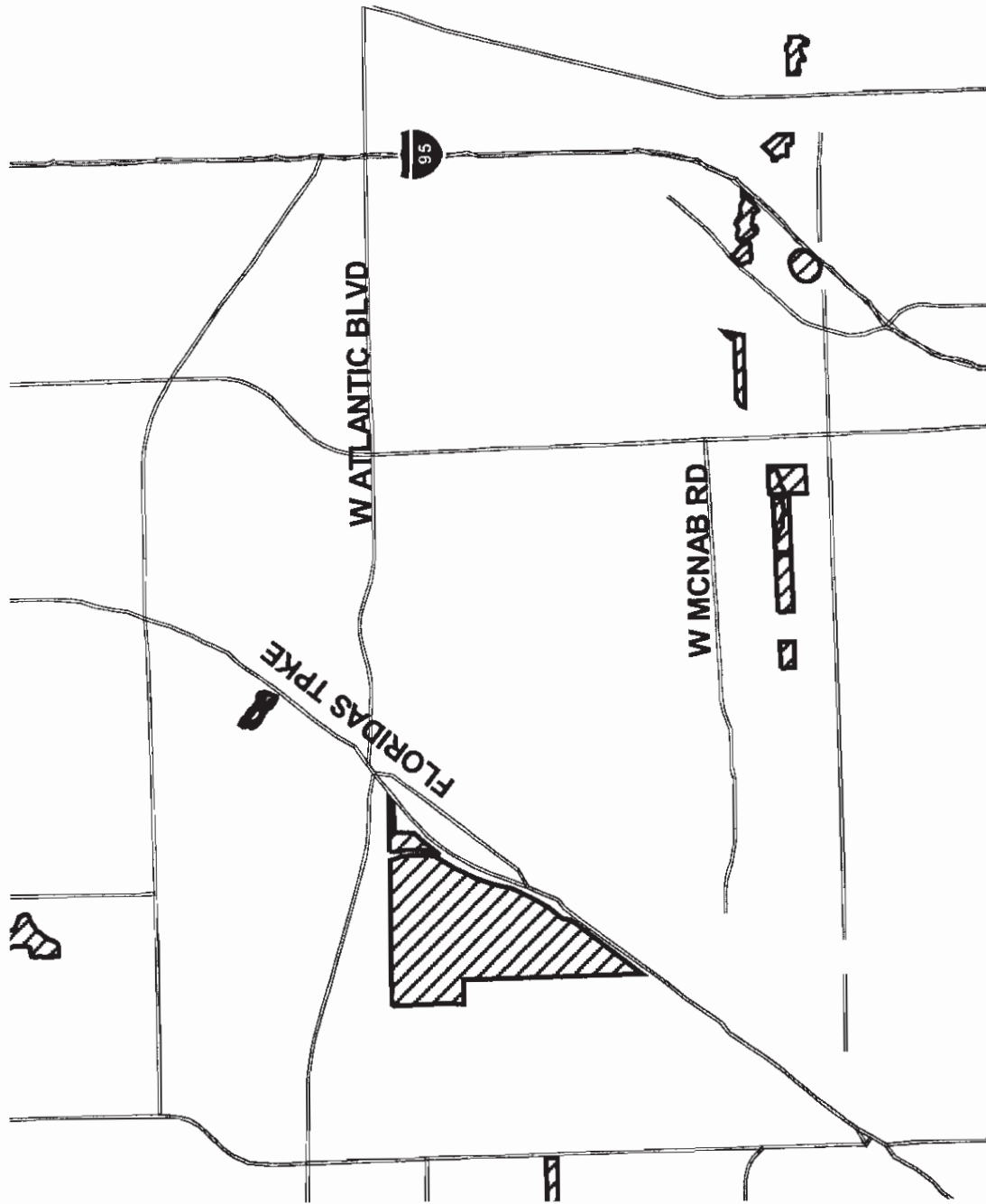
Exhibit 7-2

EXHIBIT

14B



Western Wellfield (Palm Aire) Wetlands



EXHIBIT

1 0 1 2 Miles

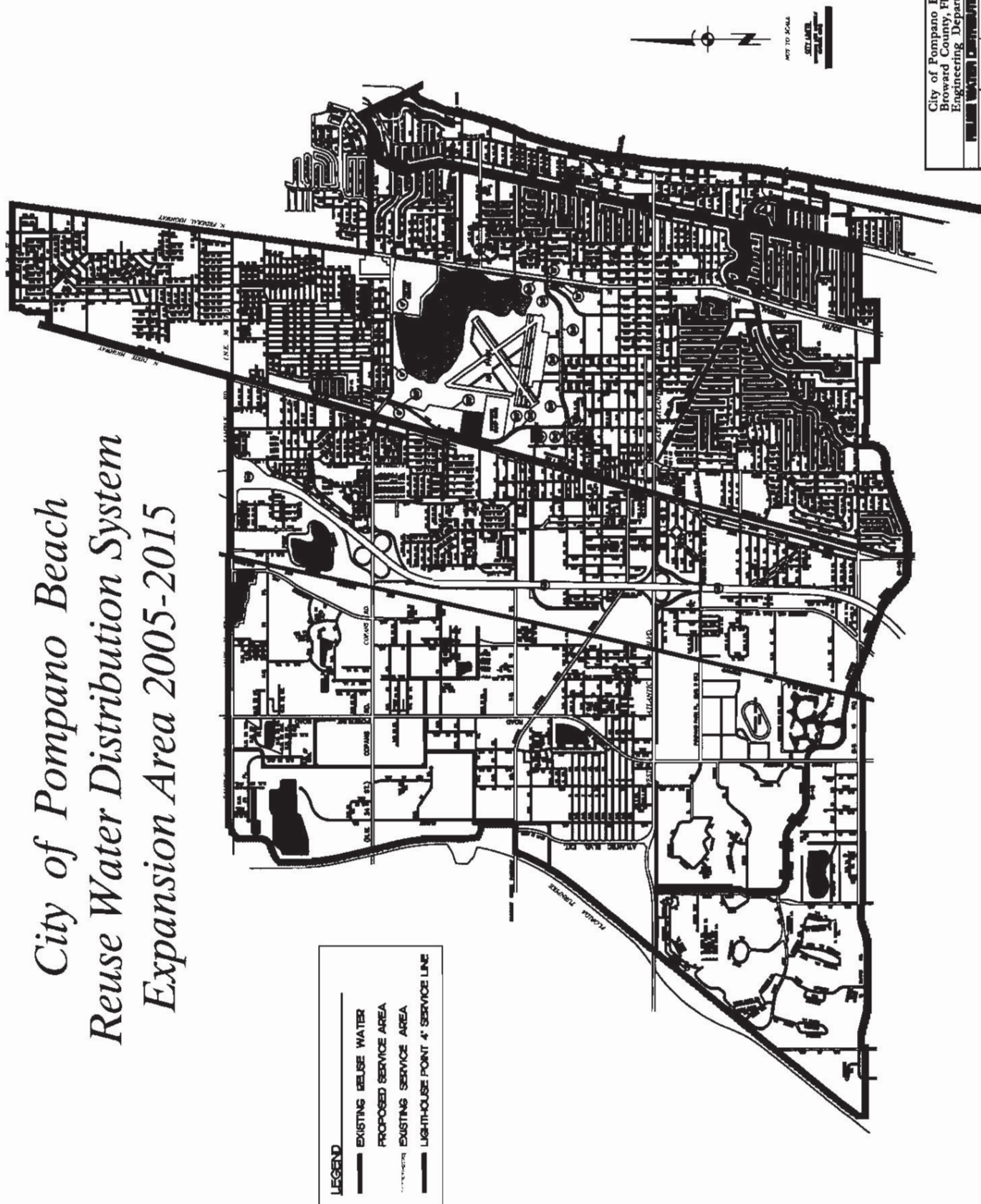
14 D

Monthly Recharges from Canals and at the Fern Forest (MGD)

Year	Month	Current Permit			2009 Demand			2025 Demand		
		Fern Forest	C-14	Brd Canals	Fern Forest	C-14	Brd Canals	Fern Forest	C-14	Brd Canals
1989	1	0.7	55.7	34.2	0.7	59.6	34.2	0.7	63.7	34.3
1989	2	0.7	64.2	38.6	0.7	68.2	38.6	0.7	72.4	38.8
1989	3	0.6	51.0	31.8	0.6	54.9	31.8	0.6	59.1	32.0
1989	4	0.6	36.1	31.6	0.6	40.4	31.6	0.6	44.9	31.8
1989	5	0.7	21.4	35.9	0.7	25.8	35.9	0.7	30.3	36.1
1989	6	0.8	13.3	36.3	0.8	17.3	36.3	0.8	21.5	36.5
1989	7	0.6	-0.5	21.0	0.6	3.2	21.0	0.6	7.2	21.2
1989	8	0.6	30.7	21.8	0.6	34.4	21.9	0.7	38.3	21.9
1989	9	0.6	31.7	24.6	0.6	36.3	24.7	0.6	39.9	24.7
1989	10	0.5	20.8	25.4	0.6	24.6	25.4	0.6	28.1	25.5
1989	11	0.7	41.1	32.5	0.7	45.2	32.5	0.7	49.7	32.6
1989	12	0.7	54.6	36.4	0.7	58.7	36.5	0.7	62.7	36.5
1990	1	0.7	59.5	38.1	0.7	63.7	38.2	0.7	67.8	38.3
1990	2	0.7	62.1	40.9	0.7	66.1	40.9	0.7	70.3	41.0
1990	3	0.7	47.6	37.1	0.7	51.3	37.2	0.7	55.6	37.3
1990	4	0.6	33.5	31.9	0.6	37.7	32.0	0.7	42.3	32.1
1990	5	0.6	-4.3	19.0	0.6	0.0	19.0	0.6	4.6	19.2
1990	6	0.5	0.9	4.5	0.5	5.0	4.6	0.5	9.1	4.7
1990	7	0.3	-14.3	-15.3	0.3	-10.3	-15.2	0.3	-6.6	-15.1
1990	8	0.4	-18.4	-11.6	0.4	-14.7	-11.6	0.4	-10.8	-11.5
1990	9	0.5	5.2	1.9	0.5	9.2	1.8	0.5	12.9	2.0
1990	10	0.5	4.6	4.2	0.5	7.6	4.0	0.5	11.4	4.2
1990	11	0.6	40.5	22.1	0.6	43.7	22.0	0.6	48.1	22.2
1990	12	0.6	47.4	27.8	0.6	51.3	27.8	0.6	55.6	28.0
Dry 6/89-5/90		0.65	32.5	30.4	0.66	36.5	30.5	0.67	40.7	30.6
Increase from Current in Dry Year					0.00	4.05	0.05	0.01	8.18	0.17

EXHIBIT 15

City of Pompano Beach Reuse Water Distribution System Expansion Area 2005-2015



City of Pompano Beach
Broward County, Florida
Engineering Department

Drawn By: S. Serrano | Checked By: R. Brown | Date: 6/6/05

Expansion Area 2005-2015

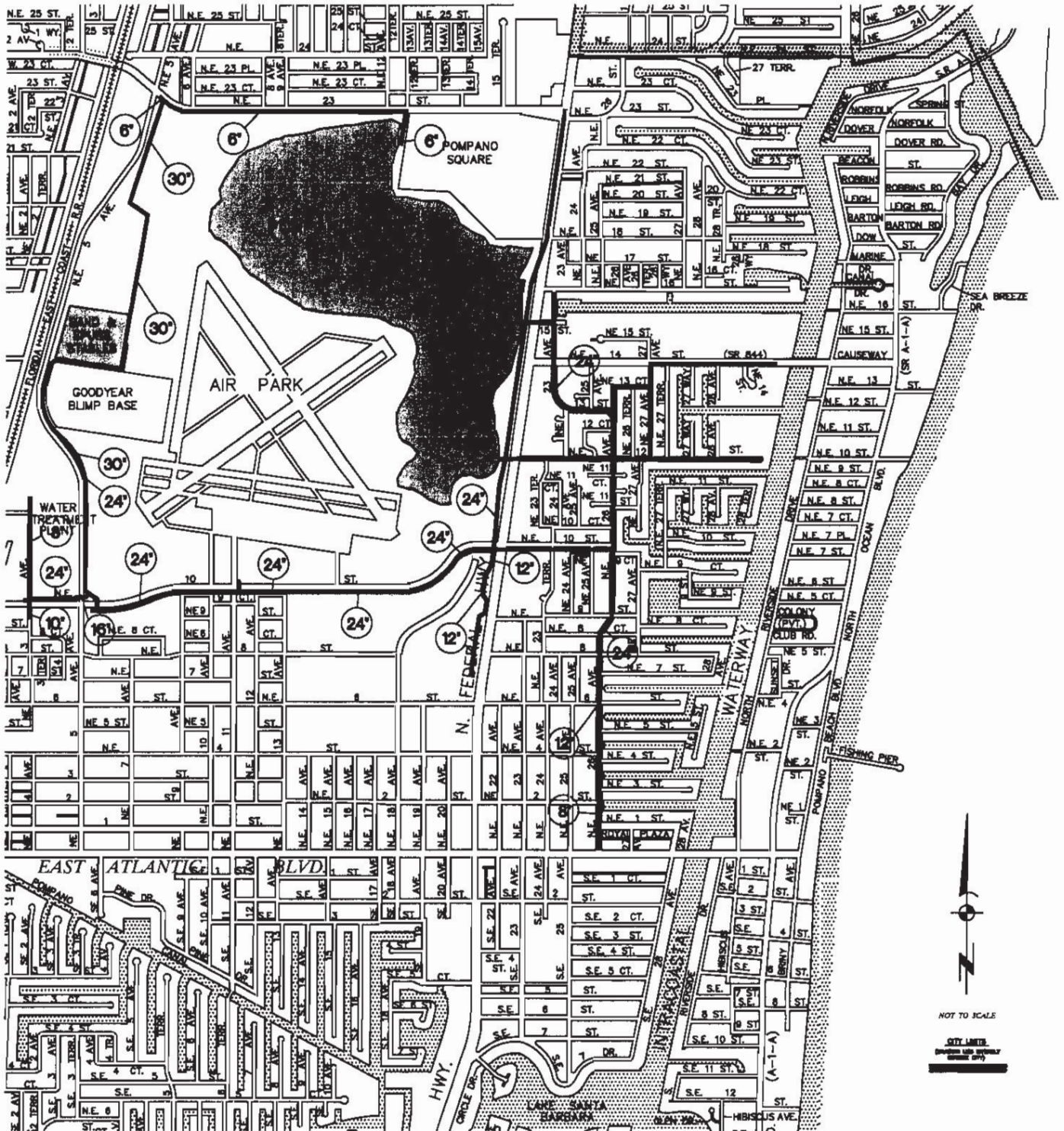


EXHIBIT 16B

Public Water Supply Demands

Application Number: 040302-8

Service Area: POMPANO BEACH
 Treatment Name: Membrane treatment
 Standard PCUR: 199
 System Efficiency: 100%
 Standard Max Monthly Ratio: 1.13
 Standard Max Day Ratio:

Past Water Use (Table-F):

Year	Population	PCUR	Average Use (MGD)	Max Day Use (MGD)	Ratio	Average Monthly Use(MG)	Max Monthly Use (MG)	Ratio	Basis For Demand	Basis For Ratio
1994	73,642	214	15.73			478.19	543.00	1.14		
1995	73,950	220	16.27			494.61	556.00	1.12		
1996	75,326	232	17.50			532.00	616.00	1.16		
1997	76,702	220	16.88			513.15	573.00	1.12		
1998	78,078	207	16.19			492.18	562.00	1.14		
1999	79,454	220	17.46			530.78	617.00	1.16		
2000	80,830	234	18.88			573.95	640.00	1.12		
2001	82,502	197	16.27			494.61	567.00	1.15		
2002	84,175	214	18.01			547.50	623.00	1.14	Y	Y
2003	85,847	200	17.20			522.88	584.00	1.12	Y	Y
2004	87,520	182	15.94			484.58	544.00	1.12	Y	Y

Projected Water Use (Table-G):

Year	Population	PCUR	Recommended Average (MGD)	Recommended Max Day (MGD)	Ratio	Average Monthly Use(MG)	Rec Max Monthly (MG)	Ratio	Basis for Allocation
2005	89,192	199	17.75			539.58	609.7205	1.13	
2006	90,812	199	18.07			549.38	620.7956	1.13	
2007	92,433	199	18.39			559.18	631.8776	1.13	
2008	94,053	199	18.72			568.98	642.9508	1.13	
2009	95,674	199	19.04			578.79	654.0321	1.13	
2010	97,294	199	19.36			588.59	665.1065	1.13	Y
2015	101,579	199	20.21			614.51	694.3989	1.13	
2020	109,621	199	21.81			663.16	749.3744	1.13	
2025	116,334	199	23.15			703.77	795.2648	1.13	

Exhibit No:17

Requirement by Limiting Condition Report

App No: 040302-8

Expiration Date: 14-SEP-2025

Permit No: 06-00070-W

Issued Date:

Project Name: POMPANO BEACH PWS

Limiting Condition No: 17		Limiting Condition Code: WUSTD021-8					
Entity	Entity ID	Requirement	Due Date	Start Date	End Date	Col Freq	Sub Freq
WELL	2622	Pump Calibration Report	30-SEP-2010	01-OCT-2005	31-AUG-2025	Every Five Years	Every Five Years
WELL	2623	Pump Calibration Report	30-SEP-2010	01-OCT-2005	31-AUG-2025	Every Five Years	Every Five Years
WELL	2624	Pump Calibration Report	30-SEP-2010	01-OCT-2005	31-AUG-2025	Every Five Years	Every Five Years
WELL	2626	Pump Calibration Report	30-SEP-2010	01-OCT-2005	31-AUG-2025	Every Five Years	Every Five Years
WELL	2628	Pump Calibration Report	30-SEP-2010	01-OCT-2005	31-AUG-2025	Every Five Years	Every Five Years
WELL	2630	Pump Calibration Report	30-SEP-2010	01-OCT-2005	31-AUG-2025	Every Five Years	Every Five Years
WELL	2632	Pump Calibration Report	30-SEP-2010	01-OCT-2005	31-AUG-2025	Every Five Years	Every Five Years
WELL	2634	Pump Calibration Report	30-SEP-2010	01-OCT-2005	31-AUG-2025	Every Five Years	Every Five Years
WELL	2636	Pump Calibration Report	30-SEP-2010	01-OCT-2005	31-AUG-2025	Every Five Years	Every Five Years
WELL	164569	Pump Calibration Report	30-SEP-2010	01-OCT-2005	31-AUG-2025	Every Five Years	Every Five Years
WELL	164568	Pump Calibration Report	30-SEP-2010	01-OCT-2005	31-AUG-2025	Every Five Years	Every Five Years
WELL	164567	Pump Calibration Report	30-SEP-2010	01-OCT-2005	31-AUG-2025	Every Five Years	Every Five Years
WELL	2642	Pump Calibration Report	30-SEP-2010	01-OCT-2005	31-AUG-2025	Every Five Years	Every Five Years
WELL	2641	Pump Calibration Report	30-SEP-2010	01-OCT-2005	31-AUG-2025	Every Five Years	Every Five Years
WELL	2640	Pump Calibration Report	30-SEP-2010	01-OCT-2005	31-AUG-2025	Every Five Years	Every Five Years
WELL	2639	Pump Calibration Report	30-SEP-2010	01-OCT-2005	31-AUG-2025	Every Five Years	Every Five Years
WELL	2638	Pump Calibration Report	30-SEP-2010	01-OCT-2005	31-AUG-2025	Every Five Years	Every Five Years
WELL	2637	Pump Calibration Report	30-SEP-2010	01-OCT-2005	31-AUG-2025	Every Five Years	Every Five Years
WELL	177414	Pump Calibration Report	30-SEP-2010	01-OCT-2005	31-AUG-2025	Every Five Years	Every Five Years
WELL	2635	Pump Calibration Report	30-SEP-2010	01-OCT-2005	31-AUG-2025	Every Five Years	Every Five Years
WELL	2633	Pump Calibration Report	30-SEP-2010	01-OCT-2005	31-AUG-2025	Every Five Years	Every Five Years
WELL	2631	Pump Calibration Report	30-SEP-2010	01-OCT-2005	31-AUG-2025	Every Five Years	Every Five Years
WELL	2629	Pump Calibration Report	30-SEP-2010	01-OCT-2005	31-AUG-2025	Every Five Years	Every Five Years
WELL	2627	Pump Calibration Report	30-SEP-2010	01-OCT-2005	31-AUG-2025	Every Five Years	Every Five Years
WELL	2625	Pump Calibration Report	30-SEP-2010	01-OCT-2005	31-AUG-2025	Every Five Years	Every Five Years

Limiting Condition No: 18

Limiting Condition Code: WUSTD022-1

Exhibit No: 18

Requirement by Limiting Condition Report

Entity	Entity ID	Requirement	Due Date	Start Date	End Date	Col Freq	Sub Freq
WELL	2622	Water Use Report	31-DEC-2005	01-OCT-2005	31-AUG-2025	Monthly	Quarterly
WELL	177414	Water Use Report	31-DEC-2005	01-OCT-2005	31-AUG-2025	Monthly	Quarterly
WELL	164569	Water Use Report	31-DEC-2005	01-OCT-2005	31-AUG-2025	Monthly	Quarterly
WELL	164568	Water Use Report	31-DEC-2005	01-OCT-2005	31-AUG-2025	Monthly	Quarterly
WELL	164567	Water Use Report	31-DEC-2005	01-OCT-2005	31-AUG-2025	Monthly	Quarterly
WELL	2642	Water Use Report	31-DEC-2005	01-OCT-2005	31-AUG-2025	Monthly	Quarterly
WELL	2641	Water Use Report	31-DEC-2005	01-OCT-2005	31-AUG-2025	Monthly	Quarterly
WELL	2640	Water Use Report	31-DEC-2005	01-OCT-2005	31-AUG-2025	Monthly	Quarterly
WELL	2639	Water Use Report	31-DEC-2005	01-OCT-2005	31-AUG-2025	Monthly	Quarterly
WELL	2638	Water Use Report	31-DEC-2005	01-OCT-2005	31-AUG-2025	Monthly	Quarterly
WELL	2637	Water Use Report	31-DEC-2005	01-OCT-2005	31-AUG-2025	Monthly	Quarterly
WELL	2636	Water Use Report	31-DEC-2005	01-OCT-2005	31-AUG-2025	Monthly	Quarterly
WELL	2635	Water Use Report	31-DEC-2005	01-OCT-2005	31-AUG-2025	Monthly	Quarterly
WELL	2634	Water Use Report	31-DEC-2005	01-OCT-2005	31-AUG-2025	Monthly	Quarterly
WELL	2633	Water Use Report	31-DEC-2005	01-OCT-2005	31-AUG-2025	Monthly	Quarterly
WELL	2632	Water Use Report	31-DEC-2005	01-OCT-2005	31-AUG-2025	Monthly	Quarterly
WELL	2631	Water Use Report	31-DEC-2005	01-OCT-2005	31-AUG-2025	Monthly	Quarterly
WELL	2630	Water Use Report	31-DEC-2005	01-OCT-2005	31-AUG-2025	Monthly	Quarterly
WELL	2629	Water Use Report	31-DEC-2005	01-OCT-2005	31-AUG-2025	Monthly	Quarterly
WELL	2624	Water Use Report	31-DEC-2005	01-OCT-2005	31-AUG-2025	Monthly	Quarterly
WELL	2625	Water Use Report	31-DEC-2005	01-OCT-2005	31-AUG-2025	Monthly	Quarterly
WELL	2626	Water Use Report	31-DEC-2005	01-OCT-2005	31-AUG-2025	Monthly	Quarterly
WELL	2628	Water Use Report	31-DEC-2005	01-OCT-2005	31-AUG-2025	Monthly	Quarterly
WELL	2627	Water Use Report	31-DEC-2005	01-OCT-2005	31-AUG-2025	Monthly	Quarterly
WELL	2623	Water Use Report	31-DEC-2005	01-OCT-2005	31-AUG-2025	Monthly	Quarterly
Limiting Condition No: 21			Limiting Condition Code: WUPWS003-1				
Entity	Entity ID	Requirement	Due Date	Start Date	End Date	Col Freq	Sub Freq
PERMIT	06-00070-W	Unaccounted for Water Loss Report	30-SEP-2006	01-OCT-2005	31-AUG-2025	Monthly	Yearly
Limiting Condition No: 25			Limiting Condition Code: WURWF007-1				
Entity	Entity ID	Requirement	Due Date	Start Date	End Date	Col Freq	Sub Freq

Exhibit No: 18

Requirement by Limiting Condition Report

Entity	Entity ID	Requirement	Due Date	Start Date	End Date	Col Freq	Sub Freq
PERMIT	06-00070-W	Reuse Information Update	30-SEP-2006	01-OCT-2005	31-AUG-2025	Yearly	Yearly
Limiting Condition No: 26							
Limiting Condition Code: WUPWS008-2							
Entity	Entity ID	Requirement	Due Date	Start Date	End Date	Col Freq	Sub Freq
PERMIT	06-00070-W	Five-Year Water Use Compliance Report	30-SEP-2010	01-OCT-2005	31-AUG-2025	Every Five Years	Every Five Years
Limiting Condition No: 27							
Limiting Condition Code: WUPCM001-4							
Entity	Entity ID	Requirement	Due Date	Start Date	End Date	Col Freq	Sub Freq
WELL	136193	Water Quality Analysis	31-DEC-2005	01-OCT-2005	31-AUG-2025	Monthly	Quarterly
WELL	136299	Water Quality Analysis	31-DEC-2005	01-OCT-2005	31-AUG-2025	Monthly	Quarterly
WELL	136300	Water Quality Analysis	31-DEC-2005	01-OCT-2005	31-AUG-2025	Monthly	Quarterly
WELL	136301	Water Quality Analysis	31-DEC-2005	01-OCT-2005	31-AUG-2025	Monthly	Quarterly
WELL	136302	Water Quality Analysis	31-DEC-2005	01-OCT-2005	31-AUG-2025	Monthly	Quarterly
WELL	136303	Water Quality Analysis	31-DEC-2005	01-OCT-2005	31-AUG-2025	Monthly	Quarterly
WELL	136306	Water Quality Analysis	31-DEC-2005	01-OCT-2005	31-AUG-2025	Monthly	Quarterly
WELL	136307	Water Quality Analysis	31-DEC-2005	01-OCT-2005	31-AUG-2025	Monthly	Quarterly
WELL	136308	Water Quality Analysis	31-DEC-2005	01-OCT-2005	31-AUG-2025	Monthly	Quarterly
WELL	136319	Water Quality Analysis	31-DEC-2005	01-OCT-2005	31-AUG-2025	Monthly	Quarterly
WELL	136320	Water Quality Analysis	31-DEC-2005	01-OCT-2005	31-AUG-2025	Monthly	Quarterly
WELL	136325	Water Quality Analysis	31-DEC-2005	01-OCT-2005	31-AUG-2025	Monthly	Quarterly
WELL	136326	Water Quality Analysis	31-DEC-2005	01-OCT-2005	31-AUG-2025	Monthly	Quarterly
WELL	136327	Water Quality Analysis	31-DEC-2005	01-OCT-2005	31-AUG-2025	Monthly	Quarterly
WELL	136332	Water Quality Analysis	31-DEC-2005	01-OCT-2005	31-AUG-2025	Monthly	Quarterly
WELL	136333	Water Quality Analysis	31-DEC-2005	01-OCT-2005	31-AUG-2025	Monthly	Quarterly

STAFF REPORT DISTRIBUTION LIST

POMPANO BEACH PWS

Application No: 040302-8

Permit No: 06-00070-W

INTERNAL DISTRIBUTION

- X Jeffery Scott - 4320
- X A. Superchi - 4320
- X J. Marquez - 4230
- X Permit File
- X WU Compliance - K. Guerrero - 4320

GOVERNING BOARD MEMBERS

- Mr. Harkley R. Thornton
- Mr. Kevin McCarty
- Mr. Lennart Lindahl
- Mr. Malcolm S. Wade, Jr.
- Mr. Michael Collins
- Mr. Nicolas Gutierrez, Jr.
- Ms. Alice J. Carlson
- Ms. Irela Bague
- Ms. Pamela Brooks-Thomas

EXTERNAL DISTRIBUTION

- X Permittee - City Of Pompano Beach
- X Agent - Hazen & Sawyer

GOVERNMENT AGENCIES

- X Broward County - Director, Water Mgmt Div
- X Broward County -Environmental Protection Department
- X Broward County Bureau of Water and Wastewater Services
- X Dept of Environmental Protection - West Palm Beach
- X FDEP
- X Florida Fish & Wildlife Conservation Commission - Imperiled Species Mgmt Section

OTHER INTERESTED PARTIES

- X Jamie Furgang Audubon of Florida
- X Joan Lawrence c/o: Florida International University
- X Lisa Interlandi Environmental & Land Use Law Center
- X Marcy LaHart
- X National Parks Conservation Association Regional Program Manager
- X Natural Resources Defense Council
- X Old Plantation Water Control District Pat O'Quinn

Exhibit No:19



FORM #0299
Rev. 5/93

**SOUTH FLORIDA WATER MANAGEMENT DISTRICT
WATER USE PERMIT NO. RE-ISSUE 06-00146-W
(NON - ASSIGNABLE)**

Date Issued: 10-APR-2008

Expiration Date: April 10, 2028

Authorizing: THE CONTINUATION OF AN EXISTING USE OF GROUND WATER FROM THE BISCAYNE AQUIFER AND UPPER FLORIDAN AQUIFER FOR PUBLIC WATER SUPPLY USE WITH AN ANNUAL ALLOCATION OF 5074 MILLION GALLONS.

Located In: Broward County, S12, 13, 24, 25/T49S/R41E
S3,4,7,9,10,11,14,15,18,19,10,29,30,31/T49S/R42E
S13,24/T50S/R41E
S6,7/T50S/R42E

Issued To: BROWARD COUNTY BOARD OF COUNTY COMMISSIONERS
(BROWARD COUNTY DISTRICT 1 PWS)
2555 W COPANS ROAD
POMPANO BEACH. FL 33069

This Permit is issued pursuant to Application No.061212-28, dated December 12, 2006, for the Use of Water as specified above and subject to the Special Conditions set forth below. Permittee agrees to hold and save the South Florida Water Management District and its successors harmless from any and all damages, claims or liabilities which may arise by reason of the construction, maintenance or use of activities authorized by this permit. Said application, including all plan and specifications attached thereto, is by reference made a part hereof.

Upon written notice to the permittee, this permit may be temporarily modified, or restricted under a Declaration of Water Shortage or a Declaration of Emergency due to Water Shortage in accordance with provisions of Chapter 373, Fla. Statutes, and applicable rules and regulations of the South Florida Water Management District.

This Permit may be permanently or temporarily revoked, in whole or in part, for the violation of the conditions of the permit or for the violation of any provision of the Water Resources Act and regulations thereunder.

This Permit does not convey to the permittee any property rights nor any privileges other than those specified herein, nor relieve the permittee from complying with any law, regulation, or requirement affecting the rights of other bodies or agencies.

Limiting Conditions are as follows:

SEE PAGES 2 - 6 OF 6 (33 LIMITING CONDITIONS).

South Florida Water Management
District, by its Governing Board

On ORIGINAL SIGNED BY:
By ELIZABETH VEGUILLA
DEPUTY CLERK

LIMITING CONDITIONS

1. This permit shall expire on April 10, 2028.
2. Application for a permit modification may be made at any time.
3. Water use classification:

Public water supply

4. Source classification is:

Ground Water from:
Biscayne Aquifer
Upper Floridan Aquifer

5. Annual allocation shall not exceed 5074 MG.

Maximum monthly allocation shall not exceed 461 MG.

The following limitations to the withdrawals from the Biscayne aquifer are applicable until April 1, 2013:

Annual average withdrawal: 3,894 MG

Maximum month withdrawal: 354 MG

The following limitations to the withdrawals from the Biscayne aquifer are applicable from April 1, 2013 to April 10, 2028:

Annual average withdrawal: 3,358 MG

Maximum month withdrawal: 280 MG

6. Pursuant to Rule 40E-1.6105, F.A.C., Notification of Transfer of Interest in Real Property, within 30 days of any transfer of interest or control of the real property at which any permitted facility, system, consumptive use, or activity is located, the permittee must notify the District, in writing, of the transfer giving the name and address of the new owner or person in control and providing a copy of the instrument effectuating the transfer, as set forth in Rule 40E-1.6107, F.A.C.

Pursuant to Rule 40E-1.6107 (4), until transfer is approved by the District, the permittee shall be liable for compliance with the permit. The permittee transferring the permit shall remain liable for all actions that are required as well as all violations of the permit which occurred prior to the transfer of the permit.

Failure to comply with this or any other condition of this permit constitutes a violation and pursuant to Rule 40E-1.609, Suspension, Revocation and Modification of Permits, the District may suspend or revoke the permit.

This Permit is issued to:

Broward County Water and Wastewater Services
2555 W Copans Road
Pompano Beach, FL 33069

7. Withdrawal facilities:

Ground Water - Existing:

- 1 - 12" X 100' X 1200 GPM Well Cased To 76 Feet
- 1 - 12" X 147' X 2700 GPM Well Cased To 80 Feet
- 2 - 20" X 100' X 2100 GPM Wells Cased To 75 Feet
- 1 - 12" X 100' X 1150 GPM Well Cased To 89 Feet

- 1 - 12" X 100' X 1100 GPM Well Cased To 72 Feet
- 1 - 12" X 100' X 1150 GPM Well Cased To 70 Feet
- 1 - 20" X 94' X 2100 GPM Well Cased To 84 Feet
- 1 - 12" X 145' X 2700 GPM Well Cased To 80 Feet

Ground Water - Proposed:

- 4 - 16" X 1200' X 1400 GPM Wells Cased To 1000 Feet

8. Permittee shall mitigate interference with existing legal uses that was caused in whole or in part by the permittee's withdrawals, consistent with the approved mitigation plan. As necessary to offset the interference, mitigation will include pumpage reduction, replacement of the impacted individual's equipment, relocation of wells, change in withdrawal source, or other means.

Interference to an existing legal use is defined as an impact that occurs under hydrologic conditions equal to or less severe than a 1 in 10 year drought event that results in the:

(1) Inability to withdraw water consistent with provisions of the permit, such as when remedial structural or operational actions not materially authorized by existing permits must be taken to address the interference; or

(2) Change in the quality of water pursuant to primary State Drinking Water Standards to the extent that the water can no longer be used for its authorized purpose, or such change is imminent.

9. Permittee shall mitigate harm to existing off-site land uses caused by the permittee's withdrawals, as determined through reference to the conditions for permit issuance. When harm occurs, or is imminent, the District will require the permittee to modify withdrawal rates or mitigate the harm. Harm caused by withdrawals, as determined through reference to the conditions for permit issuance, includes:

(1) Significant reduction in water levels on the property to the extent that the designed function of the water body and related surface water management improvements are damaged, not including aesthetic values. The designed function of a water body is identified in the original permit or other governmental authorization issued for the construction of the water body. In cases where a permit was not required, the designed function shall be determined based on the purpose for the original construction of the water body (e.g. fill for construction, mining, drainage canal, etc.)

(2) Damage to agriculture, including damage resulting from reduction in soil moisture resulting from consumptive use; or

(3) Land collapse or subsidence caused by reduction in water levels associated with consumptive use.

10. Permittee shall mitigate harm to the natural resources caused by the permittee's withdrawals, as determined through reference to the conditions for permit issuance. When harm occurs, or is imminent, the District will require the permittee to modify withdrawal rates or mitigate the harm. Harm, as determined through reference to the conditions for permit issuance includes:

(1) Reduction in ground or surface water levels that results in harmful lateral movement of the fresh water/salt water interface,

(2) Reduction in water levels that harm the hydroperiod of wetlands,

(3) Significant reduction in water levels or hydroperiod in a naturally occurring water body such as a lake or pond,

(4) Harmful movement of contaminants in violation of state water quality standards, or

(5) Harm to the natural system including damage to habitat for rare or endangered species.

11. If any condition of the permit is violated, the permit shall be subject to review and possible modification, enforcement action, or revocation.
12. Authorized representatives of the District shall be permitted to enter, inspect, and observe the permitted system to determine compliance with special conditions.
13. The Permittee is advised that this permit does not relieve any person from the requirement to obtain all necessary federal, state, local and special district authorizations.
14. The permit does not convey any property right to the Permittee, nor any rights and privileges other than those specified in the Permit and Chapter 40E-2, Florida Administrative Code.
15. Permittee shall submit all data as required by the implementation schedule for each of the limiting conditions to: S.F.W.M.D., Supervising Hydrogeologist - Post-Permit Compliance, Water Use Regulation Dept. (4320), P.O. Box 24680, West Palm Beach, FL 33416-4680.
16. In the event of a declared water shortage, water withdrawal reductions will be ordered by the District in accordance with the Water Shortage Plan, Chapter 40E-21, F.A.C. The Permittee is advised that during a water shortage, pumpage reports shall be submitted as required by Chapter 40E-21, F.A.C.
17. Prior to the use of any proposed water withdrawal facility authorized under this permit, unless otherwise specified, the Permittee shall equip each facility with a District-approved operating water use accounting system and submit a report of calibration to the District, pursuant to Section 4.1, Basis of Review for Water Use Permit Applications.

In addition, the Permittee shall submit a report of recalibration for the water use accounting system for each water withdrawal facility (existing and proposed) authorized under this permit every five years from each previous calibration, continuing at five-year increments.

18. Monthly withdrawals for each withdrawal facility shall be submitted to the District quarterly. The water accounting method and means of calibration shall be stated on each report.
19. The Permittee shall notify the District within 30 days of any change in service area boundary. If the Permittee will not serve a new demand within the service area for which the annual allocation was calculated, the annual allocation may then be subject to modification and reduction.
20. Permittee shall implement the wellfield operating plan described in District staff report prepared in support of recommendation for permit issuance.
21. Permittee shall determine unaccounted-for distribution system losses. Losses shall be determined for the entire distribution system on a monthly basis. Permittee shall define the manner in which unaccounted-for losses are calculated. Data collection shall begin within six months of Permit issuance. Loss reporting shall be submitted to the District on a yearly basis from the date of Permit issuance.
22. Permittee shall maintain an accurate flow meter at the intake of the water treatment plant for the purpose of measuring daily inflow of water.
23. It has been determined that this project relies, in part on the waters from the Central and Southern Project, and as such is considered to be an indirect withdrawal from an MFL water body under recovery (Everglades). The Lower East Coast Regional Water Supply Plan (May 2000), which is the recovery plan for the Everglades, incorporates a series of water resource development projects and operational changes that are to be completed over the duration of the permit and beyond. If the recovery plan is modified and it is determined that this project is inconsistent with the approved recovery plan, the Permittee shall be required to modify the permit consistent with the provisions of Chapter 373, Florida Statutes.
24. The Water Conservation Plan required by Section 2.6.1 of the Basis of Review for Water Use Permit Applications within the South Florida Water Management District, must be implemented in accordance

with the approved implementation schedule.

25. Every five years from the date of permit issuance, the permittee shall submit a water use compliance report for review and approval by District Staff, which addresses the following:

1. The results of a water conservation audit that documents the efficiency of water use on the project site using data produced from an onsite evaluation conducted. In the event that the audit indicates additional water conservation is appropriate or the per capita use rate authorized in the permit is exceeded, the permittee shall propose and implement specific actions to reduce the water use to acceptable levels within timeframes proposed by the permittee and approved by the District.

2. A comparison of the permitted allocation and the allocation that would apply to the project based on current District allocation rules and updated population and per capita use rates. In the event the permit allocation is greater than the allocation provided for under District rule, the permittee shall apply for a letter modification to reduce the allocation consistent with District rules and the updated population and per capita use rates to the extent they are considered by the District to be indicative of long term trends in the population and per capita use rates over the permit duration. In the event that the permit allocation is less than allowable under District rule, the permittee shall apply for a modification of the permit to increase the allocation if the permittee intends to utilize an additional allocation, or modify its operation to comply with the existing conditions of the permit.

26. Public water utilities that control, either directly or indirectly, a wastewater treatment plant, and which have determined pursuant to Section 403.064, F.S., that use of reclaimed water is feasible, must provide the District with annual updates of the following information: (1) the status of distribution system construction, including location and capacity of lines; (2) a summary of uncommitted supplies for the next year; (3) copies of any new or amended local mandatory reclaimed water reuse zone ordinances; and (4) a list of end-users who have contracted to receive reclaimed water and the agreed upon quantity of water to be delivered.
27. Within six months of permit issuance, Permittee shall develop and implement a water level monitoring program to monitor the water level of the groundwater source(s) or adjacent zones potentially influenced as identified in the impact assessment summary of this staff report. A preliminary proposal shall be submitted to staff for review and approval within three months of permit issuance. In developing the program, the Permittee shall consider the number of wells, well localities, depth, method of well construction, types of screen, method of water level measurement or water quality analysis, and frequency of data collection.

The permittee shall select a location for a Biscayne aquifer monitor well within the cone of influence of the Biscayne aquifer wellfield. Once the monitor well is installed, it will be sampled for water levels monthly and the data submitted quarterly.

Upon completion of the Upper Floridan aquifer wellfield, the permittee shall select one Upper Floridan aquifer well to be designated as a production/monitor well. The well shall be sampled quarterly for chloride concentration and water level.

28. Within six months of permit issuance, the Permittee shall implement the following saline water intrusion monitoring program:
Upon completion of the Upper Floridan aquifer wellfield, the permittee shall select one Upper Floridan aquifer well to be designated as a production/monitor well. The well shall be sampled quarterly for chloride concentration and water level.
29. If a proposed well location is different from a location specified in the application, the Permittee shall submit to the District an evaluation of the impact of pumpage from the proposed well location on adjacent existing legal uses, pollution sources, environmental features, the saline water interface, and water bodies one month prior to all new well construction. The Permittee is advised that the proposal must be in compliance with all permitting criteria and performance standards in effect at the time of submittal, and

that a formal modification of the permit shall be required if the withdrawals from the well location will result in an environmental or resource impact significantly greater than that anticipated in the permit review process.

30. If at any time there is an indication that the well casing, valves, or controls leak or have become inoperative, repairs or replacement shall be made to restore the system to an operating condition. Failure to make such repairs shall be cause for filling and abandoning the well, in accordance with procedures outlined in Chapters 40E-3 and 40E-30, Florida Administrative Code.
31. The Permittee shall submit to the District an updated Well Description Table (Table A) within one month of completion of the proposed wells identifying the actual total and cased depths, pump manufacturer and model numbers, pump types, intake depths and type of meters.
32. Within two years of permit issuance, potable public water supply utilities are required to provide a study evaluating emergency water supply preparedness, including analysis of demand management measures, potential pumpage shifting and the feasibility of emergency interconnections for the purpose of supplying water on a short-term, emergency basis to adjoining utilities. The Permittee must provide the District with a copy of the study. As to emergency interconnects, the feasibility study must assess the technical, physical and economic ability of the Permittee to develop interconnecting pipes capable of delivering water to adjoining utilities to meet emergency, short-term water supply needs. (in the event of an interconnect being established, individual public water supply Permit allocations will not address the emergency usage.) It is the policy of the District to encourage emergency interconnects between adjoining public water supply utilities for the purpose of providing emergency water supply. Thus, where the feasibility study indicates emergency interconnects are possible, the District encourages the adjoining utilities to implement the same.
33. The permittee shall construct the proposed Floridan aquifer wellfield in accordance with the following schedule:

Planning and Design	January 2008 - September 2010
Permitting and Procurement	October 2010 - June 2011
Construction and Startup	July 2011 - April 2013

Beginning in January 2009, the permittee shall provide annual updates of the status of all alternative water supply projects being constructed by the permittee that are associated with this permit. The status report shall include work completed to date, expenditures and any anticipated changes in the timelines. The annual report shall address activities that occurred during a calendar year and shall be submitted to Water Use Compliance on or before January 31st of the following year.



FORM #0299
Rev. 5/93

**SOUTH FLORIDA WATER MANAGEMENT DISTRICT
WATER USE PERMIT NO. RE-ISSUE 06-01634-W
(NON - ASSIGNABLE)**

Date Issued: 13-MAR-2008

Expiration Date: March 13, 2028

Authorizing: THE CONTINUATION OF AN EXISTING USE OF GROUND WATER FROM THE BISCAYNE AQUIFER AND UPPER FLORIDAN AQUIFER FOR PUBLIC WATER SUPPLY AND OTHER IRRIGATION USE WITH AN ANNUAL ALLOCATION OF 8052 MILLION GALLONS.

Located In: Broward County,
S36/T47S/R41E
S31,32/T47S/R42E
S1,2,3/T48S/R41E
S4-26,28-30/T48S/R42E
S7,8,17-20,30/T48S/R43E

Issued To: BROWARD COUNTY BOARD OF COUNTY COMMISSIONERS
(BROWARD COUNTY 2A/NORTH REGIONAL PWS)
2555 WEST COPANS ROAD
POMPANO BEACH. FL 33069

This Permit is issued pursuant to Application No.030811-14 , dated August 5, 2003, for the Use of Water as specified above and subject to the Special Conditions set forth below. Permittee agrees to hold and save the South Florida Water Management District and its successors harmless from any and all damages, claims or liabilities which may arise by reason of the construction, maintenance or use of activities authorized by this permit. Said application, including all plan and specifications attached thereto, is by reference made a part hereof.

Upon written notice to the permittee, this permit may be temporarily modified, or restricted under a Declaration of Water Shortage or a Declaration of Emergency due to Water Shortage in accordance with provisions of Chapter 373, Fla. Statutes, and applicable rules and regulations of the South Florida Water Management District.

This Permit may be permanently or temporarily revoked, in whole or in part, for the violation of the conditions of the permit or for the violation of any provision of the Water Resources Act and regulations thereunder.

This Permit does not convey to the permittee any property rights nor any privileges other than those specified herein, nor relieve the permittee from complying with any law, regulation, or requirement affecting the rights of other bodies or agencies.

Limiting Conditions are as follows:

SEE PAGES 2 - 6 OF 6 (34 LIMITING CONDITIONS).

South Florida Water Management
District, by its Governing Board

On ORIGINAL SIGNED BY:
By ELIZABETH VEGUILLA
DEPUTY CLERK

LIMITING CONDITIONS

1. This permit shall expire on March 13, 2028.
2. Application for a permit modification may be made at any time.
3. Water use classification:

Public water supply
Other Landuse

4. Source classification is:

Ground Water from:
Biscayne Aquifer
Upper Floridan Aquifer

5. Annual allocation shall not exceed 8052 MG.

Maximum monthly allocation shall not exceed 738 MG.

The following limitations to the withdrawals from the Biscayne aquifer are applicable until March 1, 2013:

Annual average withdrawal: 7,282 MG

Maximum month withdrawal: 660 MG

The following limitations to the withdrawals from the Biscayne aquifer are applicable from March 1, 2013 to March 13, 2028:

Annual average withdrawal: 6,388 MG

Maximum month withdrawal: 585.2 MG

The allocations are further constrained by the wellfield operating plan described in the Facility Operation section of the staff report.

6. Pursuant to Rule 40E-1.6105, F.A.C., Notification of Transfer of Interest in Real Property, within 30 days of any transfer of interest or control of the real property at which any permitted facility, system, consumptive use, or activity is located, the permittee must notify the District, in writing, of the transfer giving the name and address of the new owner or person in control and providing a copy of the instrument effectuating the transfer, as set forth in Rule 40E-1.6107, F.A.C.

Pursuant to Rule 40E-1.6107 (4), until transfer is approved by the District, the permittee shall be liable for compliance with the permit. The permittee transferring the permit shall remain liable for all actions that are required as well as all violations of the permit which occurred prior to the transfer of the permit.

Failure to comply with this or any other condition of this permit constitutes a violation and pursuant to Rule 40E-1.609, Suspension, Revocation and Modification of Permits, the District may suspend or revoke the permit.

This Permit is issued to:

Broward County Board of County Commissioners
Public Works and Transportation Dept. - Water and Wastewater Services
2555 West Copans Road
Pompano Beach, FL 33069

7. In the event of a declared water shortage, water withdrawal reductions will be ordered by the District in accordance with the Water Shortage Plan, Chapter 40E-21, F.A.C. The Permittee is advised that during a water shortage, pumpage reports shall be submitted as required by Chapter 40E-21, F.A.C.

8. Withdrawal facilities:

Ground Water - Existing:

- 1 - 20" X 176' X 4000 GPM Well Cased To 156 Feet
- 1 - 20" X 112' X 1400 GPM Well Cased To 94 Feet
- 1 - 12" X 180' X 2100 GPM Well With Unknown Cased Depth
- 1 - 18" X 142' X 2100 GPM Well Cased To 125 Feet
- 1 - 20" X 120' X 1400 GPM Well Cased To 88 Feet
- 1 - 18" X 120' X 3000 GPM Well Cased To 107 Feet
- 1 - 16" X 1200' X 1388 GPM Well Cased To 995 Feet
- 1 - 20" X 130' X 1400 GPM Well Cased To 95 Feet
- 1 - 24" X 110' X 2100 GPM Well Cased To 104 Feet
- 1 - 8" X 178' X 600 GPM Well With Unknown Cased Depth
- 1 - 20" X 170' X 1400 GPM Well Cased To 112 Feet
- 1 - 12" X 142' X 1800 GPM Well Cased To 125 Feet
- 1 - 24" X 150' X 3100 GPM Well Cased To 80 Feet
- 1 - 20" X 130' X 1400 GPM Well Cased To 116 Feet
- 1 - 20" X 130' X 1400 GPM Well Cased To 94 Feet
- 1 - 20" X 170' X 1400 GPM Well Cased To 131 Feet
- 3 - 20" X 121' X 1400 GPM Wells Cased To 92 Feet
- 1 - 24" X 155' X 2400 GPM Well Cased To 85 Feet
- 1 - 24" X 110' X 2100 GPM Well Cased To 105 Feet

Ground Water - Proposed:

- 4 - 16" X 1200' X 1400 GPM Wells Cased To 1000 Feet

9. Permittee shall mitigate harm to existing legal uses caused by the permittee's withdrawals as determined through reference to the conditions for permit issuance. When harm occurs, or is imminent, the District will require the permittee to modify withdrawal rates or mitigate the harm. Harm, as determined through reference to the conditions for permit issuance, includes:

- A) Reduction in surface or ground water levels that prevents an adjacent withdrawal facility from producing water, or
- B) Induced movement of saline water or pollutants into a withdrawal facility to a degree that causes the water to be unsuitable for the use intended.

10. Permittee shall mitigate harm to existing off-site land uses caused by the permittee's withdrawals, as determined through reference to the conditions for permit issuance. When harm occurs, or is imminent, the District will require the permittee to modify withdrawal rates or mitigate the harm. Harm as determined through reference to the conditions for permit issuance, includes:

- A) Significant reduction in water levels in an adjacent surface water body, including impoundments, to the extent that the designed function of the authorized structures and facilities is impaired,
- B) Land collapse or subsidence caused by reduction in water levels, or
- C) Damage to crops and other types of vegetation caused by withdrawals that impair the operation of a seepage irrigation system.

11. Permittee shall mitigate harm to the natural resources caused by the permittee's withdrawals, as determined through reference to the conditions for permit issuance. When harm occurs, or is imminent, the District will require the permittee to modify withdrawal rates or mitigate the harm. Harm, as determined through reference to the conditions for permit issuance includes:

- A) Reduction in ground or surface water levels that results in harmful lateral movement of the fresh

water/salt water interface,

- B) Reduction in water levels that harm the hydroperiod of wetlands,
- C) Significant reduction in water levels or hydroperiod in a naturally occurring water body such as a lake or pond,
- D) Harmful movement of contaminants in violation of state water quality standards, or
- E) Significant damage to the natural system including damage to habitat for rare or endangered species.

12. If any condition of the permit is violated, the permit shall be subject to review and possible modification, enforcement action, or revocation.
13. Authorized representatives of the District shall be permitted to enter, inspect, and observe the permitted system to determine compliance with special conditions.
14. The Permittee is advised that this permit does not relieve any person from the requirement to obtain all necessary federal, state, local and special district authorizations.
15. The permit does not convey any property right to the Permittee, nor any rights and privileges other than those specified in the Permit and Chapter 40E-2, Florida Administrative Code.
16. Permittee shall submit all data as required by the implementation schedule for each of the limiting conditions to: S.F.W.M.D., Supervising Hydrogeologist - Post-Permit Compliance, Water Use Regulation Dept. (4320), P.O. Box 24680, West Palm Beach, FL 33416-4680.
17. Prior to the use of any proposed water withdrawal facility authorized under this permit, unless otherwise specified, the Permittee shall equip each facility with a District-approved operating water use accounting system and submit a report of calibration to the District, pursuant to Section 4.1, Basis of Review for Water Use Permit Applications.

In addition, the Permittee shall submit a report of recalibration for the water use accounting system for each water withdrawal facility (existing and proposed) authorized under this permit every five years from each previous calibration, continuing at five-year increments.

Results of calibration testing for wells 8, 9, 46 and FL1 must be provided within three months of permit issuance.

18. Monthly withdrawals for each withdrawal facility shall be submitted to the District quarterly. The water accounting method and means of calibration shall be stated on each report.
19. The Permittee shall notify the District within 30 days of any change in service area boundary. If the Permittee will not serve a new demand within the service area for which the annual allocation was calculated, the annual allocation may then be subject to modification and reduction.
20. Permittee shall implement the wellfield operating plan described in District staff report prepared in support of recommendation for permit issuance.
21. Permittee shall determine unaccounted-for distribution system losses. Losses shall be determined for the entire distribution system on a monthly basis. Permittee shall define the manner in which unaccounted-for losses are calculated. Data collection shall begin within six months of Permit issuance. Loss reporting shall be submitted to the District on a yearly basis from the date of Permit issuance.
22. Permittee shall maintain an accurate flow meter at the intake of the water treatment plant for the purpose of measuring daily inflow of water.
23. The Water Conservation Plan required by Section 2.6.1 of the Basis of Review for Water Use Permit Applications within the South Florida Water Management District, must be implemented in accordance with the approved implementation schedule.

Upon completion of the Water Conservation Study, titled "Water Use Profile", a copy shall be submitted to the the District. In addition, a Water Conservation Plan implementation schedule shall be submitted for approval.

24. It has been determined that this project relies, in part on the waters from the Central and Southern Project, and as such is considered to be an indirect withdrawal from an MFL water body under recovery (Everglades). The Lower East Coast Regional Water Supply Plan (May 2000), which is the recovery plan for the Everglades, incorporates a series of water resource development projects and operational changes that are to be completed over the duration of the permit and beyond. If the recovery plan is modified and it is determined that this project is inconsistent with the approved recovery plan, the Permittee shall be required to modify the permit consistent with the provisions of Chapter 373, Florida Statutes.

25. Every five years from the date of permit issuance, the permittee shall submit a water use compliance report for review and approval by District Staff, which addresses the following:

1. The results of a water conservation audit that documents the efficiency of water use on the project site using data produced from an onsite evaluation conducted. In the event that the audit indicates additional water conservation is appropriate or the per capita use rate authorized in the permit is exceeded, the permittee shall propose and implement specific actions to reduce the water use to acceptable levels within timeframes proposed by the permittee and approved by the District.

2. A comparison of the permitted allocation and the allocation that would apply to the project based on current District allocation rules and updated population and per capita use rates. In the event the permit allocation is greater than the allocation provided for under District rule, the permittee shall apply for a letter modification to reduce the allocation consistent with District rules and the updated population and per capita use rates to the extent they are considered by the District to be indicative of long term trends in the population and per capita use rates over the permit duration. In the event that the permit allocation is less than allowable under District rule, the permittee shall apply for a modification of the permit to increase the allocation if the permittee intends to utilize an additional allocation, or modify its operation to comply with the existing conditions of the permit.

26. Public water utilities that control, either directly or indirectly, a wastewater treatment plant, and which have determined pursuant to Section 403.064, F.S., that use of reclaimed water is feasible, must provide the District with annual updates of the following information: (1) the status of distribution system construction, including location and capacity of lines; (2) a summary of uncommitted supplies for the next year; (3) copies of any new or amended local mandatory reclaimed water reuse zone ordinances; and (4) a list of end-users who have contracted to receive reclaimed water and the agreed upon quantity of water to be delivered.

27. This Permit supersedes and/or cancels the following Water Use Permits:
06-00142-W

28. The Permittee shall continue to submit monitoring data in accordance with the approved saline water intrusion monitoring program for this project.

See Exhibit 4 of the staff report prepared in support issuance of this permit for monitor well locations, Exhibit 5 of the staff report for well construction information and Exhibit 18 of the staff report for monitoring requirements.

29. The Permittee shall continue to submit monitoring data in accordance with the approved water level monitoring program for this project.

See Exhibit 4 of the staff report prepared in support issuance of this permit for monitor well locations, Exhibit 5 of the staff report for well construction information and Exhibit 18 of the staff report for monitoring requirements.

30. If a proposed well location is different from a location specified in the application, the Permittee shall submit to the District an evaluation of the impact of pumpage from the proposed well location on adjacent existing legal uses, pollution sources, environmental features, the saline water interface, and water bodies one month prior to all new well construction. The Permittee is advised that the proposal must be in compliance with all permitting criteria and performance standards in effect at the time of submittal, and that a formal modification of the permit shall be required if the withdrawals from the well location will result in an environmental or resource impact significantly greater than that anticipated in the permit review process.
31. If at any time there is an indication that the well casing, valves, or controls leak or have become inoperative, repairs or replacement shall be made to restore the system to an operating condition. Failure to make such repairs shall be cause for filling and abandoning the well, in accordance with procedures outlined in Chapters 40E-3 and 40E-30, Florida Administrative Code.
32. The Permittee shall submit to the District an updated Well Description Table (Table A) within one month of completion of the proposed wells identifying the actual total and cased depths, pump manufacturer and model numbers, pump types, intake depths and type of meters.
33. Within two years of permit issuance, potable public water supply utilities are required to provide a study evaluating emergency water supply preparedness, including analysis of demand management measures, potential pumpage shifting and the feasibility of emergency interconnections for the purpose of supplying water on a short-term, emergency basis to adjoining utilities. The Permittee must provide the District with a copy of the study. As to emergency interconnects, the feasibility study must assess the technical, physical and economic ability of the Permittee to develop interconnecting pipes capable of delivering water to adjoining utilities to meet emergency, short-term water supply needs. (in the event of an interconnect being established, individual public water supply Permit allocations will not address the emergency usage.) It is the policy of the District to encourage emergency interconnects between adjoining public water supply utilities for the purpose of providing emergency water supply. Thus, where the feasibility study indicates emergency interconnects are possible, the District encourages the adjoining utilities to implement the same.

34. The permittee shall construct the proposed Floridan aquifer wellfield in accordance with the following schedule:

2009 - 2010

Floridan wells site selection

2010 - 2011

Feasibility Study of conversion of ASR-1 well to Floridan production well

Contractor selection and contract negotiations

Design water treatment plant modifications

2011 - 2012

Construction of wells

Construction of water treatment plant modifications

March 2013 - wellfield startup

Beginning in January 2010, the permittee shall provide annual updates of the status of all alternative water supply projects being constructed by the permittee that are associated with this permit. The status report shall include work completed to date, expenditures and any anticipated changes in the timelines. The annual report shall address activities that occurred during a calendar year and shall be submitted to Water Use Compliance on or before January 31st of the following year.

Appendix D2

City of Pompano Beach Consumptive Use Permit Letter Modification





UTILITIES ADMINISTRATION

A. RANDOLPH BROWN
Director

1205 N.E. 5th Avenue
Pompano Beach, Florida 33060

Pompano Beach



Phone: 954-545-7043

City of Pompano Beach, Florida

Fax: 954-545-7046

July 19, 2006

RECEIVED

JUL 24 2006

ENV RES REGULATION

Mr. James Harmon
Water Use Division
South Florida Water Management District
P.O. Box 24680
West Palm Beach, Florida 33416-4680

Subject: Letter Modification Request
Water Use Permit No. 06-00070-W
City of Pompano Beach Public Water Supply

060724-1312

060724-1312

JUL 24 2006

Dear Mr. Harmon:

The City of Pompano Beach would like to request a letter modification of the referenced permit in order to correct the City's saline water monitoring requirement (Limiting Condition No. 27).

The Limiting Condition currently states "The Permittee shall continue to submit monitoring data in accordance with the approved water quality monitoring program for this project. Chloride and water level monitoring shall be collected monthly and submitted to the District quarterly."

The City requests that the Limiting Condition be changed to "*The Permittee shall continue to submit monitoring data in accordance with the approved water quality monitoring program for this project. Conductivity and water level monitoring shall be collected monthly and submitted to the District quarterly.*", in order for the condition to more accurately reflect our approved monitoring program.

The District approved our current monitoring program, which consists of conductivity profiles in specific monitoring wells (and not chloride measurements - see attached 1999 letter from Donna Rickabus to William Flaherty). The City has been collecting conductivity data for many years to determine the location of the saline water interface and that data forms the historical baseline that the City uses to compare our current results.

In order to accurately measure the conductivity profiles, the City constructed a series of fully-screened monitoring wells. These wells are not appropriate for taking discrete chloride samples, because the depth from which the sample was collected would not be accurately known as the water in the well would most likely move preferentially toward the collection device as compared to collecting a representative depth sample from the aquifer. In addition, the process of either performing the conductivity profile or collecting the water sample for analysis would most likely affect the accuracy of the other data.

Please contact me at 954-545-7044, if you have any questions on this letter modification request. Thank you for your consideration.

Sincerely,

A handwritten signature in cursive script, appearing to read "A. Randolph Brown".

A. Randolph Brown
Utilities Director

cc: Kurt Leckler, SFWMD



SOUTH FLORIDA WATER MANAGEMENT DISTRICT

3301 Gun Club Road, West Palm Beach, Florida 33406 • (561) 686-8800 • FL WATS 1-800-432-2045 • TDD (561) 697-2574
Mailing Address: P.O. Box 24680, West Palm Beach, FL 33416-4680 • www.sfwmd.gov

CON 24-06

Application No.: 060724-13

September 7, 2006

POMPANO BEACH CITY OF
1201 N.E. 5TH AVENUE
UTILITIES DEPARTMENT
POMPANO BEACH, FL 33061

Dear Permittee:

SUBJECT: Permit No.: 06-00070-W
Project: POMPANO BEACH PWS
Location: BROWARD COUNTY S21-23,25-28,32-
36/T48S/R42E
S19,20,29-32/T48S/R43E
S1-8,11,12/T49S/R42E
S6,7/T49S/R43E

Permittee: POMPANO BEACH CITY OF

District staff has reviewed the information submitted in support of the referenced application for permit modification(s) and determined that the proposed activities are in compliance with the previous permit and the appropriate provisions of Rule 40E-2.331 (4)(a), Florida Administrative Code. The permit modification(s) include the following:

The applicant is requesting to change the chloride monitoring requirement of Limiting Condition 27 to conductivity. As historically monitored, conductivity profiles will be used in specific monitoring wells well to determine the location of the saline interface. There are no other changes to this limiting condition or anything else within the permitted project site at this time.

Please understand that your permit remains subject to the 28 Limiting Conditions and all other terms of the permit authorization as previously issued.

Sincerely,

A handwritten signature in black ink, appearing to read "James Harmon".

James Harmon, P.G.
Sr Supv Hydrogeologist
Water Use Regulation Division

JH /js

GOVERNING BOARD

Kevin McCarty, *Chair*
Irela M. Bagué, *Vice-Chair*
Miya Burt-Stewart

Alice J. Carlson
Michael Collins
Nicolás J. Gutiérrez, Jr., Esq.

EXECUTIVE OFFICE

Lennart E. Lindahl, P.E.
Harkley R. Thornton
Malcolm S. Wade, Jr.

Carol Ann Wehle, *Executive Director*

Limiting Conditions

- 1 This permit shall expire on September 14, 2025.
- 2 Application for a permit modification may be made at any time.
- 3 Water use classification:

Public water supply
- 4 Source classification is:
- 5 Annual allocation shall not exceed 7067 MG.

Maximum monthly allocation shall not exceed 665.1 MG.

The stipulated annual allocation of 7,067 MG and maximum monthly allocation of 665.1 MG are authorized through August 10, 2010. After August 10, 2009, the annual allocation shall not exceed 6,478 MG and the maximum month allocation shall not 610 MG unless the permit is modified.

The maximum monthly allocation shall not exceed 186 MG from the Airport Wellfield from November 1st through May 31st of each year.

The maximum monthly allocation shall not exceed 279 MG from the Airport Wellfield from June 1st through October 31st of each year.

- 6 Pursuant to Rule 40E-1.6105, F.A.C., Notification of Transfer of Interest in Real Property, within 30 days of any transfer of interest or control of the real property at which any permitted facility, system, consumptive use, or activity is located, the permittee must notify the District, in writing, of the transfer giving the name and address of the new owner or person in control and providing a copy of the instrument effectuating the transfer, as set forth in Rule 40E-1.6107, F.A.C.

Pursuant to Rule 40E-1.6107 (4), until transfer is approved by the District, the permittee shall be liable for compliance with the permit. The permittee transferring the permit shall remain liable for all actions that are required as well as all violations of the permit which occurred prior to the transfer of the permit.

Failure to comply with this or any other condition of this permit constitutes a violation and pursuant to Rule 40E-1.609, Suspension, Revocation and Modification of Permits, the District may suspend or revoke the permit.

This Permit is issued to:

POMPANO BEACH CITY OF
1201 N.E. 5TH AVENUE UTILITIES DEPARTMENT
POMPANO BEACH, FL - 33061

- 7 Withdrawal facilities:
- 8 Permittee shall mitigate interference with existing legal uses that was caused in whole or in part by the permittee's withdrawals, consistent with the approved mitigation plan. As necessary to offset the

interference, mitigation will include pumpage reduction, replacement of the impacted individual's equipment, relocation of wells, change in withdrawal source, or other means.

Interference to an existing legal use is defined as an impact that occurs under hydrologic conditions equal to or less severe than a 1 in 10 year drought event that results in the:

(1) Inability to withdraw water consistent with provisions of the permit, such as when remedial structural or operational actions not materially authorized by existing permits must be taken to address the interference; or

(2) Change in the quality of water pursuant to primary State Drinking Water Standards to the extent that the water can no longer be used for its authorized purpose, or such change is imminent.

- 9 Permittee shall mitigate harm to existing off-site land uses caused by the permittee's withdrawals, as determined through reference to the conditions for permit issuance. When harm occurs, or is imminent, the District will require the permittee to modify withdrawal rates or mitigate the harm. Harm as determined through reference to the conditions for permit issuance, includes:

(1) Significant reduction in water levels on the property to the extent that the designed function of the water body and related surface water management improvements are damaged, not including aesthetic values. The designed function of a water body is identified in the original permit or other governmental authorization issued for the construction of the water body. In cases where a permit was not required, the designed function shall be determined based on the purpose for the original construction of the water body (e.g. fill for construction, mining, drainage canal, etc.)

(2) Damage to agriculture, including damage resulting from reduction in soil moisture resulting from consumptive use; or

(3) Land collapse or subsidence caused by reduction in water levels associated with consumptive use.

- 10 Permittee shall mitigate harm to the natural resources caused by the permittee's withdrawals, as determined through reference to the conditions for permit issuance. When harm occurs, or is imminent, the District will require the permittee to modify withdrawal rates or mitigate the harm. Harm, as determined through reference to the conditions for permit issuance includes:

(1) Reduction in ground or surface water levels that results in harmful lateral movement of the fresh water/salt water interface,

(2) Reduction in water levels that harm the hydroperiod of wetlands,

(3) Significant reduction in water levels or hydroperiod in a naturally occurring water body such as a lake or pond,

(4) Harmful movement of contaminants in violation of state water quality standards, or

(5) Harm to the natural system including damage to habitat for rare or endangered species.

- 11 If any condition of the permit is violated, the permit shall be subject to review and possible modification, enforcement action, or revocation.

- 12 Authorized representatives of the District shall be permitted to enter, inspect, and observe the permitted system to determine compliance with special conditions.
- 13 The Permittee is advised that this permit does not relieve any person from the requirement to obtain all necessary federal, state, local and special district authorizations.
- 14 The permit does not convey any property right to the Permittee, nor any rights and privileges other than those specified in the Permit and Chapter 40E-2, Florida Administrative Code.
- 15 Permittee shall submit all data as required by the implementation schedule for each of the limiting conditions to: S.F.W.M.D., Supervising Hydrogeologist – Post-Permit Compliance, Water Use Regulation Dept. (4320), P.O. Box 24680, West Palm Beach, FL 33416-4680.
- 16 In the event of a declared water shortage, water withdrawal reductions will be ordered by the District in accordance with the Water Shortage Plan, Chapter 40E-21, F.A.C. The Permittee is advised that during a water shortage, pumpage reports shall be submitted as required by Chapter 40E-21, F.A.C.
- 17 Prior to the use of any proposed water withdrawal facility authorized under this permit, unless otherwise specified, the Permittee shall equip each facility with a District-approved operating water use accounting system and submit a report of calibration to the District, pursuant to Section 4.1, Basis of Review for Water Use Permit Applications.

In addition, the Permittee shall submit a report of recalibration for the water use accounting system for each water withdrawal facility (existing and proposed) authorized under this permit every five years from each previous calibration, continuing at five-year increments.

- 18 Monthly withdrawals for each withdrawal facility shall be submitted to the District quarterly. The water accounting method and means of calibration shall be stated on each report.
- 19 The Permittee shall notify the District within 30 days of any change in service area boundary. If the Permittee will not serve a new demand within the service area for which the annual allocation was calculated, the annual allocation may then be subject to modification and reduction.
- 20 Permittee shall implement the wellfield operating plan described in District staff report prepared in support of recommendation for permit issuance.
- 21 Permittee shall determine unaccounted-for distribution system losses. Losses shall be determined for the entire distribution system on a monthly basis. Permittee shall define the manner in which unaccounted-for losses are calculated. Data collection shall begin within six months of Permit issuance. Loss reporting shall be submitted to the District on a yearly basis from the date of Permit issuance.
- 22 Permittee shall maintain an accurate flow meter at the intake of the water treatment plant for the purpose of measuring daily inflow of water.
- 23 It has been determined that this project relies, in part on the waters from the Central and Southern Project, and as such is considered to be an indirect withdrawal from an MFL water body under recovery (Everglades). The Lower East Coast Regional Water Supply Plan (May 2000), which is the recovery plan for the Everglades, incorporates a series of water resource development projects and operational changes that are to be completed over the duration of the permit and beyond. If the recovery plan is modified and it is determined that this project is inconsistent with the approved recovery plan, the

Permittee shall be required to modify the permit consistent with the provisions of Chapter 373, Florida Statutes.

24 The Water Conservation Plan required by Section 2.6.1 of the Basis of Review for Water Use Permit Applications within the South Florida Water Management District, must be implemented in accordance with the approved implementation schedule.

25 Public water utilities that control, either directly or indirectly, a wastewater treatment plant, and which have determined pursuant to Section 403.064, F.S., that use of reclaimed water is feasible, must provide the District with annual updates of the following information: (1) the status of distribution system construction, including location and capacity of lines; (2) a summary of uncommitted supplies for the next year; (3) copies of any new or amended local mandatory reclaimed water reuse zone ordinances; and (4) a list of end-users who have contracted to receive reclaimed water and the agreed upon quantity of water to be delivered.

26 Every five years from the date of permit issuance, the permittee shall submit a water use compliance report for review and approval by District Staff, which addresses the following:

1. The results of a water conservation audit that documents the efficiency of water use on the project site using data produced from an onsite evaluation conducted. In the event that the audit indicates additional water conservation is appropriate or the per capita use rate authorized in the permit is exceeded, the permittee shall propose and implement specific actions to reduce the water use to acceptable levels within timeframes proposed by the permittee and approved by the District.

2. A comparison of the permitted allocation and the allocation that would apply to the project based on current District allocation rules and updated population and per capita use rates. In the event the permit allocation is greater than the allocation provided for under District rule, the permittee shall apply for a letter modification to reduce the allocation consistent with District rules and the updated population and per capita use rates to the extent they are considered by the District to be indicative of long term trends in the population and per capita use rates over the permit duration. In the event that the permit allocation is less than allowable under District rule, the permittee shall apply for a modification of the permit to increase the allocation if the permittee intends to utilize an additional allocation, or modify its operation to comply with the existing conditions of the permit.

27 The Permittee shall continue to submit monitoring data in accordance with the approved water quality monitoring program for this project.

Conductivity and water level monitoring shall be collected monthly and submitted to the District quarterly

Wells SWI1, SWI2, SWI3, SWI4, SWI5, SWI6, SWI9, SWI10, PRW1 and PRW8

28 .

The City has worked with Staff to implement an alternative water supply project (reuse dual distribution system) which is integral to preventing saltwater intrusion in the area. The implementation of this system is a requirement of this permit and as such is considered consistent with the objectives of the Lower East Coast Regional Water Supply Plan and the MFL recovery plan for the Everglades.

c: B.F.

Broward County

Dept of Environmental Protection

FDEP

Florida Fish & Wildlife Conservation Commission

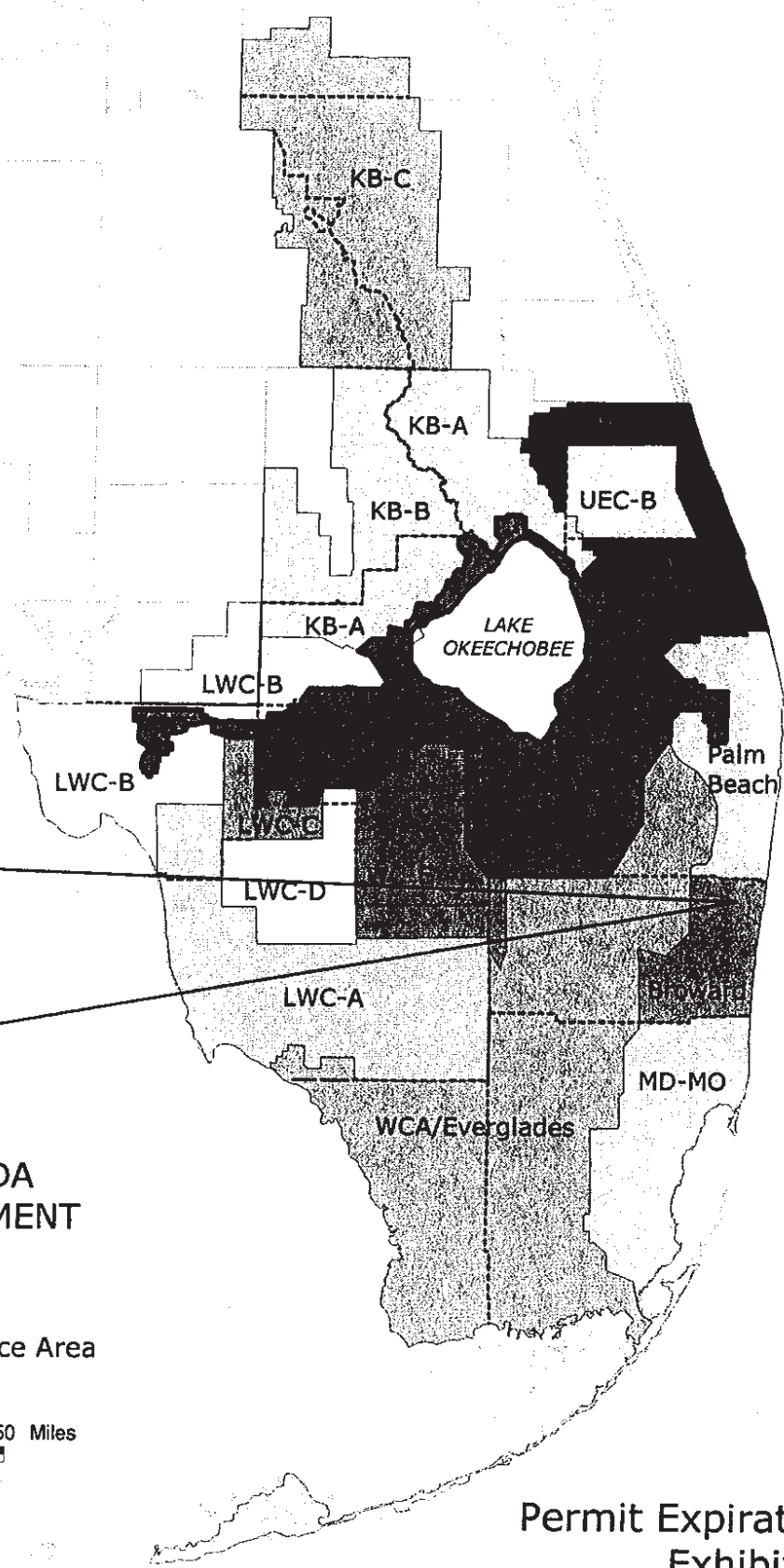
Old Plantation Water Control District



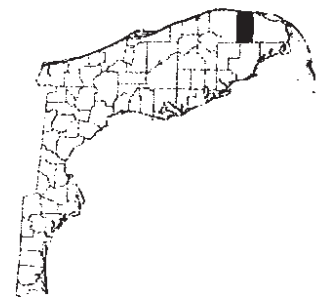
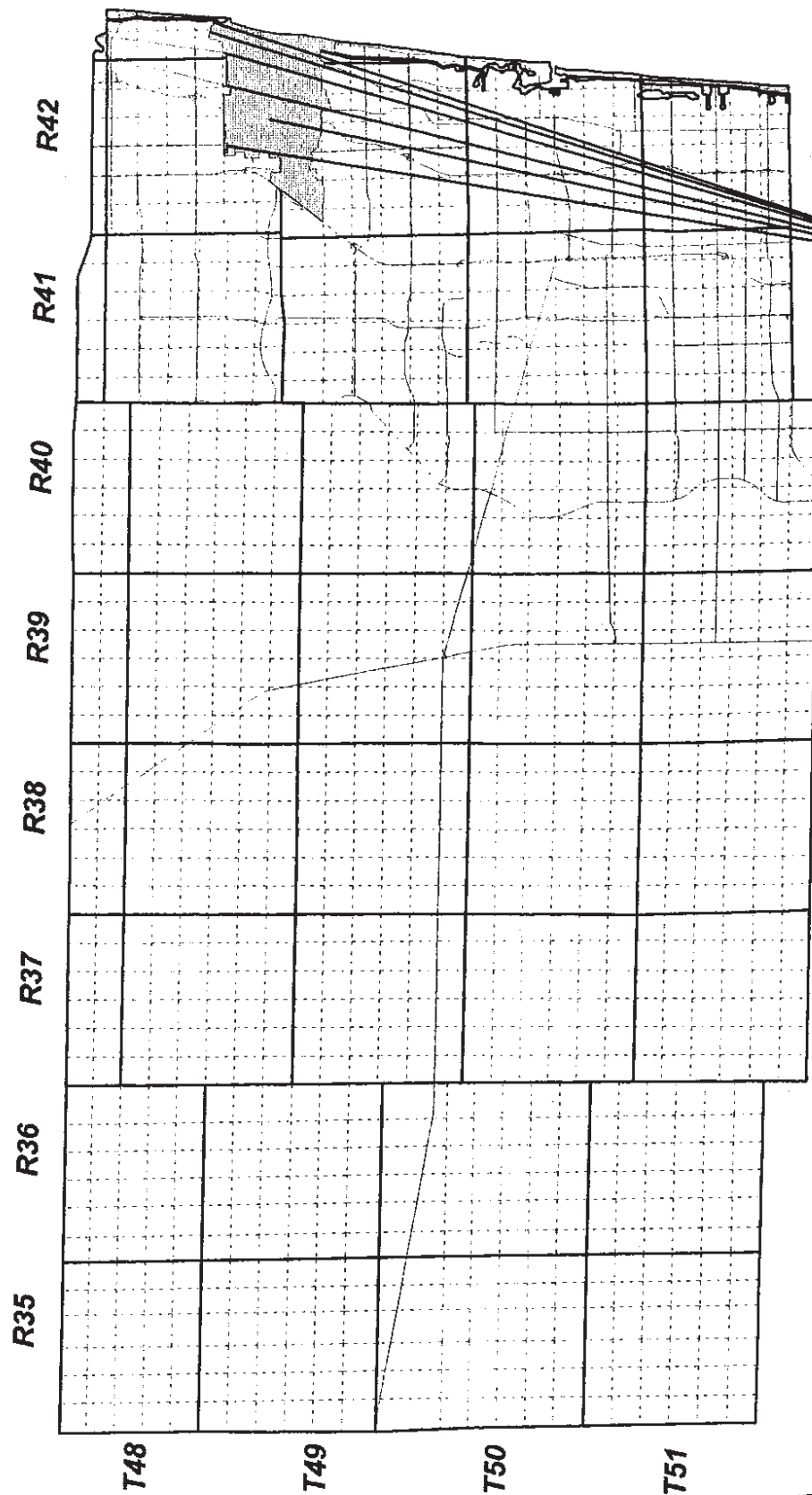
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SITE

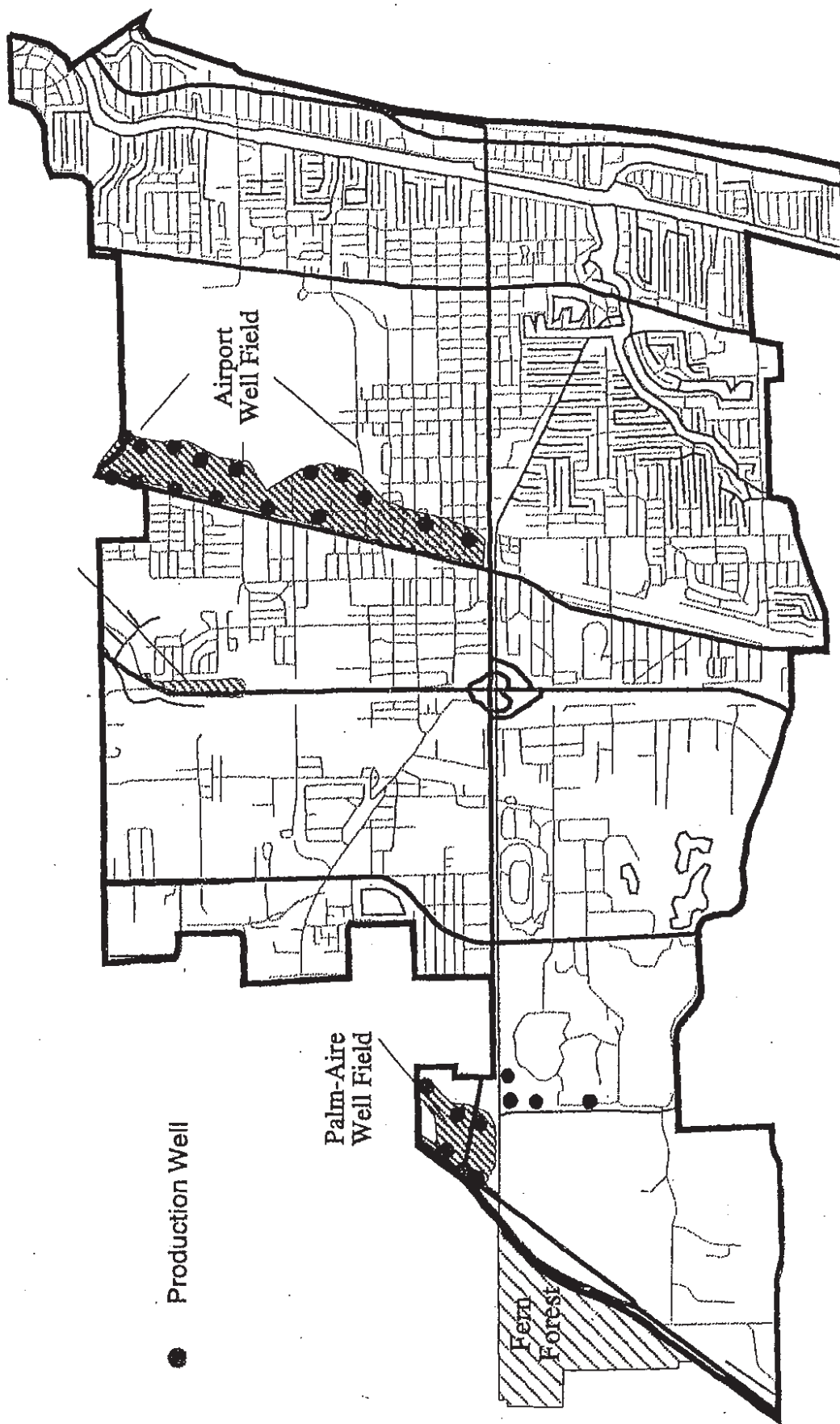
**SOUTH FLORIDA
WATER MANAGEMENT
DISTRICT**

 Okeechobee Service Area



**Permit Expiration Basins
Exhibit 1**





Pompano Beach Service Area

bc:Jeffery Scott

ANNE MARIE SUPERCHI – 4320

BROWARD COUNTY SERVICE CENTER DIRECTOR – 6840

J. Marquez – 4230

Permit File

Permit File – 4240

WU Compliance – K. Miller – 4320

ADDRESSES

B.F. Sewell

Attn: Sewell

Natural Resources Defense Council

40 W 20th st

New York NY 10011

Broward County – Director, Water Mgmt Div

Attn: – Director, Water Mgmt Div

2555 W. Copans Rd

Pompano FL 33069

Broward County –Environmental Protection Department

Attn: –Environmental Protection Department

115 S. Andrew Avenue

Room A-240

Ft. Lauderdale FL 33301

Broward County Bureau of Water and Wastewater Services

Attn: Bureau of Water and Wastewater Services

2555 W. Copans Rd

Pompano Beach FL 33069

~~Dept of Environmental Protection – West Palm Beach~~

~~Attn: – West Palm Beach~~

FDEP

Attn: Div of Recreation and Park – District 7

13798 SE Federal Highway

Hobe Sound FL 33455

Florida Fish & Wildlife Conservation Commission – Imperiled Species Mgmt Section

Attn: – Imperiled Species Mgmt Section

620 South Meridian Street

Tallahassee FL 32399-6000

Old Plantation Water Control District Pat O'Quinn

Attn: Pat O'Quinn

P.O. Box 15405

Plantation FL 33318

PERMIT APPLICATION ROUTING
Environmental Resource Regulation

Application Number: 060724-13 Permit Number: 06-00070-W
Related Application Number: _____
Applicant: CITY OF POMPANO BEACH
Project: POMPANO BEACH PWS
County: Broward Permit Type: WU Land Use Type: PWS

- ☒ Copy of application was not sent to the ACOE, if determined there is wetland activity please route a copy of the application back to the ADMIN staff.
☐ Copy of application was sent to the ACOE on _____.

30 Day Deadline: 8/23/06
No Fee Required: LTRMOD
Fee Received: \$_____ Fee Due: \$_____ Fee Code: W13
(Do Not Issue Permit)

		DATE RECEIVED	DATE OUT
PROCESSED BY:	<u>Valerie Johnson</u>	<u>7/25/06</u>	<u>7/25/06</u>
<u>Virg Cruz</u>	_____	_____	_____
<u>Barbara Comny</u>	_____	_____	_____
<u>ENV. RES. COMPL. DIV.</u>	_____	_____	_____
<u>BACK-UP</u>	<u>Broward-Jenny</u>	_____	_____
<u>RIGHT-OF-WAY</u>	<u>7330</u>	_____	_____
<u>WEEKLY MAIL/Fran</u>	_____	_____	_____

NRM Signoff: _____ Date: _____
COMMENTS: LETTER MOD.
Scanned By: _____ Date: _____

No Map
No STR



South Florida Water Management District

3301 Gun Club Road, West Palm Beach, Florida 33406 • (561) 686-8800 • FL WATS 1-800-432-2045
TDD (561) 697-2574 • www.sfwmd.gov

CON -24 -06

May 7, 1999

William F. Flaherty, P.E.
Director, Utilities Department
City of Pompano Beach
P.O. Box 1300
Pompano Beach, FL 33061

060724-1512

ORIGINAL SIGNATURE

JUL 21 2006

WPD

Dear Mr. Flaherty,

Subject: Limiting Conditions Nos. 29 and 30,
Project: Water Use Permit 06-00070-W, City of Pompano Beach

Regarding the City's response regarding Limiting Condition No. 29, monthly conductivity profiles and water levels of monitoring wells 1, 2, 4, and 6 are appropriate. In addition, monthly conductivity profiles and water levels of monitoring wells 5, 9 and 10 are to be included..

The information regarding contamination in the Palm Aire Wellfield area was obtained from the Broward County DNR internet web site (see attached) and Broward County Staff. In the August 4, 1998 correspondence from the City, a copy of the Broward County contamination sites map was enclosed. The purpose of Limiting Condition No. 30 is to make sure that increased pumpage from the Palm Aire Wellfield wells does not induce movement of contaminated groundwater. It may be helpful for a representative of the City to contact and meet with Broward County Staff to review the current status of contaminated sites in the Palm Aire Wellfield vicinity. District Staff (Jeff Rosenfeld and myself) are available to meet with City and Broward County Staff on this matter.

If you have any questions please contact me at (561) 682-6940.

Sincerely,

Donna Rickabus
Staff Hydrogeologist, Water Use

C: Scott Burns, Jeff Rosenfeld, Luna Ergas, Mike Piper, Lorenzo Fernandez

Governing Board:
Michael Collins, Chairman
Michael D. Minton, Vice Chairman
Mitchell W. Berger

Vera M. Carter
Gerardo B. Fernandez
Patrick J. Gleason

Nicolas J. Gutierrez, Jr.
Harkley R. Thornton
Trudi K. Williams

James Harvey, Interim Executive Director
Michael Slayton, Deputy Executive Director
Trevor Campbell, Deputy Executive Director

Appendix D

REUSE AGREEMENT BETWEEN THE CITY OF LIGHTHOUSE POINT AND THE CITY OF POMPANO BEACH

RESOLUTION NO. 97- 116

CITY OF POMPANO BEACH
Broward County, Florida

A RESOLUTION OF THE CITY COMMISSION OF THE CITY OF POMPANO BEACH, FLORIDA, APPROVING AND AUTHORIZING THE PROPER CITY OFFICIALS TO EXECUTE AN INTERLOCAL AGREEMENT BETWEEN THE CITY OF POMPANO BEACH AND THE CITY OF LIGHTHOUSE POINT PROVIDING FOR EFFLUENT WATER USE ON FEDERAL HIGHWAY FROM NORTHEAST 24TH STREET TO SAMPLE ROAD; PROVIDING AN EFFECTIVE DATE.

BE IT RESOLVED BY THE CITY COMMISSION OF THE CITY OF POMPANO BEACH, FLORIDA:

SECTION 1. That an Agreement between the City of Pompano Beach and the City of Lighthouse Point, a copy of which Agreement is attached hereto and incorporated herein by reference as if set forth in full, is hereby approved.

SECTION 2. That the proper City officials are hereby authorized to execute said Agreement between the City of Pompano Beach and the City of Lighthouse Point.

SECTION 3. This Resolution shall become effective upon passage.

PASSED AND ADOPTED this 22nd day of April, 1997.


WILLIAM F. GRIFFIN, MAYOR

ATTEST:


MARY L. CHAMBERS, CITY CLERK

Stacy

INTERLOCAL AGREEMENT
between
THE CITY OF LIGHTHOUSE POINT
and
THE CITY OF POMPANO BEACH
providing for
EFFLUENT WATER USE -- FEDERAL HIGHWAY --
NORTHEAST 24th STREET TO SAMPLE ROAD

This Interlocal Agreement is made and entered into between:

THE CITY OF LIGHTHOUSE POINT, FLORIDA, a municipal corporation organized under the laws of the State of Florida, hereinafter sometimes referred to as "LIGHTHOUSE POINT",

and

THE CITY OF POMPANO BEACH, FLORIDA, hereinafter sometimes referred to as "POMPANO BEACH", a municipal corporation organized under the laws of the State of Florida.

WHEREAS, LIGHTHOUSE POINT is providing for the installation of a water distribution and sprinkler system in the center island medians between Northeast 24th Street and Sample Road; and

WHEREAS, POMPANO BEACH has the ability to provide reclaimed/recycled wastewater from its tertiary treatment facility located within the City of Pompano Beach to LIGHTHOUSE POINT; and

WHEREAS, LIGHTHOUSE POINT is desirous of obtaining the water from POMPANO BEACH and both cities have agreed upon the cost of the water to be paid to POMPANO BEACH by LIGHTHOUSE POINT; and

WHEREAS, both cities are authorized to enter into this Interlocal Agreement pursuant to the provisions of Florida Statute 163.01; and

WHEREAS, both cities have determined that it is mutually beneficial and in the best interests of the public to enter into this Interlocal Agreement;

NOW, THEREFORE, in consideration of the mutual covenants, promises, terms and conditions set forth herein, LIGHTHOUSE POINT and POMPANO BEACH do hereby agree as follows:

ARTICLE I

BACKGROUND PURPOSE AND INTENT

- 1.1 The above recitals are true and correct and are incorporated herein as if set forth in full hereunder.
- 1.2 POMPANO BEACH has the facilities and ability to provide recycled wastewater from their tertiary treatment facility for use by LIGHTHOUSE POINT in irrigating the median strips located within LIGHTHOUSE POINT and in the center of Federal Highway.
- 1.3 LIGHTHOUSE POINT has need for the recycled wastewater to be provided by POMPANO BEACH for the irrigation of the median strips located within its city between Northeast 24th Street and Sample Road.

- 1.4 It is the purpose of this Interlocal Agreement to accomplish the above purposes and establish the responsibilities and obligations of each of the cities with respect to this Interlocal Agreement.

ARTICLE II

TERMS OF AGREEMENT

- 2.1 This Interlocal Agreement shall commence upon the date that both parties have executed the same by their appropriate City officials and have filed the Agreement with the Clerk of the Circuit Court for Broward County, Florida, as required by Florida Statute Section 163.01(11). **This Agreement shall continue for a period of five (5) years and shall automatically renew for successive five (5) year periods unless either City notifies the other, in writing, at least six (6) months prior to the expiration of the then current five-year period, that it no longer wishes to continue with the Agreement.**
- 2.2 Any successive renewal period shall be under the same terms and conditions as provided for in this Interlocal agreement unless both parties have executed an amendment changing the terms or conditions contained herein, and the original Agreement as thus amended shall be in force in all future renewal successive periods, except as provided in Section 2.3 herein below.
- 2.3 POMPANO BEACH shall recover the costs of the treatment of the effluent water and delivery to LIGHTHOUSE POINT on the **basis of 64.25 cents per 1,000 gallons.** LIGHTHOUSE POINT agrees to pay POMPANO BEACH for said water on said cost basis. In the event POMPANO BEACH determines that the **cost of producing and delivering the 1,000 gallons of recycled wastewater has increased** above the 64.25 cents it is charging LIGHTHOUSE POINT, it will **present said calculations** to LIGHTHOUSE POINT and the cities will agree on an adjusted cost per 1,000 gallons of recycled wastewater. Should the parties be unable to agree on an adjusted cost, then POMPANO

BEACH shall have the option of accepting cost payments as agreed or terminating this Agreement upon sixty (60) days' prior notice to LIGHTHOUSE POINT.

- 2.4 POMPANO BEACH agrees to furnish and install a wastewater metering device, housing, accessories, and appurtenances of a type and design selected by POMPANO BEACH, to be located at the site as defined in Exhibit "A" attached hereto. POMPANO BEACH shall retain ownership of the metering device, together with the housing, accessories, and appurtenances thereto. LIGHTHOUSE POINT shall have the right to make its own meter inspection, or to have an independent company check the metering equipment at any time during normal business hours provided, however, no such inspection shall be made unless LIGHTHOUSE POINT shall first give POMPANO BEACH notice of its intent to have the inspection made. All cost and expense of LIGHTHOUSE POINT's inspection shall be borne by LIGHTHOUSE POINT unless the meter is found to be inaccurate beyond the manufacturer's guaranteed range of accuracy, in which case the cost and expense of such inspection shall be borne by POMPANO BEACH. Normal maintenance of the metering device shall be performed by POMPANO BEACH as an expense of wastewater treatment and effluent disposal.

Both parties agree that, should the metering equipment be found to be inaccurate beyond the manufacturer's range of accuracy, the meter will be assumed to be inaccurate since the last meter check and that the following month's billing will be adjusted to show a credit or additional charge to LIGHTHOUSE POINT for that period.

Both parties agree that, if at any time the metering system shall be inoperative or in any way fails to provide information with respect to the quantity of flow, LIGHTHOUSE POINT will pay POMPANO BEACH a sum equal to the average flow of the monthly billing period prior to the date the meter became inoperative.

- 2.5 POMPANO BEACH shall deliver wastewater to said meter. LIGHTHOUSE POINT will cause pipes and sprinklers to be installed from the POMPANO BEACH meter north

throughout the median locations. POMPANO BEACH shall have no obligation for costs incurred with respect to the installation, maintenance or repairs of the lines or sprinkler systems, that being the sole expense of LIGHTHOUSE POINT.

- 2.6 POMPANO BEACH and LIGHTHOUSE POINT acknowledge that the water being used to irrigate the median strips is recycled wastewater and is the same water that is being used by POMPANO BEACH to irrigate the two Pompano Beach municipal golf courses and other Pompano Beach facilities. This water is not potable and not for human or animal consumption and shall only be used for sprinkling the median strips. LIGHTHOUSE POINT agrees to install appropriate signage to notify the public that the recycled water is being used and is not for consumption.
- 2.7 LIGHTHOUSE POINT has been advised by O'Leary Design Associates, P.A. that it is estimated that the average monthly water usage will be approximately 160,000 gallons based on a normal two-hour watering cycle of three days per week.
- 2.8 In the event, due to plant failure or other causes, the quality of the water deteriorates to a point that POMPANO BEACH does not feel that it is safe or advisable to use the same for the irrigation of its municipal golf courses or its own median strips, it will, as soon as possible, notify LIGHTHOUSE POINT of the stoppage of the water flow and, if possible, the date that it is anticipated it will recommence delivering recycled wastewater.

Both parties agree that any temporary cessation of wastewater transmission resulting from an act of God, fire, strikes, casualty, necessary maintenance work, breakdown of or injury to machinery, pumps or pipe lines, unavailabilities, insurrection or riot, or civil or military authority, shall not constitute a breach of this Agreement on the part of POMPANO BEACH and POMPANO BEACH shall not be liable to LIGHTHOUSE POINT for any damage resulting from such cessation.

- 2.9 POMPANO BEACH will cause its water meter to be read on a regular basis and will deliver a bill to LIGHTHOUSE POINT establishing the amount of wastewater consumption used by LIGHTHOUSE POINT for its median strip irrigation. LIGHTHOUSE POINT agrees to pay said invoice within two weeks after receipt of the same.
- 2.10 LIGHTHOUSE POINT agrees that it will not connect nor allow any connection to any portion of the wastewater system by any properties, persons, buildings or structures without prior permission of and approval of POMPANO BEACH, including compliance with all terms and conditions established by POMPANO BEACH, and any revenue or resale derived from any such connection shall belong to and be the property of POMPANO BEACH unless agreed otherwise.

ARTICLE III

MISCELLANEOUS

- 3.1 LIGHTHOUSE POINT presently has median strips located on Federal Highway from Sample Road north to Northeast 53rd Street. It is irrigating such median strips with non-wastewater obtained from Broward County Utilities, and the monthly water usage can be readily determined. In the future LIGHTHOUSE POINT desires to extend the area that POMPANO BEACH wastewater will be used to include Sample Road north to Northeast 53rd Street. LIGHTHOUSE POINT will give POMPANO BEACH at least sixty (60) days' notice of its desire to extend the system. Such notice will include the amount of water LIGHTHOUSE POINT is then using to irrigate the medians so that POMPANO BEACH can prepare and adjust their delivery system accordingly. All provisions of this Interlocal Agreement shall apply to the extended area referenced herein. However, POMPANO BEACH makes no warranties or assurances as to the adequacy of the volume of wastewater capable of being supplied to this or any other expanded area.

- 3.2 Whenever either party desires to give notice to the other, such notice shall be in writing and shall be posted in the United States mail, Return Receipt Requested, or forwarded by courier evidenced by a delivery receipt or by an overnight express delivery service addressed to the party being noticed. The address of both parties shall be as set forth below and shall remain in effect until written notice is given to the other party changing the same.

FOR THE CITY OF LIGHTHOUSE POINT:

Administrative Assistant to the Mayor
City of Lighthouse Point
City Hall
2200 Northeast 38 Street
Lighthouse Point, Florida 33064

FOR THE CITY OF POMPANO BEACH:

City Manager
City of Pompano Beach
City Hall
100 West Atlantic Boulevard
Pompano Beach, Florida 33060

- 3.3 Both parties agree that the invalidity of any section, clause, sentence, or provision of this Agreement shall not affect the validity of any other part of this Agreement which can be given effect without such invalid part or parts.
- 3.4 Both parties agree that this Agreement shall be binding upon the successors and assigns of the parties hereto and may be enforced by appropriate action in court, or courts, of competent jurisdiction.
- 3.5 Both parties agree that all legal requirements for execution of this Agreement have been performed and each party hereto agrees to exchange with the other certified copies of the official records of its governing body which authorize the execution of this Agreement.

3.6 LIGHTHOUSE POINT shall be responsible for implementation in its system of any federal, state, or local regulations imposed upon LIGHTHOUSE POINT, either now or in the future.

3.7 This document supersedes all prior negotiations, correspondence, conversations, agreements or understandings applicable to the matters contained herein and the parties agree that there are no commitments, agreements, or understandings concerning the subject matter of this Agreement that are not contained in this document. Accordingly, it is agreed that no deviation from the terms hereof shall be predicated upon any prior representations or agreements, whether oral or written.

It is further agreed that no modification, amendment, or alteration in the terms or conditions contained herein shall be effective unless contained in a written document executed with the same formality and of equal dignity.

3.8 In the event that POMPANO BEACH becomes or is made a party to a lawsuit either as a defendant or plaintiff, which said lawsuit arises from or is in connection with this Agreement or any of the terms hereof including, but not limited to, any action between the parties hereto and any action resulting from the effects of the improper use by LIGHTHOUSE POINT or any other of the wastewater, the wastewater system or part thereof of any liquid, or other effluent which may cause damage, LIGHTHOUSE POINT shall pay all costs and expenses paid by or incurred by POMPANO BEACH connected with or arising from such lawsuit, including a reasonable attorney's fee for the attorney representing POMPANO BEACH in such litigation, whether such costs, expenses and attorney's fee be incurred in the trial court or in any appellate court or courts to which the matter may be appealed.

3.9 The cities to this Interlocal Agreement agree to comply with all applicable Florida Statutes, rules and regulations that may now or hereafter apply to this Interlocal Agreement.

IN WITNESS WHEREOF, the parties have made and executed this Agreement on the respective dates under each signature and have caused the same to be executed by the appropriate City officials.

CITY OF LIGHTHOUSE POINT:

Witnesses:

Stephen De

Stephen De

CITY OF LIGHTHOUSE POINT

By: [Signature]
MAYOR

By: [Signature]
Admin. Assistant to the Mayor CITY MANAGER

Attest:

[Signature]

CITY CLERK

(SEAL)

Approved by:

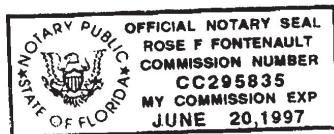
[Signature]

RICHARD H. ROTH
CITY ATTORNEY

STATE OF FLORIDA
COUNTY OF BROWARD

The foregoing instrument was acknowledged before me this 14th day of March, 1997 by William F. Sullivan as Mayor of the City of Lighthouse Point, Florida, a municipal corporation, on behalf of the municipal corporation, who is personally known to me.

NOTARY'S SEAL:



Rose F. Fontenault

NOTARY PUBLIC, STATE OF FLORIDA

Rose F. Fontenault

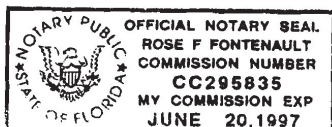
(Name of Acknowledger Typed, Printed or Stamped)

Commission Number

STATE OF FLORIDA
COUNTY OF BROWARD

The foregoing instrument was acknowledged before me this 14th day of March, 1997 by Gerald J. Renuart as City Manager of the City of Lighthouse Point, Florida, a municipal corporation, on behalf of the municipal corporation, who is personally known to me.

NOTARY'S SEAL:



Rose F. Fontenault

NOTARY PUBLIC, STATE OF FLORIDA

Rose F. Fontenault

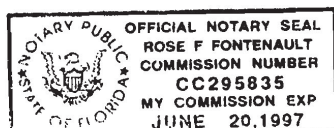
(Name of Acknowledger Typed, Printed or Stamped)

Commission Number

STATE OF FLORIDA
COUNTY OF BROWARD

The foregoing instrument was acknowledged before me this 14th day of March, 1997 by Frances S. Marsh as City Clerk of the City of Lighthouse Point, Florida, a municipal corporation, on behalf of the municipal corporation, who is personally known to me.

NOTARY'S SEAL:



Rose F. Fontenault

NOTARY PUBLIC, STATE OF FLORIDA

Rose F. Fontenault

(Name of Acknowledger Typed, Printed or Stamped)

Commission Number

CITY OF POMPANO BEACH:

Witnesses:

Leland E. Quinn

Shelley R. Bartholomew

CITY OF POMPANO BEACH

By: William F. Griffin
WILLIAM F. GRIFFIN, MAYOR

By: C. William Hargett, Jr.
C. WILLIAM HARGETT, JR.
CITY MANAGER

Attest:

Mary L. Chambers
MARY L. CHAMBERS
CITY CLERK

(SEAL)

Approved by:

Gordon B. Linn
GORDON B. LINN
CITY ATTORNEY

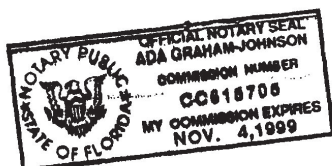
STATE OF FLORIDA

COUNTY OF BROWARD

The foregoing instrument was acknowledged before me this 1st day of May, 1997 by WILLIAM F. GRIFFIN, as Mayor of the City of Pompano Beach, Florida, a municipal corporation, on behalf of the municipal corporation, who is personally known to me.

NOTARY'S SEAL:

Ada Graham-Johnson
NOTARY PUBLIC, STATE OF FLORIDA



(Name of Acknowledger Typed, Printed or Stamped)

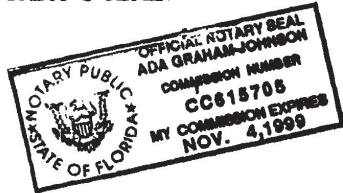
Commission Number

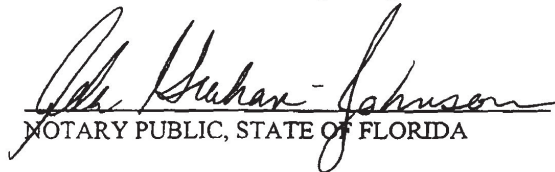
STATE OF FLORIDA

COUNTY OF BROWARD

The foregoing instrument was acknowledged before me this 1st day of May, 1997 by C. WILLIAM HARGETT, JR. as City Manager of the City of Pompano Beach, Florida, a municipal corporation, on behalf of the municipal corporation, who is personally known to me.

NOTARY'S SEAL:




NOTARY PUBLIC, STATE OF FLORIDA

(Name of Acknowledger Typed, Printed or Stamped)

Commission Number

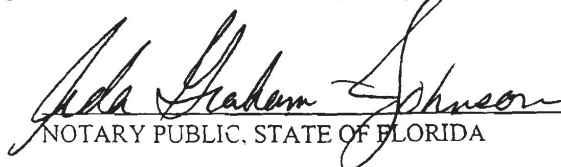
STATE OF FLORIDA

COUNTY OF BROWARD

The foregoing instrument was acknowledged before me this 1st day of May, 1997 by MARY L. CHAMBERS as City Clerk of the City of Pompano Beach, Florida, a municipal corporation, on behalf of the municipal corporation, who is personally known to me.

NOTARY'S SEAL:




NOTARY PUBLIC, STATE OF FLORIDA

(Name of Acknowledger Typed, Printed or Stamped)

Commission Number

RESOLUTION NO. 2007- 100

CITY OF POMPANO BEACH
Broward County, Florida

A RESOLUTION OF THE CITY COMMISSION OF THE CITY OF POMPANO BEACH, FLORIDA, APPROVING AND AUTHORIZING THE PROPER CITY OFFICIALS TO EXECUTE AN ADDENDUM TO INTERLOCAL AGREEMENT BETWEEN THE CITY OF POMPANO BEACH AND THE CITY OF LIGHTHOUSE POINT PROVIDING FOR INSPECTION OF REUSE COMPONENTS AND SIGNAGE FOR THE REUSE WATER DISTRIBUTION AND IRRIGATION SYSTEM IN THE CITY OF LIGHTHOUSE POINT BY THE CITY OF POMPANO BEACH; PROVIDING AN EFFECTIVE DATE.



BE IT RESOLVED BY THE CITY COMMISSION OF THE CITY OF POMPANO BEACH, FLORIDA:

SECTION 1. That an Agreement between the City of Pompano Beach and City of Lighthouse Point providing for inspection of reuse components and signage for the reuse water distribution and irrigation system in the City of Lighthouse Point by the City of Pompano Beach, a copy of which Agreement is attached hereto and incorporated by reference as if set forth in full, is hereby approved.

SECTION 2. That the proper City officials are hereby authorized to execute said Agreement between the City of Pompano Beach and the City of Lighthouse Point.

SECTION 3. This Resolution shall become effective upon passage.

PASSED AND ADOPTED this 23rd day of January, 2007.



JOHN C. RAYSON, MAYOR

ATTEST:



MARY L. CHAMBERS, CITY CLERK

MEBds
12/13/06
l:reso/2007-86

11/28/07
cc: Bill H.

INSTR # 106838232
OR BK 43608 Pages 652 - 660
RECORDED 02/15/07 09:20:41
BROWARD COUNTY COMMISSION
DEPUTY CLERK 1923
#3, 9 Pages

ADDENDUM
to
INTERLOCAL AGREEMENT
between
CITY OF LIGHTHOUSE POINT
and
CITY OF POMPANO BEACH
providing for
INSPECTION OF REUSE COMPONENTS AND SIGNAGE IN THE CITY
OF LIGHTHOUSE POINT BY THE CITY OF POMPANO BEACH

This Addendum to the Interlocal Agreement is made and entered into between:

CITY OF LIGHTHOUSE POINT, FLORIDA, a municipal corporation organized under the laws of the State of Florida, hereinafter sometime refereed to as "LIGHTHOUSE POINT",

and

CITY OF POMPANO BEACH, FLORIDA, a municipal corporation organized under the laws of the State of Florida, hereinafter sometimes referred to as "POMPANO BEACH",.

WHEREAS, LIGHTHOUSE POINT currently provides for the maintenance of a reuse water distribution and irrigation system in the center island medians between Northeast 24th Street and Northeast 54th Street; and

WHEREAS, POMPANO BEACH currently provides reuse water from its tertiary treatment facility located within the City of Pompano Beach, to LIGHTHOUSE POINT via a master meter; and

WHEREAS, The Florida Department of Environmental Protection has granted POMPANO BEACH one hundred eighty (180) days from the issuance of Permit FLA013581-

(a)

004-DWIP to provide proof of legal authority to assure the compliance of FAC Chapter 62-610 with regards to cross connection control and signage; and

WHEREAS, both cities are authorized to enter into this Addendum to the Interlocal Agreement pursuant to the provisions of Florida Statute 163.01; and

WHEREAS, both cities have determined that is mutually beneficial and in the best interests of the public to enter into this Addendum to the Interlocal Agreement;

NOW, THEREFORE, in consideration of the mutual covenants, promises, terms and conditions set forth herein, LIGHTHOUSE POINT and POMPANO BEACH do hereby agree as follows:

ARTICLE I

BACKGROUND PURPOSE AND INTENT

- 1.1 The above recitals are true and correct and are incorporated herein as if set forth in full hereunder.
- 1.2 POMPANO BEACH currently provides reuse water from their tertiary treatment facility for use by LIGHTHOUSE POINT in irrigating the median strips located within LIGHTHOUSE POINT and in the center of Federal Highway, by and through an Interlocal Agreement providing for effluent water, dated May 1, 1997.
- 1.3 POMPANO BEACH shall provide annual inspection of signage in the City of Lighthouse Point, as required by FAC 62-610.
- 1.4 LIGHTHOUSE POINT will allow POMPANO BEACH access to median locations for the purpose of cross connection and signage inspection.
- 1.5 LIGHTHOUSE POINT will reimburse POMPANO BEACH for all costs incurred for inspections.
- 1.6 It is the purpose of this Addendum to accomplish the above purposes and establish the responsibilities and obligations of each of the cities with respect to this Addendum.

ARTICLE II

TERMS OF AGREEMENT

- 2.1 This Addendum to the Interlocal Agreement shall commence upon the last date that both parties have executed the same by their appropriate City officials and have filed the Agreement with the Clerk of the Circuit Court for Broward County, Florida, as required by Florida Statute Section 163.01(11). This Agreement shall continue for the remainder of the period of the current Interlocal Agreement between Pompano Beach and Lighthouse Point providing for effluent water use, dated May 1, 1997, and approved by Resolution No. 97-116. The time periods for both the Agreement and this Addendum to the Agreement shall merge, and renewal or modification of the time period of the Agreement shall cause the time periods for this Addendum to run concurrently.
- 2.2 Any successive renewal period shall be under the same terms and conditions as provided for in the original Interlocal Agreement unless both parties have executed an amendment changing the terms or conditions contained herein, and the original Agreement as thus amended by this Addendum shall be in force in all future renewal successive periods.
- 2.3 POMPANO BEACH agrees to conduct annual inspection of the medians and check valve boxes for signage requirements according to FAC 62-610. Inspections will be documented. The cost and expense of such inspections shall be borne by LIGHTHOUSE POINT.
- 2.4 POMPANO BEACH agrees to conduct annual inspection of all cross connection control devices in the medians where reuse water is used and where cross connections are required. The cost and expense of such inspections shall be borne by LIGHTHOUSE POINT. Inspections shall meet City of Pompano Beach Ordinance requirements, including, but not limited to, annual backflow certification by a licensed inspector.
- 2.5 LIGHTHOUSE POINT agrees to allow POMPANO BEACH access to inspection locations in public medians where reuse is applied.
- 2.6 LIGHTHOUSE POINT agrees to install approved cross connection control devices in any reuse irrigation area where potable water is also available.
- 2.7 LIGHTHOUSE POINT agrees to provide a map to POMPANO BEACH showing the locations of all valve boxes, and to provide revisions upon receiving approval for additional connections.
- 2.8 LIGHTHOUSE POINT agrees to provide to POMPANO BEACH Engineered sealed plans for additional reuse areas, for approval, before connecting to the reuse system.
- 2.9 LIGHTHOUSE POINT agrees to pay POMPANO BEACH the amount of Eight Hundred Dollars (\$800.00) at the commencement of each five (5) year renewal period of the Agreement which represents its share of the costs of permit renewal with the Florida Department of Environmental Protection and with Broward County, incurred by POMPANO BEACH.

ARTICLE III

MISCELLANEOUS

- 3.1 LIGHTHOUSE POINT presently irrigates median strips located between Northeast 24th Street and Northeast 54th Street. LIGHTHOUSE POINT will abide by regulations for use of reuse water as specified in the Florida Department of Environmental Protection Permit FLA103581-004-DW1P, issued to POMPANO BEACH on April 26, 2005. LIGHTHOUSE POINT will agree to abide by the FAC Chapter 62-610 and the City of Pompano Beach Ordinance Chapter 54.
- 3.2 Both parties agree that the invalidity of any section, clause, sentence or provision of this Addendum to the Interlocal Agreement shall not affect the validity of any other part of this Addendum which can be given effect without such invalid part or parts.
- 3.3 Both parties agree that this Addendum shall be binding upon the successors and assigns of the parties hereto and may be enforced by appropriate action in court, or courts, of competent jurisdiction.
- 3.4 Both parties agree that all legal requirements for execution of this Addendum have been performed and each party hereto agrees to exchange with the other certified copies of the official records of its governing body which authorize the execution of this Addendum.
- 3.5 LIGHTHOUSE POINT shall be responsible for implementation in its system of any Federal, state, or local regulations imposed upon LIGHTHOUSE POINT, either now or in the future.
- 3.6 This document amends the Interlocal Agreement Providing for Effluent Water Use between the City of Pompano Beach and the City of Lighthouse Point, dated May 1, 1997. Accordingly, it is agreed that no deviation from the terms hereof shall be predicated upon any prior representations or agreements, whether oral or written.

It is further agreed that no modification, amendment, or alteration in the terms or conditions contained herein shall be effective unless contained in a written document executed with the same formality and of equal dignity.

- 3.7 LIGHTHOUSE POINT agrees, to the extent permitted by law, to indemnify, save and hold harmless POMPANO BEACH and any of its officials, commissioners, officers, agents and employees from any and all claims of loss, injury, death, damage and liabilities of whatever kind or nature including attorney's fees, court costs and interest, and any costs of defense from any persons, or their personal representatives, estate, heirs, next-of-kin, or any other party that may claim or have acquired an interest, occasioned wholly, or in part, by the conduct, action, activities, or negligence of LIGHTHOUSE POINT, its agents or employees, involving or arising from, the use or distribution of

reuse water by LIGHTHOUSE POINT, including any and all claims arising from the operation of its reuse water distribution and irrigation system, whether such costs, expenses and attorney's fees be incurred in the trial court or in any appellate court or courts to which the matter may be appealed.

- 3.8. The cities to this Addendum to the Interlocal Agreement to comply with all applicable Florida Statutes, rules and regulations that may now or hereafter apply to this Addendum.

IN WITNESS WHEREOF, the parties hereto have set their hands and affixed their corporate seals the day and year first above written.

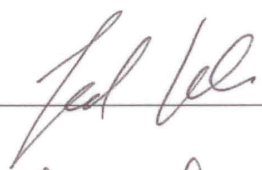
"LIGHTHOUSE POINT":

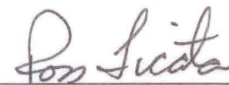
Witnesses:

CITY OF LIGHTHOUSE POINT

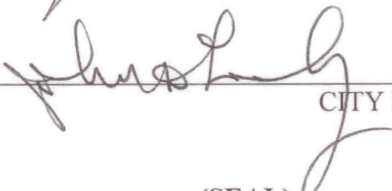


Signature

By: _____
MAYOR



Signature

By: _____
CITY MANAGER
(SEAL)

Attest:



CITY CLERK

Approved by:

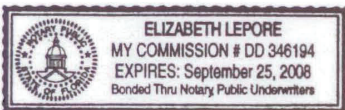


CITY ATTORNEY

STATE OF FLORIDA
COUNTY OF BROWARD

The foregoing instrument was acknowledged before me this 18th day of December, 2007, by Fred Salazar, as Mayor of the City of Lighthouse Point, Florida, a municipal corporation, on behalf of the municipal corporation, who is personally known to me.

NOTARY'S SEAL:



Elizabeth Lepore
NOTARY PUBLIC, STATE OF FLORIDA

ELIZABETH LEPORE
(Name of Acknowledger Typed, Printed or Stamped)

Commission Number _____

STATE OF FLORIDA
COUNTY OF BROWARD

The foregoing instrument was acknowledged before me this 18th day of December, 2007, by John D. Perusky as City Manager of the City of Lighthouse Point, Florida, a municipal corporation, on behalf of the municipal corporation, who is personally known to me.

NOTARY'S SEAL:



Elizabeth Lepore
NOTARY PUBLIC, STATE OF FLORIDA

ELIZABETH LEPORE
(Name of Acknowledger Typed, Printed or Stamped)

Commission Number _____

STATE OF FLORIDA
COUNTY OF BROWARD

The foregoing instrument was acknowledged before me this 18th day of December, 2007, by Carol Jordan as City Clerk of the City of Lighthouse Point, Florida, a municipal corporation, on behalf of the municipal corporation, who is personally known to me.

NOTARY'S SEAL:



Elizabeth Lepore
NOTARY PUBLIC, STATE OF FLORIDA

ELIZABETH LEPORE
(Name of Acknowledger Typed, Printed or Stamped)

Commission Number _____

"POMPANO BEACH":

Witnesses:

Nichelle J. Jorda
Signature

Shelley R. Bartholomew
Signature

CITY OF POMPANO BEACH

By: *John C. Rayson*
JOHN C. RAYSON, MAYOR

By: *C. William Hargett, Jr.*
C. WILLIAM HARGETT, JR.,
CITY MANAGER

Attest:

Mary L. Chambers
MARY L. CHAMBERS, CITY CLERK

(SEAL)

Approved As To Form:

Gordon B. Linn
GORDON B. LINN, CITY ATTORNEY

STATE OF FLORIDA
COUNTY OF BROWARD

The foregoing instrument was acknowledged before me this 26th day of
January, 2007 by **JOHN C. RAYSON**, as Mayor of the City of Pompano Beach,
Florida, a municipal corporation, on behalf of the municipal corporation, who is personally known to me.

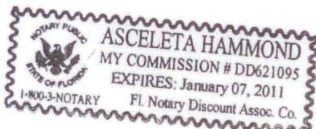
NOTARY'S SEAL:

Asceletha Hammond
NOTARY PUBLIC, STATE OF FLORIDA

Asceletha Hammond

(Name of Acknowledger Typed, Printed or Stamped)

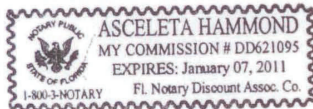
Commission Number



STATE OF FLORIDA
COUNTY OF BROWARD

The foregoing instrument was acknowledged before me this 26th day of January, 2007 by **C. WILLIAM HARGETT, JR.**, as City Manager of the City of Pompano Beach, Florida, a municipal corporation, on behalf of the municipal corporation, who is personally known to me.

NOTARY'S SEAL:



Asceletha Hammond
NOTARY PUBLIC, STATE OF FLORIDA

Asceletha Hammond

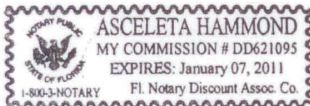
(Name of Acknowledger Typed, Printed or Stamped)

Commission Number

STATE OF FLORIDA
COUNTY OF BROWARD

The foregoing instrument was acknowledged before me this 26th day of January, 2007 by **MARY L. CHAMBERS** as City Clerk of the City of Pompano Beach, Florida, a municipal corporation, on behalf of the municipal corporation, who is personally known to me.

NOTARY'S SEAL:



Asceletha Hammond
NOTARY PUBLIC, STATE OF FLORIDA

Asceletha Hammond

(Name of Acknowledger Typed, Printed or Stamped)

Commission Number

MEB/ds
12/6/06
L:agr/utility/2007-326

Appendix E

REUSE AGREEMENT BETWEEN THE CITY OF POMPANO BEACH AND BROWARD COUNTY

015.5

RESOLUTION NO. 2016- 229

CITY OF POMPANO BEACH
Broward County, Florida

A RESOLUTION OF THE CITY COMMISSION OF THE CITY OF POMPANO BEACH, FLORIDA, APPROVING AND AUTHORIZING THE PROPER CITY OFFICIALS TO EXECUTE A RECLAIMED WATER SUPPLY AGREEMENT BETWEEN BROWARD COUNTY AND THE CITY OF POMPANO BEACH TO FURNISH RECLAIMED WATER TO BROWARD COUNTY'S UTILITY SERVICE AREA, WITHIN THE POMPANO BEACH NORTHERN COMMUNITIES; PROVIDING AN EFFECTIVE DATE.

BE IT RESOLVED BY THE CITY COMMISSION OF THE CITY OF POMPANO BEACH, FLORIDA:

SECTION 1: That an Agreement between Broward County and the City of Pompano Beach, a copy of which Agreement is attached hereto and incorporated by reference as if set forth in full, is hereby approved.

SECTION 2: That the proper City officials are hereby authorized to execute said Agreement between Broward County and the City of Pompano Beach.

SECTION 3: This Resolution shall become effective upon passage.

PASSED AND ADOPTED this 28th day of June, 2016.



LAMAR FISHER, MAYOR

ATTEST:



ASCELETA HAMMOND, CITY CLERK

PLEASE RETURN TO:
Asceleta Hammond, CMC
City Clerk
P.O. Drawer 1300, Suite 253
Pompano Beach, FL 33061

Orig. 5

RECLAIMED WATER SUPPLY AGREEMENT
BETWEEN
BROWARD COUNTY
AND
CITY OF POMPANO BEACH

RECLAIMED WATER SUPPLY AGREEMENT

BETWEEN

BROWARD COUNTY

AND

CITY OF POMPANO BEACH

This is an Agreement, made and entered into by and between: BROWARD COUNTY, a political subdivision of the State of Florida, hereinafter referred to as "COUNTY," through its Board of County Commissioners,

AND

CITY OF POMPANO BEACH, a municipal corporation located in Broward County, Florida, and organized and existing under the laws of the State of Florida, hereinafter referred to as "CITY," collectively referred to as the "Parties."

WHEREAS, CITY owns and operates the Reclaimed Water System; and

WHEREAS, the Reclaimed Water System produces Reclaimed Water for beneficial reuse; and

WHEREAS, the CITY desires to furnish Reclaimed Water to COUNTY; and

WHEREAS, COUNTY desires to purchase Reclaimed Water from the CITY to provide a source for non-potable water within COUNTY's Service Area; and

WHEREAS, CITY has Reclaimed Water capacity sufficient to meet the needs of COUNTY; NOW, THEREFORE,

IN CONSIDERATION of the mutual terms, conditions, promises, covenants, and payments hereinafter set forth, CITY and COUNTY agree to the following:

1. PREAMBLE. In order to establish the background, context, and frame of reference for this Agreement and to generally express the objectives and intentions of the Parties herein, the following statements, representations, and explanations shall be accepted as predicates of the undertakings and commitments included within the provisions which follow and may be relied upon by the Parties as essential elements of the mutual considerations upon which this Agreement is based:

1.1 COUNTY owns and operates COUNTY System.

1.2 CITY owns and operates the Reclaimed Water System capable of serving certain defined Reclaimed Water needs of COUNTY.

1.3 COUNTY agrees to purchase Reclaimed Water from CITY in accordance with the terms set forth in this Agreement.

2. **DEFINITIONS.** Unless the context specifically indicates otherwise, the following words and phrases used in this Agreement shall have the following meanings:

2.1 **Agreement** – This Agreement includes Articles 1 through 7, the exhibits and documents that are expressly incorporated by reference.

2.2 **Board** – The Board of County Commissioners of Broward County, Florida.

2.3 **County Administrator** – The administrative head of COUNTY appointed by the Board.

2.4 **County Attorney** – The chief legal counsel for COUNTY appointed by the Board.

2.5 **COUNTY Reuse System Permits** – All permits, licenses or other governmental approvals necessary for acquisition, construction, operation and expansion of COUNTY Reuse System, including but not limited to, the Florida Department of Environmental Protection (FDEP) Permit No. FL0031771.

2.6 **COUNTY Service Area** – The geographic boundaries for which CITY's Reclaimed Water is ultimately utilized by COUNTY, as shown on Exhibit "A," attached hereto and incorporated herein.

2.7 **COUNTY Reuse System** – Those facilities owned or operated, or both, by COUNTY including present and future Reclaimed Water distribution and utilization system, which may include Reclaimed Water mains, pumping stations, storage facilities, and appurtenances thereto downstream of the Point of Connection to the Reclaimed Water System.

2.8 **Effective Date** – The date on which the Agreement is approved and fully executed by the Parties.

2.9 **Joint Operation and Maintenance Costs** – The portion of total Operation and Maintenance Costs which provide a benefit to both retail and wholesale Reclaimed Water customers of the CITY.

2.10 **Metering Facilities** – Those certain Reclaimed Water meters and appurtenant recording and transmitting devices to be installed and owned by the CITY, as required in Article 3, which are used to measure the volume of Reclaimed Water delivered to COUNTY.

2.11 **Point of Connection** – The point or points where COUNTY System connects to CITY System for the purpose of delivering Reclaimed Water to COUNTY System from the CITY System.

2.12 **Operation and Maintenance Costs** – These costs shall include any and

all costs incurred by the CITY in operating, maintaining and administering the Reclaimed Water System, including, but not limited to, the general administrative and legal costs of the CITY related to operation, maintenance, management, security and development of the Reclaimed Water System; costs associated with tools, equipment, vehicles, supplies, materials, services and support for the operation, maintenance, management, security and development of the Reclaimed Water System; any costs of litigation or legal judgment against the CITY relating to operation, maintenance, management, security and development of the Reclaimed Water System; development expenses relating to expansion of the Reclaimed Water System; all costs incurred in planning or applying for, obtaining, maintaining and defending the Reclaimed Water System Permit; accounting, legal and engineering expenses; ordinary and current rentals of equipment or other property; refunds of moneys lawfully due to others; payments in lieu of taxes and facility impact fees; moneys to be deposited to a rate stabilization fund; and fees for management of the Reclaimed Water System or any portion thereof.

2.13 Rate Year – The time period that each annual rate adjustment will be in effect, beginning March 1st of each year and ending February 28/29th of each year.

2.14 Reclaimed Water – Domestic wastewater effluent that has received at least secondary treatment and high level disinfection and which is suitable for direct, non-potable, beneficial reuse in accordance with Florida Department of Environmental Protection (FDEP) regulations.

2.15 Reclaimed Water Ordinance – Chapter 54 of the CITY Code, Ordinance titled "Reuse Water and Cross-Connection Control," as may be amended from time to time.

2.16 Reclaimed Water System or CITY System – Those facilities owned or operated, or both, by CITY, including present and future Reclaimed Water treatment and transmission facilities, up to the Point of Connection that are now or will be used for the purpose of providing Reclaimed Water from the CITY System to the COUNTY System.

2.17 Reclaimed Water System Permits – All permits, licenses or other government approvals necessary for the acquisition, construction, operation and expansion of the Reclaimed Water System, including but not limited to, FDEP Permit No. FL013581.

2.18 Reserve Capacity – The average monthly maximum daily flow expressed in one million gallons per day (MGD) for which COUNTY has reserved Reclaimed Water as set forth in Section 3.7.

2.19 Retail Operation and Maintenance Costs – The portion of total Operation and Maintenance Costs which only provide a benefit to retail

Reclaimed Water customers of the CITY.

3. CONNECTING TO CITY RECLAIMED WATER SYSTEM; REUSE; CAPACITY.

3.1 POINT OF CONNECTION AND METERING FACILITIES. The Point of Connection and Metering Facilities shall be as identified in Exhibit "B," attached hereto and incorporated herein.

3.2 MAINTENANCE OF COUNTY SYSTEM. COUNTY shall design, construct, permit, operate, and properly maintain, at its sole cost and expense, COUNTY System that is necessary to properly receive and distribute Reclaimed Water and shall obtain and maintain all required COUNTY Reuse System Permits.

3.3 COUNTY SERVICE AREA. COUNTY agrees that it will not distribute Reclaimed Water outside COUNTY Service Area (as shown in Exhibit A).

3.4 REUSE OF RECLAIMED WATER. COUNTY shall not reuse or permit reuse by a third party of Reclaimed Water without requiring as a condition of such use compliance with the Reclaimed Water Ordinance by COUNTY or such third party. COUNTY shall meet all requirements for public health and reuse of Reclaimed Water as described in Chapter 62-610, Florida Administrative Code (F.A.C.), and be responsible to ensure that third party users meet these same requirements. COUNTY shall be solely responsible for any Reclaimed Water sampling, inspection and testing required by any federal, state or local regulatory agency for Reclaimed Water downstream of the Point of Connection.

3.5 EXCLUSIVITY. COUNTY shall purchase all of its Reclaimed Water exclusively from CITY to meet all of COUNTY's Reclaimed Water needs within COUNTY Service Area and use the Reclaimed Water within COUNTY Service Area (as shown in Exhibit A). COUNTY Service Area may be changed administratively without formal modification to this Agreement, by mutual consent as documented by a letter jointly signed by the persons designated in Section 7.5 of this Agreement.

3.6 RESERVE CAPACITY. CITY's obligation to furnish Reclaimed Water services to COUNTY under this Agreement shall be limited to an average rate of one million gallons per day. CITY shall have all right and power by suit or other such proceedings at law or in equity to enforce the limitation of its obligations hereunder and to prohibit COUNTY or its agents or employees from demanding Reclaimed Water which exceeds the amount of Reserve Capacity. If COUNTY exceeds the reserve capacity for four (4) consecutive months, CITY shall have the right to terminate this Agreement for cause pursuant to Article 6 and/or require renegotiation of the Agreement. The above Reserve Capacity may be changed administratively without formal modification to this Agreement, by mutual consent as documented by a letter jointly signed by the persons

designated in Section 7.5 of this Agreement.

3.7 MINIMUM DELIVERY PRESSURE. CITY does not guarantee, but intends and will endeavor to provide a minimum delivery pressure at the Point of Connection of fifty (50) pounds per square-inch as measured at the Metering Facilities. It is anticipated that COUNTY may need to boost pressure for delivery to third parties within COUNTY Service Area.

3.8 COUNTY TO INSTALL METERS AND ANCILLARY EQUIPMENT. COUNTY shall transfer to CITY the ownership of the Metering Facilities and modulating flow control valves capable of isolating flow to COUNTY, together with the housing, accessories, and ancillary equipment thereto, and record drawings acceptable to CITY. COUNTY may install its own Reclaimed Water meters and appurtenant recording and transmitting devices at the Point(s) of Connection. However, the quantity of Reclaimed Water delivered from CITY's Reuse Plant at the specified Point of Connection shall be exclusively measured by the Metering Facilities. In the event the capacity of the Metering Facilities or modulating flow control valve becomes inadequate for the amount of flow delivered because of increased demand by COUNTY, CITY, at COUNTY's sole expense, shall replace the device or install such additional device or devices as may be necessary and invoice COUNTY for the costs of doing so. COUNTY shall remit to CITY the amount invoiced within thirty (30) days of COUNTY's receipt of the invoice.

3.9 CITY TO MAINTAIN METERS. CITY shall maintain the Metering Facilities, routinely inspect the metering devices at least every three (3) months, calibrate twice a year, and have an annual inspection and report prepared regarding the condition and accuracy of the Metering Facilities. A copy of the inspection report shall be furnished to COUNTY electronically within five (5) days of completion. COUNTY shall have the right to make its own interim meter inspection at any time during normal business hours provided, however, no such inspection shall be made unless COUNTY shall first provide CITY with written notice of its intent to have the inspection made, nor shall such inspection be made prior to forty-eight (48) hours, excluding Saturdays, Sundays, and holidays, subsequent to the receipt of said notice by CITY. All costs and expenses of COUNTY's interim inspection shall be borne by COUNTY, unless the Metering Facilities are found to be inaccurate beyond the manufacturer's guaranteed range of accuracy and beyond the adjusted range of accuracy due to the design and installation at the specific location, in which case the reasonable cost and expense of such interim inspection shall be borne by CITY.

3.10 PAYMENT IN CASE OF METER INACCURACY. Should the Metering Facilities be found to be inaccurate beyond the manufacturer's range of accuracy and beyond the adjusted range of accuracy due to the design and installation at the specific location, the Metering Facilities will be assumed to be inaccurate since the last semi-annual meter calibration and the following month's billing will be adjusted to show a credit or additional charge to COUNTY for that period,

based on the previous six-month average that the Metering Facilities were found to be accurate by CITY.

3.11 PAYMENT IN CASE OF METER FAILURE. If at any time the Metering Facilities becomes inoperative or in any way fails to provide information with respect to the quantity of Reclaimed Water flow, COUNTY shall pay to CITY a daily amount equal to the average flow of the monthly billing period prior to the date the Metering Facilities became inoperative.

4. SUPPLY OF RECLAIMED WATER.

4.1 RECLAIMED WATER SUPPLY. CITY does not guarantee the supply of the Reclaimed Water supplied at the Point of Connection. Cessation or restriction of Reclaimed Water supply services, including any resulting from, but not limited to, an act of God; fire; strikes; accidents; casualty; maintenance; expansion; breakdown or damage to machinery, pumps, pipelines, or storage, processing, treatment or other facilities insurrection or riot; government rules, acts orders, restrictions, regulations or requirements; discretionary acts or actions of any government, public, governmental authority, commission, board, agency, agent, official or officer (except for actions or of the Parties or its employees, agents or officers affecting this Agreement); the enactment of any statute, ordinance resolution, regulation, rule, ruling or order; a decree, judgment or injunction of any court; civil or military authority shall not constitute a breach of this Agreement by CITY. CITY shall exercise its regular management practices with respect to providing Reclaimed Water of a supply and quality to meet COUNTY's needs up to the limit of Reserved Capacity.

4.2 UNAVAILABLE RECLAIMED WATER SUPPLY. CITY agrees to attempt, when possible, to give COUNTY notice by telephone, followed by notice in writing via email, in the event the supply of Reclaimed Water has become or will be unavailable.

4.3 RECLAIMED WATER SAMPLING. CITY shall be responsible for having the Reclaimed Water within the Reclaimed Water System sampled and tested as required by the Reclaimed Water System Permits. Any Reclaimed Water sampling, inspection and testing required by any regulatory agency for Reclaimed Water downstream of the Point of Connection shall be the sole responsibility of COUNTY.

5. PROVISIONS PERTAINING TO CHARGES.

5.1 BASIS OF CHARGES. CITY shall provide Reclaimed Water to COUNTY at the following initial Wholesale Reclaimed Water Rate:

Volumetric rate of \$ 0.76 per thousand gallons

The Wholesale Reclaimed Water Rate is subject to change each Rate Year, based on actual costs incurred during the previous Fiscal Year. COUNTY shall be notified of proposed rate changes in writing at least sixty (60) days prior to the

beginning of each Rate Year. No increase shall be implemented without this required notice.

5.2 ESTABLISHMENT OF WHOLESALE RECLAIMED WATER RATE. The Wholesale Reclaimed Water Rate is designed to allow the CITY to pay all Operation and Maintenance Cost of the Reclaimed Water System, both fixed and variable, as may be determined by the CITY based on the cost allocation methodology demonstrated in Exhibit C, as needed to supply Reclaimed Water to wholesale customers. For each Rate Year, the CITY shall fix a Wholesale Reclaimed Water Rate for the sale of Reclaimed Water furnished by the CITY to the COUNTY, as follows:

(1) Assessment of Joint Operation and Maintenance Cost to COUNTY. For each Rate Year, the Wholesale Reclaimed Water Rate will be based on the actual Operation and Maintenance Cost incurred in the prior Fiscal Year. The CITY shall separate the actual Operation and Maintenance Cost from the prior Fiscal Year into Joint Operation and Maintenance Cost and Retail Operation and Maintenance Cost. The City will develop estimates of the actual costs incurred in each Fiscal Year in order to prepare a new rate calculation before the end of January in order to provide notification of any changes to the Wholesale Reclaimed Water Rate at least thirty (30) days prior to the beginning of each Rate Year. The Joint Operation and Maintenance Cost shall be allocated to the COUNTY based on its expected purchase of Reclaimed Water pursuant to Section 5.2 (2) in proportion to the total expected Reclaimed Water demand for said Rate Year and expressed as cost per thousand gallons of Reclaimed Water (the Wholesale Reclaimed Water Rate).

(2) The COUNTY will provide to the CITY an estimate of expected purchases of Reclaimed Water for each Rate Year by the end of December of the preceding year. This estimate shall be used or the previous year's contracted amount (whichever is larger), in combination with the CITY's estimate of retail reclaimed water sales for the next Rate Year, to determine the total expected reclaimed water demand.

(3) Exclusivity. The Wholesale Reclaimed Water Rate shall not be subject to supervision or regulation by any other commission, board, bureau, agency or other political subdivision or agency of the county, state or federal government.

5.3 PAYMENT AND PENALTIES FOR NON-PAYMENT. CITY shall bill COUNTY for Reclaimed Water services on a monthly basis in accordance with its standard billing procedures and COUNTY shall pay such billings within forty-five (45) days of the date of the receipt of each monthly bill. Should COUNTY not pay within the forty-five (45) day period, COUNTY shall pay an interest penalty on the unpaid balance at the maximum rate allowable by law. Should a billing or a portion of a billing be outstanding for a period of more than sixty (60) days from the date of the original billing, COUNTY shall be considered in default

and CITY shall have the right, but not the obligation, to: (a) discontinue service until the past due billing is paid; (b) seek enforcement for the payment of outstanding billings by filing an action in the state court of local jurisdiction; and (c) terminate this Agreement for cause pursuant to Article 6.

6. TERM AND TERMINATION AND OTHER AGENCIES

6.1 The Parties acknowledge that each is undertaking a major obligation in consideration for entering into this Agreement. The term of this Agreement shall begin on the Effective Date, and shall continue in perpetuity unless terminated:

- for cause as provided in Sections 6.2 through 6.4 below,
- by mutual agreement of the parties,
- upon three (3) years written notice by CITY to COUNTY or by COUNTY to CITY or
- pursuant to Section 7.6.

6.2 This Agreement may be terminated for cause by the aggrieved Party if the Party in breach has not corrected the breach within thirty (30) days after written notice from the aggrieved Party identifying the breach.

6.3 Termination of this Agreement for cause shall include, but not be limited to, COUNTY exceeding the reserve capacity for four (4) consecutive months pursuant to Section 3.7, COUNTY's failure to timely pay any billings from CITY for the services provided pursuant to this Agreement pursuant to Section 5.2, or failure to comply with the terms set forth in this Agreement.

6.4 JURISDICTION OF OTHER AGENCIES. The Parties acknowledge that certain federal, state, and local agencies have jurisdiction and control over Reclaimed Water matters. Should any such agency issue legally enforceable laws, regulations, mandates, or orders that may alter any of the terms and conditions of this Agreement, each Party shall not be liable to the other Party because of such action, provided that CITY shall not be precluded from making all necessary adjustments to the rates, fees, and charges defined in Article 5. If such agency requests a change in the terms and conditions of this Agreement, the Parties will, by mutual agreement, make every effort to comply with such request. However, this section shall not preclude either Party from bringing forth administrative or judicial challenge, or both, to any change requested by any agency.

7. MISCELLANEOUS

7.1 GRANT INFORMATION. The Parties shall provide each other with all reasonably necessary information pertinent to COUNTY System and COUNTY Service Area or CITY System which any federal, state, or local agencies shall require in an application for financial assistance for construction of Reclaimed Water facilities.

7.2 DEFAULT. In the event any Party defaults under any terms or provisions of this Agreement, the Parties may avail themselves of any rights or remedies available under applicable law, except that the Agreement may not be terminated, except as specified in Article 6.

7.3 INDEPENDENT CONTRACTOR. COUNTY is an independent contractor under this Agreement. Services provided by COUNTY pursuant to this Agreement shall be subject to the supervision of COUNTY. In providing such services, neither COUNTY nor its agents shall act as officers, employees, or agents of CITY. No partnership, joint venture, or other joint relationship is created hereby. CITY does not extend to COUNTY or COUNTY's agents any authority of any kind to bind CITY in any respect whatsoever.

7.4 THIRD PARTY BENEFICIARIES. Neither COUNTY nor CITY intends to directly or substantially benefit a third party by this Agreement. Therefore, the Parties acknowledge that there are no third party beneficiaries to this Agreement and that no third party shall be entitled to assert a right or claim against either of them based upon this Agreement.

7.5 NOTICES. Whenever either Party desires to give notice to the other, such notice must be in writing, sent by certified United States Mail, postage prepaid, return receipt requested, or sent by commercial express carrier with acknowledgement of delivery, or by hand delivery with a request for a written receipt of acknowledgment of delivery, addressed to the Party for whom it is intended at the place last specified. The place for giving notice shall remain the same as set forth herein until changed in writing in the manner provided in this section. For the present, the Parties designate the following:

FOR COUNTY:

Director, Broward County Water & Wastewater Services
2555 West Copans Road
Pompano Beach, Florida 33069

With copies to:

County Administrator
115 S. Andrews Ave., Room 409,
Fort Lauderdale, FL 33301-1872

County Attorney
115 S. Andrews Ave., Room 423,
Fort Lauderdale, FL 33301-1872

FOR CITY:

Director of Utilities

City of Pompano Beach Utilities Department
1205 NE 5th Avenue
Pompano Beach, FL 33060

With Copies to:
City Manager
1205 NE 5th Ave
Pompano Beach, FL 33060
City Attorney
1205 NE 5th Ave
Pompano Beach, FL 33060

7.6 ASSIGNMENT.

Neither this Agreement nor any right or interest herein shall be assigned, transferred, or encumbered without the written consent of the other Party. Notwithstanding the Termination provision of this Agreement, CITY may terminate this Agreement, effective immediately, if there is any assignment, or attempted assignment, transfer, or encumbrance, by COUNTY of this Agreement or any right or interest herein without CITY's written consent.

7.7 GOVERNMENTAL IMMUNITY. Nothing herein is intended to serve as a waiver of sovereign immunity by any Party nor shall anything included herein be construed as consent to be sued by third parties in any matter arising out of this Agreement or any other contract. COUNTY is an entity subject to Section 768.28, Florida Statutes, and shall be fully responsible for the acts and omissions of its agents or employees to the extent permitted by law.

7.8 MATERIALITY AND WAIVER OF BREACH. Each requirement, duty, and obligation set forth herein was bargained for at arm's-length and is agreed to by the Parties. Each requirement, duty, and obligation set forth herein is substantial and important to the formation of this Agreement, and each is, therefore, a material term hereof.

CITY's or COUNTY's failure to enforce any provision of this Agreement shall not be deemed a waiver of such provision or modification of this Agreement. A waiver of any breach of a provision of this Agreement shall not be deemed a waiver of any subsequent breach and shall not be construed to be a modification of the terms of this Agreement.

7.9 COMPLIANCE WITH LAWS. CITY and COUNTY shall comply with all applicable federal, state, and local laws, codes, ordinances, rules, and regulations in performing its duties, responsibilities, and obligations pursuant to this Agreement.

7.10 SEVERANCE. In the event a portion of this Agreement is found by a court of competent jurisdiction to be invalid, the remaining provisions shall continue to

be effective unless CITY or COUNTY elects to terminate this Agreement pursuant to article 6.

7.11 JOINT PREPARATION. The Parties and their counsel have participated fully in the drafting of this Agreement and acknowledge that the preparation of this Agreement has been their joint effort. The language agreed to expresses their mutual intent and the resulting document shall not, solely as a matter of judicial construction, be construed more severely against one of the Parties than the other. The language in this Agreement shall be interpreted as to its fair meaning and not strictly for or against any Party.

7.12 PRIORITY OF PROVISIONS. If there is a conflict or inconsistency between any term, statement, requirement, or provision of any exhibit attached hereto, any document or events referred to herein, or any document incorporated into this Agreement by reference and a term, statement, requirement, or provision of Articles 1 through 7 of this Agreement, the term, statement, requirement, or provision contained in Articles 1 through 7 shall prevail and be given effect.

7.13 JURISDICTION, VENUE, WAIVER OF JURY TRIAL. This Agreement shall be interpreted and construed in accordance with and governed by the laws of the State of Florida. The Parties acknowledge that jurisdiction of any controversies or legal disputes arising out of this Agreement and any action involving the enforcement or interpretation of any rights hereunder, shall be exclusively in the state courts of the Seventeenth Judicial Circuit in Broward County, Florida, and venue for litigation arising out of this Agreement shall be exclusively in such state courts, forsaking any other jurisdiction which either Party may claim by virtue of its residency or other jurisdictional device. **BY ENTERING INTO THIS AGREEMENT, COUNTY AND CITY HEREBY EXPRESSLY WAIVE ANY RIGHTS EITHER PARTY MAY HAVE TO A TRIAL BY JURY OF ANY CIVIL LITIGATION RELATED TO, ARISING FROM, OR IN CONNECTION WITH THIS AGREEMENT.**

7.14 AMENDMENTS. No modification, amendment, or alteration in the terms or conditions contained herein shall be effective unless contained in a written document prepared with the same or similar formality as this Agreement and executed by CITY and COUNTY, or others delegated authority to or otherwise authorized to execute same on their behalf.

7.15 PRIOR AGREEMENTS. This document represents the final and complete understanding of the Parties and incorporates or supersedes all prior negotiations, correspondence, conversations, agreements, and understandings applicable to the matters contained herein. There is no commitment, agreement, or understanding concerning the subject matter of this Agreement that is not contained in this written document. Accordingly, no deviation from the terms hereof shall be predicated upon any prior representation or agreement, whether oral or written.

7.16 INCORPORATION BY REFERENCE. The truth and accuracy of each "Whereas" clause set forth above is acknowledged by the Parties. The attached Exhibits "A" and "B" are incorporated into and made part of this Agreement.


7.17 REPRESENTATION OF AUTHORITY. Each individual executing this Agreement on behalf of a Party hereto hereby represents and warrants that he or she is, on the date he or she signs this Agreement, duly authorized by all necessary and appropriate action to execute this Agreement on behalf of such Party and does so with full legal authority.

7.18 MULTIPLE ORIGINALS. Multiple copies of this Agreement may be executed by all Parties, each of which, bearing original signatures, shall have the force and effect of an original document.

IN WITNESS WHEREOF, the Parties have made and executed this Agreement: BROWARD COUNTY, through its BOARD OF COUNTY COMMISSIONERS, signing by and through its Mayor or Vice-Mayor, authorized to execute same by Board action on the 16th day of August, 2016, and CITY OF POMPANO BEACH, signing by and through its _____ Mayor _____, duly authorized to execute same.

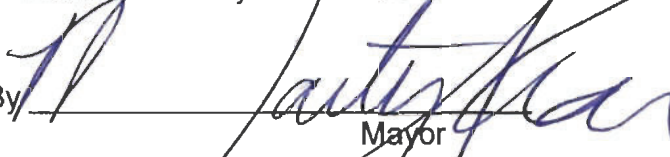
COUNTY

ATTEST:



Broward County Administrator, as
Ex-Officio Clerk of the Broward County
Board of County Commissioners

BROWARD COUNTY, by and through
its Board of County Commissioners

By 

Mayor
16th day of August, 2016

Insurance requirements
approved by Broward County
Risk Management Division

Approved as to form by
Joni Armstrong Coffey
Broward County Attorney
Governmental Center, Suite 423
115 South Andrews Avenue
Fort Lauderdale, Florida 33301
Telephone: (954) 357-7600
Telecopier: (954) 357-7641

By  8/8/16

Signature (Date)
Risk Management Division

Jacqueline A. Binns

Print Name and Title above
Risk Insurance and
Contracts Manager

By  8/9/16

Michael J. Kerr
Deputy County Attorney



RECLAIMED WATER SUPPLY AGREEMENT BETWEEN BROWARD COUNTY AND
CITY OF POMPANO BEACH

CITY

ATTEST:

City Clerk

(SEAL)

CITY OF POMPANO BEACH

By See City Signature Page Attached
Mayor-Commissioner

____ day of _____, 20____.

City Manager

____ day of _____, 20____.

APPROVED AS TO FORM:

By _____
City Attorney

"CITY":

Witnesses:

CITY OF POMPANO BEACH

Betty J. Monis

By:

Lamar Fisher

LAMAR FISHER, MAYOR

Shelly R. Bartholomew

By:

Dennis W. Beach

DENNIS W. BEACH, CITY MANAGER

Attest:

Asceleta Hammond

ASCELETA HAMMOND, CITY CLERK

(SEAL)

Approved As To Form:

Mark E. Berman

MARK E. BERMAN, CITY ATTORNEY

STATE OF FLORIDA
COUNTY OF BROWARD

The foregoing instrument was acknowledged before me this 1 day of July, 2016 by LAMAR FISHER as Mayor, DENNIS W. BEACH as City Manager and ASCELETA HAMMOND as City Clerk of the City of Pompano Beach, Florida, a municipal corporation, on behalf of the municipal corporation, who are personally known to me.

NOTARY'S SEAL:

Kristal Aaron

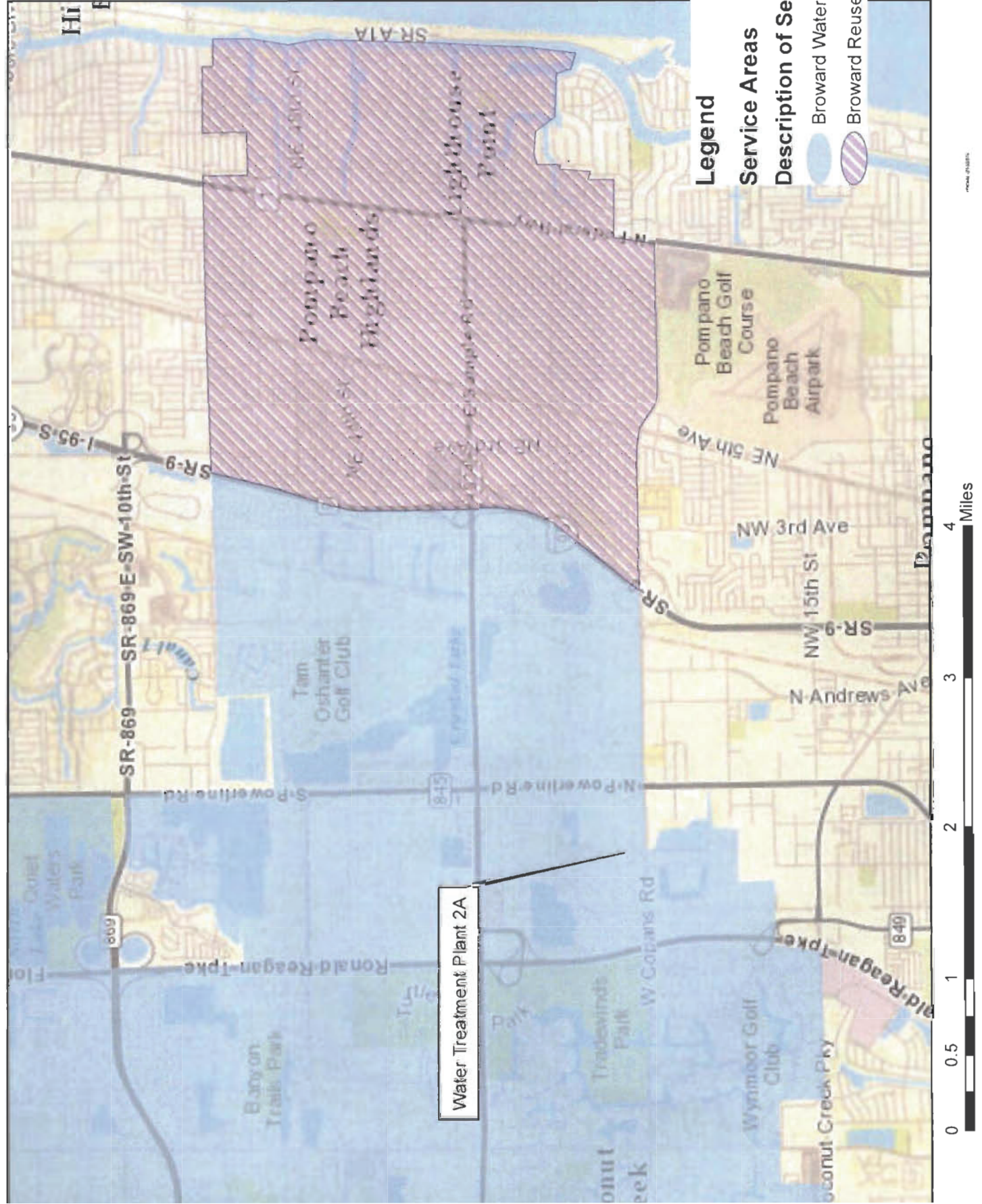
NOTARY PUBLIC, STATE OF FLORIDA

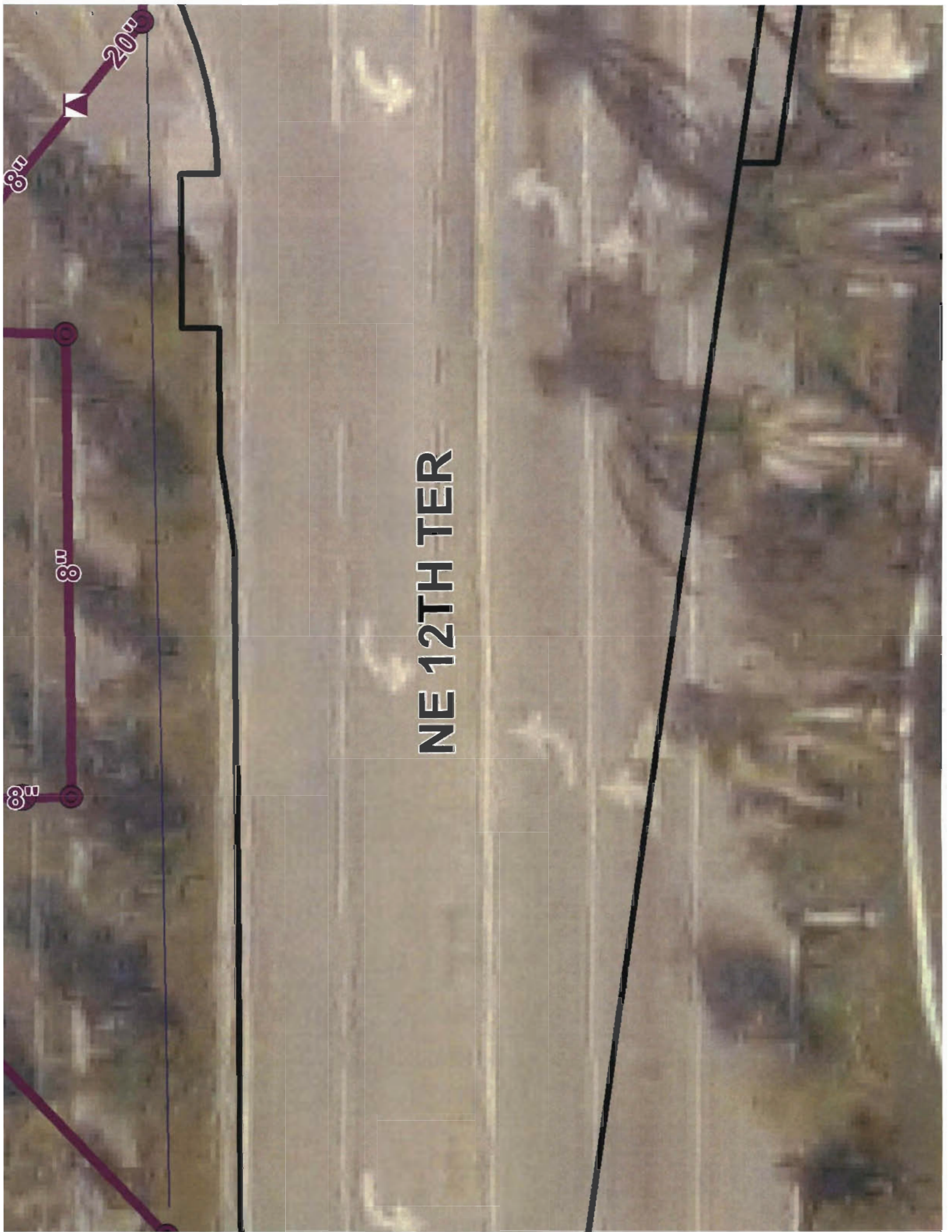
Kristal Aaron

(Name of Acknowledger Typed, Printed or Stamped)

Commission Number

Exhibit A





NE 12TH TER

Wholesale Reuse Rates**REUSE OPERATING COSTS****Reuse Treatment Plant**

Personal Services

Non Empt General Emp	\$ 115,692
Assignment Differential	\$ -
Accrued Vacation / Sick Leave	\$ 23,105
Temporary & Part Time	\$ -
Overtime Regular	\$ -
Overtime Holiday	\$ 5,104
Overtime Call-in	\$ -
Stand By	\$ -
FICA Taxes	\$ 10,911
General Employees Retirement	\$ 53,498
Education	\$ -
Total Personal Services	\$ 208,310

Operating Expenses

Other Professional	\$ 17,478
Central Service Charges	\$ 2,897
Central Stores Charges	\$ 1,229
Customer Service Charges	\$ -
Insur SVC Charges - Health	\$ 16,568
Insur SVC Charges - Risk Mgmt	\$ 29,346
Information Tech Charge	\$ 673
Water & Wastewater	\$ 1,973 ^N
FAA Land Rent	\$ -
Rentals & leases	\$ -
Land, Bldgs, Improvements	\$ -
Machinery & Equipment	\$ 29,224
Special Services	\$ 2,722
Reuse Meters	\$ -
Office Supplies	\$ 943
Chemical / Horticulture	\$ 64,037
Special Supplies	\$ 1,076
Software Purchases	\$ -
Clothing	\$ 593
Cleaning	\$ -

Subtotal Reuse Treatment Plant Operating Expenses

\$ 168,760

Reuse Distribution

Salary Exempt	\$ 36,381
Salary Non-Exempt	\$ 122,866
Fica	\$ 33,418
Other Professional	\$ -
Central Svcs Chgs	\$ 5,146
Central Stores Charges	\$ 9,135
Insur SVC Charges - Health	\$ 61,308
Insur SVC Charges - Risk Mgmt	\$ 4,950
Vehicle Service Charge	\$ 27,983
Information Tech Charge	\$ 6,220
Travel/Education/Member	\$ -
Repair & Maintenance/Land Buildings Improvements	\$ 1,867
Repair & Maintenance/Machinery & Equipment	\$ 17
Repair & Maintenance/Special Services	\$ -
Reuse Water Meters	\$ -
Operating Supplies/Small Tools/Minor Equipment	\$ -
Operating Supplies/Special Supplies	\$ -
Clothing	\$ 1,300
Service Installation Reuse	\$ -
Service Connection Reuse	\$ 94,350
Subtotal Reuse Distribution	\$ 404,941

Reuse Administration		FY 2015
Salary Executive		\$ 8,994
Salary Exempt (includes reuse coordinator position)		\$ 70,260
Salary Non-Exempt		\$ 3,354
Fica		\$ 8,612
Automobile		\$ 3,341
Engineering		\$ -
Management Consulting		\$ -
Other Professional		\$ 198
Central Services Charges		\$ 1,684
Central Stores Charges		\$ 424
Insurance Svc Chgs - health		\$ 19,581
Insurance Svc Chgs - risk mgmt		\$ 1,346
Information Tech Charge		\$ 1,944
Travel/Education/Member		\$ 8,182
Telephone		\$ 967
Postage		\$ 262
Electric (to pump reuse)		\$ 177,977
Land, Bldgs, Improvements		\$ -
Advertising		\$ 3,745
Office Supplies		\$ 32,661
Small Tools/Minor Equipment		\$ -
Special Supplies		\$ 950
Clothing		\$ 463
Publications		\$ 200
Subtotal Reuse Administration		\$ 345,145
Subtotal: O&M Costs		\$ 1,127,156
	O&M Cost per Kgal for Reuse	\$ 1.45
Capital Outlay Items		
Light		\$ 12,950
Heavy Equipment		\$ 41,177
Total Capital Items		\$ 54,127
REUSE CAPITAL COSTS		
Interfund transfer to fund 420 (R&R Fund)		\$ 575,000
Interfund transfer to 465		\$ -
Total Other Items		\$ 575,000
REUSE DEBT SERVICE		
Reclaimed Water Treatment Facility		\$ 338,403
Reclaimed Water Distribution System Expansion		\$ 202,795
		\$ 541,197
Subtotal: Capital Costs		\$ 1,170,324
	Capital Cost per Kgal for Reuse	\$ 1.51
Total Operating and Capital Costs for Reuse System		\$ 2,297,480
Total Cost per Kgal for Reuse		\$ 2.96

ALLOCATION % of OPERATING COSTS to Wholesale Reuse Customers**FY 2015****Reuse Treatment Plant****Personal Services**

Non Empt General Emp	100%
Assignment Differential	100%
Accrued Vacation / Sick Leave	100%
Temporary & Part Time	100%
Overtime Regular	100%
Overtime Holiday	100%
Overtime Call-in	100%
Stand By	100%
FICA Taxes	100%
General Employees Retirement	100%
Education	100%

Total Personal Services**Operating Expenses**

Other Professional	100%
Central Service Charges	100%
Central Stores Charges	100%
Customer Service Charges	0%
Insur SVC Charges - Health	100%
Insur SVC Charges - Risk Mgmt	100%
Information Tech Charge	100%
Water & Wastewater	100%
FAA Land Rent	100%
Leases and Rentals	100%
Land, Bldgs, Improvements	100%
Machinery & Equipment	100%
Special Services	100%
Reuse Meters	0%
Office Supplies	100%
Chemical / Horticulture	100%
Special Supplies	100%
Software Purchases	100%
Clothing	100%
Cleaning	100%
Cost of backflow devises	0%
Cost of rebate	0%
Annual permit renewals - Light House Point	0%
Annual meter inspections - Light House Point	0%

Total Operating Expenses**Reuse Distribution**

Salary Exempt	0%
Salary Non-Exempt	0%
Fica	0%
Other Professional	0%
Central Svcs Chgs	0%
Central Stores Charges	0%
Insur SVC Charges - Health	0%
Insur SVC Charges - Risk Mgmt	0%
Vehicle Service Charge	0%
Information Tech Charge	0%
Travel/Education/Member	0%
Repair & Maintenance/Land Buildings Improvements	0%
Repair & Maintenance/Machinery & Equipment	0%
Repair & Maintenance/Special Services	0%
Reuse Water Meters	0%
Operating Supplies/Small Tools/Minor Equipment	0%
Operating Supplies/Special Supplies	0%
Clothing	0%
Service Installation Reuse	0%
Service Connection Reuse	0%

Reuse Administration**FY 2015**

Salary Executive	0%
Salary Exempt (includes reuse coordinator position)	100%
Salary Non-Exempt	0%
Fica	0%
Automobile	0%
Engineering	0%
Management Consulting	0%
Other Professional	0%
Central Services Charges	0%
Central Stores Charges	0%
Insurance Svc Chgs - health	0%
Insurance Svc Chgs - risk mgmt	0%
Information Tech Charge	0%
Travel/Education/Member	0%
Postage	0%
Telephone	0%
Electric (to pump reuse)	100%
Land, Bldgs, Improvements	0%
Advertising	0%
Office Supplies	0%
Small Tools/Minor Equipment	0%
Special Supplies	0%
Clothing	0%
Publications	0%
Subtotal Reuse Administration	

FY 2015**Allocated O&M Costs to Wholesale Customers**

Reuse Treatment Plant	\$ 377,069
Reuse Distribution	\$ -
Reuse Administration	\$ 248,236
Total Allocated O&M Costs to Wholesale Customers	\$ 625,306

Total Projected Reuse (kgal)

City of Pompano Beach	782,773
Light House Point	4,465
Broward County	36,500
Total Projected Reuse (kgal)	823,738

Wholesale Reuse O&M Rate per 1,000 gallons**\$ 0.76**

Phone: 954-786-4611
Fax: 954-786-4095

July 12, 2016

Mr. Alan Garcia, P.E.
Environmental Engineering Division Director
Broward County Water & Wastewater Services
2555 W. Copans Road
Pompano Beach, FL 33069

RE: City of Pompano Beach Resolution No. 2016-229


Dear Mr. Garcia:

Enclosed, please find a copy of Resolution No. 2016-229, along with six (6) original Reclaimed Water Supply Agreements between the City of Pompano Beach and Broward County.

Upon execution of the Agreements, please ensure one (1) original is returned to the City Clerk's office for our records.

If you have any questions or require additional information, please do not hesitate to contact me.

Sincerely,


Asceletha Hammond, CMC
City Clerk

AH/kda
Enclosure(s)

Appendix F

HISTORICAL AND PROJECTED ANNUAL POPULATION AND DEMANDS

Historical and Projected Annual Populations

Year	Projected Service Area Population	Annual Average	Annual Average with Large Users	Max Month	Max Day	Peak Hour
		Peaking Factors				
		1		1.15	1.41	1.97
		Projected Water Demands (mgd)				
2017	93,529	12.6	13.3	15.3	18.8	26.2
2018	93,973	14.5	15.2	17.5	21.4	30.0
2019	94,743	15.3	16.0	18.4	22.5	31.4
2020	95,512	15.4	16.1	18.5	22.7	31.7
2021	96,173	15.5	16.2	18.6	22.8	31.9
2022	96,834	15.6	16.3	18.7	23.0	32.1
2023	97,495	15.7	16.4	18.9	23.1	32.3
2024	98,156	15.8	16.5	19.0	23.3	32.5
2025	98,817	15.9	17.0	19.6	24.0	33.5
2026	99,478	16.0	17.1	19.7	24.1	33.7
2027	100,139	16.1	17.2	19.8	24.3	33.9
2028	100,800	16.2	17.3	19.9	24.4	34.2
2029	101,461	16.3	17.4	20.1	24.6	34.4
2030	102,122	16.4	18.6	21.4	26.2	36.6
2031	102,710	16.5	18.7	21.5	26.3	36.8
2032	103,297	16.6	18.8	21.6	26.5	37.0
2033	103,885	16.7	18.9	21.7	26.6	37.2
2034	104,472	16.8	19.0	21.8	26.7	37.4
2035	105,060	16.9	19.1	21.9	26.9	37.6
2036	105,508	17.0	19.1	22.0	27.0	37.7
2037	105,956	17.1	19.2	22.1	27.1	37.8
2038	106,404	17.1	19.3	22.2	27.2	38.0
2039	106,852	17.2	19.4	22.3	27.3	38.1
2040	107,300	17.3	19.4	22.3	27.4	38.3

Large Users Total (LU)	
	LU = 0.709
	LU = 1.11
	LU = 2.15

Appendix G

LETTER TO SOUTH FLORIDA WATER MANAGEMENT DISTRICT



April 30, 2020

South Florida Water Management District
Water Supply Implementation Unit
Attention: Terry Manning, Policy and Planning Analyst
3301 Gun Club Road
West Palm Beach, FL 33406

Dear Ms. Manning:

The City of Pompano Beach (City), Florida, is pleased to transmit this Water Supply Facilities Work Plan (WSFWP) update. This WSFWP update is not done in strike-through-and-underline format, as we have instead deleted the previous WSFWP and started an entirely new electronic format.

The City has reviewed the South Florida Water Management District (SFWMD) 2013 and 2018 Lower Coast Water Supply Plan Update (LEC Plan Update) and identified projects located within the jurisdiction of the City's Utilities Department. The following summarizes those projects and their current status.

Ocean Outfall Program

- The Ocean Outfall Program requires the elimination of the six ocean outfalls in southeastern Florida as the primary means of disposal of treated wastewater effluent by 2025. In addition, affected wastewater utilities are required to reuse at least 60 percent of the outfall flows by 2025. Based on reports submitted to the Florida Department of Environmental Protection (FDEP), 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, Coconut Creek and Lighthouse Point. Additional deep injection wells are being installed to serve as a backup disposal option and to decrease flows through the ocean outfall.
- During 2014, the Reclaimed Water Distribution Project to supply the Pompano Beach Highlands area with reclaimed water, was completed. The City of Pompano Beach has an agreement with Broward County to provide up to 1.0 mgd of reclaimed water for this area. Currently, the City is providing approximately 0.4 mgd of reclaimed water to the area. This project will save potable water for Broward County Water and Wastewater Services.

Reclaimed Water

The City has expanded the reuse system to serve hundreds of residences since the last plan update and continues to actively expand the reuse distribution system every year.

- As part of the Cooperative Funding Program for Fiscal Years 2013 to 2018, SFWMD provided funds for the development of alternative water supplies. All projects funded in the LEC planning area during that period were related to reclaimed water. The projects funded by this program in the City's jurisdiction and their corresponding status are the following:

- *Reclaimed Water Distribution System Expansion 2013, Capacity 0.10 mgd.*

This is an ongoing project. Every year the City performs construction work, increasing the coverage of the reclaimed water distribution system. As of this writing, the City has over 1,000 residential customers and 300 commercial accounts.

- *Reclaimed Water System Expansion – NE Pompano and Lighthouse Point Scheduled for fiscal year 2017-2018, Capacity 0.04 mgd.*

This project was divided in five phases, in which phases 1 and 2 have already been constructed, phase 3 is currently under design, and phases 4 and 5 will be designed in the future. Currently, the City has a contract with Lighthouse Point to provide reclaimed water to almost 500 customers throughout this system.

- Reclaimed water treatment added capacity (no specific proposed project).

This planning-level project will require the expansion of the reuse water treatment facility, new storage tanks, and pump stations. Studies for the feasibility of this project will be performed after the completion of the Reclaimed Water Master Plan 2020 Update, which is currently under development. Based on feasibility studies, the plant could be expanded to up to 12.5 mgd.

Water Supply

Efforts to provide an effective use of the LEC water supply are identified throughout the LEC Plan Update. The following is an effort being implemented by the City:

- Alternative Water Supply:
 - The City's commitment to the development of alternative water supply sources through the reduction of potable water used for irrigation and conservation of water have been demonstrated for decades. Reuse efforts combined with community outreach and ordinances have led to a substantial decrease in per-capita water usage. Overall, the City's efforts have reduced the per-capita usage (level of service standard) from a high of approximately 210 gpcd in the 1990's to the rate of 161 gpcd for the year 2018.

- In late 2019, the City commission approved the participation of the City of Pompano Beach Water Utilities in Phase 1 of the C-51 Reservoir Alternative Water Supply Project, for a total 2.0 mgd of capacity. As a result, procedures will be started in 2020 to update the City CUP/WUP to incorporate the additional water supply from the C-51 Project.
- Traditional Water Supply:
 - The City's rated wellfield capacity is sufficient for the future demands during the 10-year planning period, and the City is not required to construct additional wells. However, the City is actively engaged in research concerning the eastern wellfield that may allow the abandonment of older wells and potential construction of newer wells further away from the saltwater interface. The City's new capital projects will incorporate a comprehensive assessment of both wellfields, including evaluations of well production, specific capacity, and mechanical upgrades. The plan will also review existing well rehabilitation and potential relocation and replacement of wells.

Water Treatment

- The City of Pompano Beach plans to investigate mechanisms to improve the efficiency of its nanofiltration WTP by adding a concentrate recovery system that will yield 0.6 mgd of water. The objective of the investigation would be to define how much water savings could be attained. Since the definition of this project in the 2018 LEC Plan Update, the City has considered participation in Alternative Water Supply projects, as stated above; and has placed this project as a supplementary option.

Water Conservation

Water conservation efforts are identified throughout the LEC Plan Update for all planning areas with the objective of reducing the future amount of water supply needed to meet water demands. The conservation-related actions identified in the LEC Plan Update, and the efforts being implemented by the City, are the following:

- *"To the extent feasible, the SFWMD should continue to implement the 2008 Comprehensive Water Conservation Program"* (LEC Plan Update).

The initiatives and actions being implemented by the City are in accordance with the 2008 District's Comprehensive Water Conservation Program.

- *"Public Water Supply utilities are encouraged to develop goal-based water conservation plans to implement water-saving measures and programs"* (LEC Plan Update).
The city has conservation goals of increasing reuse 5% per year and save 30 MG water per year.

The City promotes water conservation through various ways: (1) the OASIS reuse water connection program for single family residents called the ICanWater program; (2) distribution of plumbing retrofits and informing the public on water conservation through public events and homeowners associations meetings; and (3) through the Broward County Mobile Irrigation program, which helps large users of drinking water such as condominiums save water and money by increasing the performance of their irrigation system and making it more efficient. This program is free of charge and voluntary to these large water users.

In addition, the City has assigned funds in the 2019 - 2023 Utility Renewal and Replacement Capital Fund to sustain efforts to conserve potable water resources through a proactive implementation of a Water Conservation Program. The City will revise the Code of Ordinances as required to include any update to this Water Conservation Program.

- *"Local governments should consider developing or enhancing ordinances regarding Florida-Friendly Landscaping™ Program principles [Section 373.185, Florida Statutes]."* (LEC Plan Update)

The City encourages the planting of "Florida Friendly" plants and support "Florida Friendly Best Management Practices for Protection of Water Resources by Green Industries, 2008" (City Ordinance 155.52).

- *"Landscape water users are encouraged to use advanced irrigation technology, implement improved landscape design and management practices, and participate in user recognition programs to increase their water use efficiency"* (LEC Plan Update).

As indicated in the item above, the City encourages the planting of "Florida Friendly" plants and support "Florida Friendly Best Management Practices for Protection of Water Resources by Green Industries, 2008". Among the improved landscape design and management practices constantly promoted by the City are placing high watering plants in one area, using reuse water for irrigation, fertilizing sparingly, and mowing the grass only to 1/3 of grass length (to encourage roots to grow deeper and grass blades to hold more moisture).

- *"Local governments and utilities, in cooperation with SFWMD, are encouraged to provide water conservation-related educational programs, which instill a year-round water conservation ethic. Local governments are encouraged to partner with adjoining municipalities to leverage resources in public outreach and education (e.g., the Broward Water Partnership)."* (LEC Plan Update)

The City has continuously implemented local public education program to encourage water conservation. Also, the City participates in Broward County's water conservation programs, such as "Mobile irrigation" and "Know the Flow."

- *"Local governments should evaluate the implementation of water conservation measures appropriate for their jurisdiction, such as 2-days-per-week landscape irrigation ordinances, which have been successfully adopted in Broward and Miami-Dade counties"* (LEC Plan Update).

The City adopted and enforces a year-round irrigation program (City Ordinance 50.05). Residences and businesses, may water lawns and landscapes 3 days per week for existing landscape under water shortage condition 1, and 1 day a week for water shortage condition 2. For information about conditions: <http://pombeach-fl.elaws.us/code/coor/coor tv ch50 sec50.05>. NOTE: We refer to the BC Code of Ordinances and follow their 2 days per week requirement. SFWMD has asked us to put the BC year-round water restrictions into our ordinances which we will with our utility ordinance revisions this year.

- *"Agricultural water users are encouraged to install high-efficiency irrigation systems, where appropriate, for specific crop types"* (LEC Plan Update).

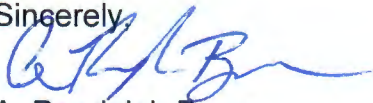
No initiatives have been implemented by the City to promote water conservation in agricultural users, since the City does not have extended land areas dedicated to agricultural purposes.

- *"Industrial, commercial, and institutional entities are encouraged to utilize the Water Efficiency and Self-Conducted Water Audits at Commercial and Institutional Facilities, A Guide for Facility Managers (SFWMD 2013b) to improve water use efficiency and reduce operating costs"* (LEC Plan Update).

The City encourages the implementation of EPA WaterSense guidelines including industrial, commercial, and institutional entities. Water audits are not currently being conducted.

The Work Plan will be adopted and incorporated into the applicable elements of the City's Comprehensive Plan (option #3). We hope the District finds the information included in this letter useful. The City of Pompano Beach continues to plan for and support future water supply and management alternatives for the City.

Sincerely,



A. Randolph Brown
Utilities Director
City of Pompano Beach

Appendix H

POTABLE WATER ELEMENT COMPONENT PROPOSED MODIFICATIONS

2020 Amendment to the Potable Water Element of the 2015 Comprehensive Plan (Amendment to Ordinance 2015-39)

Redline shown to allow identification of amended items per Section 163.3184(3)(c)3.F.S. Amendments shown are the result of both the update of the City's 10-Year Water Supply Facilities Work Plan and a full Comprehensive Plan Update that was performed concurrently by the City.

POTABLE WATER SUBELEMENT GOALS, OBJECTIVES AND POLICIES

Goal ~~1~~7A: Provide safe, reliable, *sustainable*, cost effective potable water to all residents and businesses within the City's water utility service areas and make capital improvements necessary to maintain or improve potable water services.

Objective 07A.01.00: Health & Safety

The City shall ensure the provision of a safe and *reliable sanitary* supply of potable water to customers in its service area *and the entire City* through *regulatory compliance and best*~~good~~ operating *and management* practices.

- Policy 07A.01.01: Deliver safe and reliable potable water to residents and businesses in the City of Pompano Beach *and to residential outside of Pompano Beach but within the City's utility* service area.
- Policy 07A.01.02: Maintain a conservation rate structure for potable water which provides a minimum level of usage at a cost effective rate.
- ~~Policy 3: Maintain agreements for the delivery of safe and reliable potable water to City of Pompano Beach residents and businesses which are served by outside providers.~~
- Policy 07A.01.034: Provide sufficient water to meet system designed fire flows while maintaining required system pressure.
- Policy 07A.01.045: Comply with all potable water standards and reporting requirements ~~which pertain to health and safety.~~
- Policy 07A.01.056: Potable water service providers should *explicitly* notify customers of supply interruptions as soon as possible ~~and as clearly as possible.~~
- Policy 07A.01.067: Minimize the interruption of potable water service to customers and *conserve wasted* water by responding quickly to breaks in water mains.
- Policy 07A.01.078: Follow industry standards in disinfecting water mains in order to maintain optimum chlorine residual levels.
- Policy 07A.01.089: The City of Pompano Beach shall review all proposed land use plan map amendments within *the* City limits for adequacy of water supplies ~~and identify any adverse impacts on the water supply system.~~

Objective 07A.02.00: Level of Services

Water Supply Plan: Goals, objectives, policies

2020 Amendment to the Potable Water Element of the 2015 Comprehensive Plan (Amendment to Ordinance 2015-39)

The City of Pompano Beach shall maintain the level of service standards ~~at of 161191~~ or ~~less~~ lower gallons per capita per day; *the BCWWS District 1 LOS is 112 gpcd and the BCWWS District 2 is 96 gpcd.*

- Policy *07A.02.01*: Capital improvement projects undertaken to maintain the established levels of service ~~shall~~ *will* be *included in the Capital Improvement Element of the Comprehensive Plan and implemented through the 5-Year in accordance with the schedule provided in the Capital Improvements Plan (CIP) which is updated annually. The 5-Year CIP shall reference BCWWS water supply facility improvements being implemented by BCWWS if those improvements impact the City Element of the Comprehensive Plan.*
- Policy *07A.02.02*: The projected levels of service shall be the minimum levels of service maintained during the ten (10) year review period of the Consumptive Use Permit and ten (10) year Water Supply Plan planning periods *during the planning horizon covered by this Comprehensive Plan which is the 5-year 2020-2025 and 15-year time frame of 2026-2040.*
- Policy *07A.02.03*: The City shall ~~annually~~ evaluate the levels of services standards *every five years* in order to ~~ascertain~~ *determine* continued applicability.
- Policy *07A.02.04*: The design capacities and current (~~2007~~ *2019*) demands for the Pompano Beach Water Facility and the Broward County Water Facilities 1A and 2A are as follows:



Pompano Beach Water *Treatment Capacity*

- Lime Softening Plant 40.00 million gallons per day in Design Capacity
- Membrane Plant 10.00 million gallons per day ~~in Design Capacity~~ *demand in 2019*
- Total: 50.00 million gallons per day in Design Capacity
- ~~12.42~~ *15.41* million gallons per day in ~~Current~~ *2019* Demand

Broward County *Water Treatment Capacity* ~~Level of Service~~

- *2A Plant:*
 - ~~40.00 2A Plant 30.00~~ million gallons per day in Design Capacity
 - ~~12.9~~
 - ~~12.32~~ million gallons per day in ~~Current~~ *2019* Demand
 - *112 gpcd generation rate (2019)*

~~Broward County~~

- *1A Plant:*
 - ~~1A Plant 10.67~~ *16.0* million gallons per day in Design Capacity
 - ~~7.1~~ *147.45* million gallons per day in ~~Current~~ *2019* Demand
 - *96 gpcd generation rate (2019)*

~~Note: All demand figures are for 2013~~

- Policy *07A.02.05*: Evaluate the need to update the Water Master Plan every five years.

Water Supply Plan: Goals, objectives, policies

2020 Amendment to the Potable Water Element of the 2015 Comprehensive Plan (Amendment to Ordinance 2015-39)

- Policy *07A.02.06*: Review the decennial U.S. Census data and *compare to the City's projected population projections to determine if any adjustments in-accordingly population expectations are necessary.*~~projections~~
- Policy *07A.02.07*: ~~The City of Pompano Beach will consult with the water supplier, p~~Prior to *site plan approval, the anticipated water demand for a project will be determined to ensure that issuing the building permit or its functional equivalent, to determine whether adequate water supplies-supply will be available* to serve the new development. ~~will be available no later than the anticipated date of issuance of a certificate of occupancy or its functional equivalent by the City.~~

Objective *07A.03.00*: Coordination with other entities

The City shall, through the use of Interlocal Agreements, provide potable water service to *in Lighthouse Point and Lauderdale by the Sea; will work customers outside the City limits, cooperate* with Broward County Utilities which serves customers inside the City limits; and maintain interconnections to these potable water systems.

- Policy *07A.03.01*: Continue to provide safe and reliable potable water services to the City of Lighthouse Point service area according to Interlocal Agreement.
- Policy *07A.03.02*: ~~Negotiate-Maintain~~ an Interlocal Agreement or memorandum of understanding with the Town of Lauderdale by the Sea for the continued provision of safe and reliable potable water services.
- Policy *07A.03.03*: Maintain agreements for the delivery of safe and reliable potable water to City of Pompano Beach residents which are served by *Broward County Water & Wastewater Services*~~outside providers.~~
- Policy *07A.03.04*: Monitor development near the Town of Hillsboro Beach wellfield (*925 NE 36th Street*), which is located within the City of Pompano Beach city limits, to assist them in protecting their water supply.
- Policy *07A.03.05*: Maintain agreements or memoranda of understanding which provide for various interconnections with other potable water entities which operate their own potable water systems *which include and may not be limited to in the future: Coconut Creek, Deerfield Beach, Fort Lauderdale, North Lauderdale, and Broward County.*
- Policy *07A.03.06*: Share information concerning ongoing water supply needs, especially through the 10-~~Y~~-year Water Supply *Facilities Work* Plan process, with City of Lighthouse Point, Town of Lauderdale by the Sea, and Broward County.
- Policy *07A.03.07*: Coordinate with City of Lighthouse Point, Town of Lauderdale by the Sea, and Broward County ~~on~~*n* the implementation of alternative water supply projects (primarily water reuse), establishment of level of service standards and resource allocations.

Objective *07A.03.04.00*: Capital Improvements

Taking into account recent technology advances and regulatory requirements, ~~t~~he City shall review and revise priorities for the replacement of facilities, correction of *any* existing water supply and facility deficiencies and provisions for future water supply and facility needs, as developed in the Water Master

Water Supply Plan: Goals, objectives, policies

2020 Amendment to the Potable Water Element of the 2015 Comprehensive Plan (Amendment to Ordinance 2015-39)

Plan, for inclusion in the City's 5-year Capital Improvement Plan and the Capital Improvement Element, ~~taking into account recent technology advances and regulatory requirements.~~

- Policy 07A.04.01: The construction of capital improvements will be prioritized based upon periodic review of the *Water Supply, Treatment and Reuse Master Plans*, accounting for changes *in* recent technology advances and regulatory requirements.
- Policy 07A.04.02: Where ~~potable water~~ *infrastructure improvements are service is required* concurrent with private development, it shall be the responsibility of the developer to provide these systems (except in unique State or Federal grant situations).
- Policy 07A.04.03: Whenever possible, the City shall attempt to supplement potable water improvements with funding from additional revenue sources including the issuance of City revenue bonds.
- Policy 07A.04.04: Prepare Master Plans for system improvements and submit recommended improvements for the first five years in the City of Pompano Beach Capital Improvement Plan. Water system improvements shall include improvements to Water Treatment Plants, *the* Water Reuse Plant, *the* reuse distribution system, *the* potable water distribution system *and/or the* wellfields.
- Policy 07A.04.05: Upgrade water mains and *service* lines as suggested in the Water Master Plan at strategic locations to meet current and future demand as well as maximize water quality and maintain fire flows.
- Policy 07A.04.06: To minimize the interruption of potable water service to customers due to breaks in water mains, the City's Capital Improvement Plan will follow recommendations in the Water Master Plan which addresses water line replacement at an economically feasible rate.
- Policy 07A.04.07: To minimize rate increases for customers, the City's Capital Improvement Plan will follow the recommendations of the Water Master Plan, *10-Year Water Supply Facilities Work Plan*, *Asset Management Program* and staff considerations which address the replacement of capital equipment near the end of the equipment's life expectancy.
- Policy 07A.04.08: Rates for potable water usage shall include adequate funding for capital improvements *and regulatory requirements*.
- *Policy 07A.04.09: Where new potable water service is required, it shall be the responsibility of the developer to adhere to the City approved Concurrency Design Table, which states the maximum allowable water usage factors for various establishments.*

Objective 07A.05.00: Water Reuse

The existing water reuse facility will reduce consumption of potable water supplies for ~~non-potable~~*non-potable* water purposes, thereby conserving limited supplies of potable water.

- Policy 07A.05.01: Water reuse practices in the aquifer recharge areas will assist in the replenishment of the aquifer and halt the westward flow of the saltwater intrusion line.
- Policy 07A.05.02: Continue to provide reuse water at a rate lower than *the* potable water rate.
- Policy 07A.05.03: Continue to *invest a minimum of \$400,000 per year in the* construction of *reuse* distribution lines for the Water Reuse plant ~~to, which will~~ enable residents, businesses and

Water Supply Plan: Goals, objectives, policies

2020 Amendment to the Potable Water Element of the 2015 Comprehensive Plan (Amendment to Ordinance 2015-39)

city properties to utilize reuse water for ~~outside-outdoor~~ irrigation ~~functions at the minimum rate of \$300,000 per year.~~

- Policy *07A.05.04*: ~~Evaluate the need to u~~Update *the* Water Reuse Master Plan every five years.
- Policy *07A.05.05*: Seek available grants (federal, state and local) for the expansion of the reuse water distribution system.
- Policy *07A.05.06*: ~~Encourage hook-ups to water reuse distribution system, especially large users, to decrease potable water usage for irrigation and reduce treated wastewater disposal demand, consider enacting a mandatory reuse connection for all residential properties like the one that exists for multifamily, commercial, and Lighthouse Point customers. Move toward mandatory connections~~
- Policy *07A.05.07*: Install reuse distribution lines at a rate to meet *the needs identified in the Lower East Coast Water Supply Facilities Work Plan requirements for 2030*2040.
- Policy *07A.05.08*: Upgrade Water Reuse Facility to include advanced treatment in order to meet future water quality regulatory requirements ~~for projects such as wellfield recharge.~~

Objective *07A.06.00*: Other Alternative Water Supply Sources

The City shall pursue alternative sources of raw water supply/treatment such as utilization of the Floridian Aquifer through reverse osmosis and to supplement the existing water reuse system.

- Policy *07A.06.01*: The City shall pursue alternative water supply sources as recommended in the Water Master Plan based on need.
- Policy *07A.06.02*: Develop Alternative Water Supplies, such as Reuse ~~or~~, Floridan aquifer wells, *or C-51 Reservoir capacity*, to satisfy projected water demands, which cannot be *directly* met through increased allocations in the Consumptive Use Permit.
- Policy *07A.06.03*: Develop partnerships with other utilities, in order to minimize cost increases, investigating other alternative water supplies such as the use of ~~the~~ reuse water, stormwater reservoirs and stormwater recharge.
- Policy *07A.06.04*: *Participate on the C-51 Reservoir Alternative Water Supply (AWS) Project Phase I by whatever means appropriate and approved by City Commission. Continue exploring the water storage capabilities of the C-51 storage facility.*

Objective *07A.07.00*: Conservation

Conserve potable water resources through a proactive water conservation program.

- Policy *07A.07.01*: Maintain existing water surcharge fee which is levied during times of water shortages.
- Policy *07A.07.02*: Current and future raw water withdrawals shall comply with the requirements of the SFWMD consumptive use permit.
- Policy *07A.07.03*: For all new building permits, water conserving fixtures shall be required.
- Policy *07A.07.04*: Encourage the planting of “Florida Friendly” plants and support “Florida Friendly Best Management Practices for Protection of Water Resources by Green Industries, 20152008”.

Water Supply Plan: Goals, objectives, policies

2020 Amendment to the Potable Water Element of the 2015 Comprehensive Plan (Amendment to Ordinance 2015-39)

- Policy *07A.07.05*: Continue the public education program to encourage water conservation *and to provide technology upgrades, like the free Dropcountr App, to provide the most recent tools for water use monitoring and conservation.*
- Policy *07A.07.06*: Maintain leak prevention and detection program such that unaccounted water loss is maintained at less than 10%.
- Policy *07A.07.07*: Continue to implement a formal water conservation program as required by the Consumptive Use Permit.
- Policy *07A.07.08*: Revise Code of Ordinances to include updated conservation program.
- Policy *07A.07.09*: Participate in Broward County's water conservation programs, such as "Mobile Irrigation", "Water ~~Matters'~~Matters" and "Know the Flow".
- Policy *07A.07.10*: *Comply with Broward County's Adopt and enforce a* year –round irrigation ~~ruleprogram~~ as referenced in the City of Pompano Beach 10 year Water Supply *Facilities Work Plan.*

Objective *07A.08.00*: Aquifer Resource and Protection

The ~~C~~city shall operate the potable water system and water reuse system in a manner that treats the Biscayne Aquifer as a renewable resource and protects it from depletion.

- Policy *07A.08.01*: The City shall adhere to the restrictions of the Wellfield Protection Ordinance.
- Policy *07A.08.02*: The City shall adhere to the restrictions of the Consumptive Use Permit.
- Policy *07A.08.03*: Protect the integrity of the two wellfields by designating wellfield sites with a suitable land use designation which restricts inappropriate development.
- Policy *07A.08.04*: Protect the integrity of the two wellfields by City ownership of the wellfield sites or restrictive easements on the wellfield sites and water lines from the wells.
- Policy *07A.08.05*: Continue to monitor saltwater intrusion *so that timely action can be taken to protect near the* eastern wells *to the maximum extent possible and to determine when they must be removed from use so that wells remain usable and that timely action to save the wells can be taken.*
- ~~Policy 6: Prevent saltwater intrusion into eastern wellfield site by adding reuse water to prevent western movement of the saltwater intrusion line wellfield.~~
- Policy *07A.08.067*: Follow recommended practices and make improvements to the wells in the eastern and western wellfields as recommended in the Water Master Plan as necessary to maintain capacity and water quality. *Lock in and protect the eight future western well sites in Palm Aire.*
- Policy *07A.08.078*: Review all land use plan map *and text* amendments, rezonings and site plan applications to ensure that there is sufficient potable water resources available *to serve the proposed development and the land uses are consistent with the wellfield protection zone regulations and that they pose no harmful impacts to the Biscayne Aquifer.*

Objective *07A.09.00*: Maintenance Procedures

Follow recommended maintenance industry standards and construct required improvements to assure proper operating capabilities as recommended in the Water Master Plan.

Water Supply Plan: Goals, objectives, policies

2020 Amendment to the Potable Water Element of the 2015 Comprehensive Plan (Amendment to Ordinance 2015-39)

- Policy 07A.09.01: Maintain Water Treatment Plant Facility and Equipment such that Facility meets all regulatory requirements and that said equipment and facility are maintained and improved as needed.
- Policy 07A.09.02: A proper preventative maintenance program effectively requires 80- 90% of maintenance time, while emergency maintenance occupies only 10- 20% of all maintenance hours (AWWA Manual 5).
- Policy 07A.09.03: Plant chemicals *are handled according to OSHA and SDS sheets to ensure ~~are handled such that~~* all safety requirements are met in order to prevent accidents resulting in injury, loss of life, ~~,-~~ disruption of service or costs due to environmental remediation or liability.
- Policy 07A.09.04: *Ensure the p*Preventative maintenance program for wells meets sanitary survey requirements.
- Policy 07A.09.05: Maintain a leak prevention and detection program such that unaccounted water loss is maintained at less than 10%.
- Policy 07A.09.06: Maintain an active Emergency Response Plan to prevent loss of human life, damage to property and to provide for continuation of service in the event of natural or man-made disaster.
- Policy 07A.09.07: Maintain current interconnects with other Utilities to provide water in an emergency, and upgrade interconnects to meet backflow prevention requirements.
- Policy 07A.09.08: Maintain mutual aid agreements with organizations such as FLAWARN in order to mitigate disasters.
- Policy 07A.09.09: The water treatment facility, ~~and~~ water reuse facility and distribution system shall maintain 100% compliance with all regulations.

Objective 07A.10.00: Regulatory Matters

Comply with all water quality, operations and reporting regulations.

- Policy 07A.10.01: ~~Average of p~~Plant inspections results *should average ~~at~~* 90% rating or better.
- Policy 07A.10.02: Protect wells such that water quality meets all regulatory requirements.
- Policy 07A.10.03: Maintain an effective distribution system per American Water Works Association (AWWA) standards such that water quality within the distribution system meets regulatory requirements and water delivery meets demand.
- Policy 07A.10.04: Meet regulatory requirements as well as AWWA standards for flushing, backflow prevention, valve exercising and cross connection control.
- Policy 07A.10.05: *To ensure coordination of the Comprehensive Plan with the Lower East Coast Water Supply Plan (LECWSP) Updates, continue to adopt the necessary updates to the Water Supply Facilities Work Plan (Work Plan) within 18 months of any adopted update to the LECWSP. As of October 2020, the City hereby adopts by reference the 2020 Water Supply Facilities Work Plan (available at the following link: Pompanobeachfl.gov/compmap/WaterSupplyPlan2020), which covers a planning period of not less than 10-years and addresses issues that pertain to water supply facilities and requirements needed to serve current and future development within the City. The City shall review the plan every 5-years within 18 months after the governing board of the SFWMD approves any updates to the LECWSP. Any changes affecting the Work Plan shall*

Water Supply Plan: Goals, objectives, policies

2020 Amendment to the Potable Water Element of the 2015 Comprehensive Plan (Amendment to Ordinance 2015-39)

be included in the Capital Improvements Plan to ensure consistency between the Potable Water Sub-Element and the Capital Improvements Element.

- Policy **07A.10.06**: The City's Building Inspection Division will perform residential reuse inspections and the City's Utilities Department will perform annual signage inspections as required by the Florida Department of Environmental Protection permit, the Broward County permit, and the City's Reuse Manual.
- Policy **07A.10.07**: To ensure coordination of the Comprehensive Plan with the Lower East Coast Water Supply Plan Update, approved by the South Florida Water Management District ~~on~~ *September 12, 2013 in November 2018*, and prepare updates to Water Supply Plan within 18 months of any future updates to the LEC as approved by the South Florida Water Management District.

Goal 7B2: Incorporate the best available data and science, into ~~its~~ policy and planning decisions for infrastructure, (recognizing the ~~uncertainty impacts~~ associated with long range climate change predictions).

Objective 07B.01.001: Southeast Florida Regional Climate Change Compact ~~Ratification~~

The City shall be an active member of the Southeast Florida Climate Change Compact and will follow the policy direction provided by the Compact.

- Policy **07B.01.01**: The City shall adopt the ~~southeast~~ Southeast Florida Regional Climate Change Compact *sea level rise projections, which are anticipated to be updated at least every 5-years, as the basis for sea level rise planning and adaptation initiatives.* ~~Agreed Modified Guidance developed by the U.S. Army Corps as a starting point for climate change action.~~

Objective 07B.02.00: Ensure Resiliency

The City shall *take actions to maximize the* ~~ensure~~ resiliency of existing and future water resources, water and wastewater infrastructure, ~~from to~~ the predicted impacts of climate *change which includes sea level rise related salt water intrusion and associated fresh water shortages as well as impacts for the protection of water quality, flood damages from increased rain and flooding from rain and storm surge caused by increased hurricane size and intensity and water shortages.*

- Policy **07B.02.01**: Identify public water infrastructure at risk from sea level rise and other climate change related impacts and provide periodic updated assessments no later than every five years *in the Water, Reuse, and Wastewater Master Plans.*
- Policy **07B.02.02**: Provide for increased assessments needed for projected water and wastewater management as changing land use patterns occur under the potential impacts of climate change.
- Policy **07B.02.03**: Protect existing well-fields, surface storage facilities, control structures, water and ~~reuse wastewater~~ treatment plants and transmission infrastructure from increased coastal flooding, sea level rise, saltwater intrusion, and other potential future climate change impacts, and plan for infrastructure replacement and relocation as needed.
- Policy **07B.02.04**: Continue to enforce mandatory reuse zones for commercial and multifamily property ~~easy irrigation~~ when reuse water is available.

Water Supply Plan: Goals, objectives, policies

2020 Amendment to the Potable Water Element of the 2015 Comprehensive Plan (Amendment to Ordinance 2015-39)

- Policy [07B.02.05](#): Continue to support a comprehensive saltwater intrusion monitoring program, together with the South Florida Water Management District and the United States Geological Survey that provides measurable movement of the saltwater intrusion line.
- Policy [07B.02.06](#): Improve resilience to coastal and inland flooding, salt water intrusion, and other related impacts of climate change and sea level rise through the Comprehensive Plan Amendments and related Elements, the Ten Year Water Supply Facility Work Plan, and the Water and Reuse Master Plans.
- *Policy [07B.02.07](#): Complete securing of future sited wellfield locations in Palm Aire to ensure sustainability of water supply.*

Objective [07B.03.00](#): Intergovernmental Coordination

The City shall create and maintain effective intergovernmental coordination and ongoing communication that supports sustainable water supplies and resource protection while maintaining climate change preparedness.

- Policy [07B.03.01](#): Collaborate with local, regional, state and federal partner agencies on developing the scientific, technical knowledge and integrated modeling efforts and continuous data collection needed to understand the potential impacts of climate change on the region's water resources.

Appendix I

CONSERVATION ELEMENT COMPONENT PROPOSED MODIFICATIONS

2020 Amendment to the Conservation Element of the 2015 Comprehensive Plan

Redline shown to allow identification of amended items per Section 163.3184(3)(c)3.F.S. Amendments shown are the result of both the update of the City's 10-Year Water Supply Facilities Work Plan and a full Comprehensive Plan Update that was performed concurrently by the City.

~~II. CONSERVATION ELEMENT~~ GOALS, OBJECTIVES, AND POLICIES

Goal 10

~~09.00.00~~ To protect, enhance and effectively manage the natural resources of the City in order to achieve a high environmental quality including factors that affect *carbon attenuation and* energy conservation.

Objective 10.01.00 - Air Quality

~~09.01.00~~ The City shall put forth an effort to ensure compliance with the minimum air quality standards established by the Florida Department of Environmental Protection and the Broward County Department of Environmental Protection including factors that affect energy conservation.

~~Policies~~

Policy 0910.01.01 The City shall coordinate *efforts to preserve air quality* with Broward County ~~Department of~~ Environmental Protection *and Growth Management Division and will review all proposed development with respect to potential impacts on regional air quality with negative impacts eliminated or effectively mitigated* ~~efforts to preserve air quality.~~

Policy 0910.01.02 The City shall *continue developing their implement a* Climate Change *Mitigation and Adaptation* Program that supports mitigation and sensitivity to the impacts of climate change in coordination with other municipalities, Broward County, private businesses, other governmental agencies and the State of Florida. This program will focus on mitigating the causes and consequences of greenhouse gas emissions in a cost-effective and efficient manner that preserves the City's overall values and quality of life.

Objective 10.02.00 - Surface Water Quality

~~09.02.00~~ The City shall continue to undertake the following actions to assure surface water quality including impacts on the ocean are minimized *and all conditions of the City's National Pollution Discharge Elimination System (NPDES) permit are met.*

~~Policies~~

Policy 0910.02.01 Enforce the City regulations that require new development (other than low density residential) retain the first flush of storm water before it enters surface water bodies and in other ways meet the "best management practices" of the South Florida Water Management District.

Policy 0910.02.02 The City shall encourage the appropriate agencies to monitor wastewater discharged into the ocean to assure compliance with secondary wastewater standards *and ensure all ocean outfalls are terminated by the 2025 deadline.*

Policy 0910.02.03 The City shall report all prohibited discharges of untreated wastewater into canals and the Intracoastal Waterway to ~~the~~ Broward County ~~Department of Environmental Protection~~ and/ or the South Florida Water Management District-.

Policy 0910.02.04 The City shall encourage the planting of acceptable vegetation along waterways to provide cleansing action, ~~except where sea walls now exist.~~

~~09.02.05~~ *The City shall keep any ocean sewage outfall at least one mile from the off-shore coral reef tract.*

Policy 0910.02.056 ~~The~~ Broward County ~~Department of Environmental Protection~~ requires all marinas to have pump-out facilities and ~~prohibits discharge from boats into the surface water and~~ to obtain a permit for such operation. *Discharge from boats into the surface water is prohibited.*

Policy 0910.02.067 The City and other regulatory agencies shall require the use of proper turbidity control measures during any major operation (e.g. beach re-nourishment) in the vicinity of the coral reef and the responsible permitting agency shall monitor the measures.

Policy 0910.02.078 The City shall coordinate with Broward County in the environmentally sensitive management of aquatic weeds.

Policy 0910.02.089 The City shall conduct canal dredging in an environmentally sound manner.

Policy 0910.02.0910 The City shall encourage the rapid cleanup of any off-shore oil spill; this is the responsibility of County and Federal agencies.

Policy 0910.02.1011 The City shall conform to the flood management plans of the County, South Florida Water Management District and local drainage districts in order to maintain adequate flood carrying and storage capacities.

Policy 0910.02.1112 The City shall encourage the use of on-site lakes to meet irrigational water needs.

Policy 0910.02.1213 The City shall preserve and manage wetlands in compliance with the County, State and Federal regulations.

Policy 0910.02.1314 The City shall continue to maintain Chapter 53 of the Land Development Regulations to ensure consistency with Broward County Code of Ordinances which establish stormwater quality standards.

Objective 10.03.00 - Ground Water Quality

~~09.03.00~~ The quality and quantity of the City's groundwater resources shall be maintained and, where possible, enhanced.

Policies

Policy 0910.03.01 The City shall make certain that all development within a production "wellfield cone of influence" complies with the County Wellfield Ordinance.

Policy 0910.03.02 ~~The eastern and western wellfield production quantity and quality shall be monitored for the protection of the groundwater supply. The western wellfield production quantity and quality shall be monitored particularly because of the increasing reliance on that wellfield.~~

Policy 0910.03.03 City policies shall promote water conservation and, wherever possible, promote and continue the ~~use the~~ re-use ~~of water for irrigation by whatever means are appropriate and approved by City Commission where the quality requirements permit.~~

Policy 0910.03.04 The City shall keep ~~current~~ the emergency water conservation plan *current including the conservation measures and how it will be implemented.*

Policy 0910.03.05 The City shall make certain that all unused wells are capped (per County and SFWMD regulations) to avoid pollution.

Policy 0910.03.06 ~~The City shall continue to participate in explore providing Alternative Water Supply sources of water projects included in the 10-Year Water Supply Plan such as reuse, the C-51 Reservoir, concentrate recovery and other potential AWS projects. The City shall explore the possibility of providing alternative sources of water.~~

Policy 0910.03.07 The City shall, within its jurisdiction, enforce the graduated detailed and specific water reductions set forth by the South Florida Water Management District during times of water shortage *as well as the established year-round water-use restrictions.*

Policy 0910.03.08 The City shall continue its water reuse program to combat saltwater intrusion *and extend water resources.*

Policy 0910.03.09 Protect and conserve the water resources of the Biscayne Aquifer by reducing the per capita demand for potable water and developing alternative water supplies, primarily reuse water.

Policy 10.03.10 *The City will continue to update the 10-Year Water Supply Facilities Work Plan within 18 months of adoption of any update to the Lower East Coast Water Supply Facilities Work Plan by the SFWMD.*

Policy 10.03.11 *Any remaining wetlands that may be found in the City shall be appropriately preserved and protected to preserve their aquifer recharge functions.*

Objective 10.04.00 - Soil Erosion

~~09.04.00~~ The City shall enforce the adopted soil erosion controls *including those consistent with Chapter 27 of the Broward County Code.*

Policies

Policy 0910.04.01 All new development permits will comply with City regulations requiring shoreline and slope stabilization during and after all development activity, including vegetative stabilization after development.

Policy 0910.04.02 The City shall work with the U.S. Soil Conservation Service in their soil erosion control program.

Policy 0910.04.03 All mining and quarrying activities in Pompano Beach shall comply with the permit requirements of the Broward County Department of Environmental Protection.

Objective 10.05.00 - Native Plant & Wildlife Protection

~~09.05.00 All e~~Ecological communities identified by Broward County ~~Department of Environmental Protection~~ and the City as known to contain plant species listed in the Regulated Plant Index for protection by the Florida Department of Agriculture and Consumer Services shall be managed, protected and conserved as appropriate.

Policies

Policy 0910.05.01 In reviewing development applications or park proposals, efforts will be made to preserve native vegetative communities.

Policy 0910.05.02 City policies and ordinances will support Broward County's efforts:

Aa. The sea turtle head start program, including beach lighting controls, and

Bb. The Florida Manatee protection program, including concerted winter enforcement of boat speed regulations.

Cc. Protect and conserve those areas known to be reproduction, nesting and feeding areas for animals listed in Appendix 19-2 of the Broward County Land Use Plan as endangered or threatened species or species of special concern.

Policy 0910.05.03 In the case of new development, enforce city regulation which require the berming of viable remaining Cypress stands to ~~ensure~~*insure* the viability of their ecosystems.

Objective 10.06.00 - Natural Habitats

~~09.06.00~~The City shall use a combination of public education, land acquisition and ordinances to achieve protection or mitigation of the remaining natural habitats.

Policies

~~09.06.01 Where feasible environmentally significant portions of the one remaining Urban Wilderness areas shall be preserved.~~

Policy 0910.06.021 In accordance with the City landscape ordinance continue to ~~levy severe penalties for removal of native vegetation, and~~ encourage the planting of native vegetation coupled with the removal of exotic vegetation as a part of the site plan review process.

Policy 0910.06.023 The City ordinances shall require mitigation of all adversely impacted wetlands.

Policy 0910.06.034 The City ordinances shall encourage the planting of vegetation along the shores of ponds, lakes, borrow pits, and swales.

Policy 0910.06.045 The City shall require that fisheries, wildlife habitat, lakes, floodplains, estuarine marshes and marine habits are preserved and conserved in compliance with applicable County, State and Federal regulations.

Policy 0910.06.056 The City shall coordinate inter-governmentally when opportunities for the preservation or conservation of unique vegetative communities are located within multiple governmental jurisdictions.

Policy 0910.06.067 ~~The City shall require environmental assessments of development proposals of vacant properties to ensure that the presence of protected plant or animal species is known and significant impacts can be mitigated as part of the redevelopment process. All natural ecological communities which have been identified as the basis for management using the criteria established by Broward County related to Local Areas of Particular concern and in particular for the protection of rare and endangered specie shall be designated on the Land Use Plan Map.~~

Objective 10.07.00 - Hazardous Waste

~~09-07-00~~ The City shall comply with the ~~County~~ hazardous waste management program relative to the storage, recycling, and disposal of hazardous waste.

Policies

Policy 0910.07.01 The City shall coordinate with the County's emergency response plan to handle accidents involving hazardous wastes.

Policy 0910.07.02 The City shall promote the recycling of hazardous wastes by:

Aa. Distributing lists of approved recyclers, and

Bb. Publicizing County "amnesty days".

Policy 10.07.03 ~~The City will continue to encourage the designation, clean up and redevelopment of Brownfield sites.~~

Objective 10.08.00 - Dune Restoration

~~09-08-00~~ The sand dune system shall be *protected and enhanced in all completed along the City and private sector projects -owned beach front* in accordance with ~~the a~~ Beach Master Plan *to be prepared and adopted by the City.*

Policies

Policy 0910.08.01 The City shall use its development code standards for the beach sand dune to assure proper location, vegetation, walkovers, etc., when private development takes place.

Policy 0910.08.02 The City shall work with the Broward County Department of Environmental Protection to assure that any beachfront construction obtains a Coastal Construction Permit.

Objective 10.09.00 – Flood Protection

Require all substantial improvement, new development and redevelopment to be consistent with the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM); Chapter 152 of the City's Code and future maps being prepared to determine appropriate finished floor elevations based on 2-feet of sea level rise by 2060.

Policy 10.09.01 Continue to require all substantial improvement, new development and redevelopment to be consistent with the minimum finished floor elevations as specified in the Federal Emergency Management Administrations Agency Flood Insurance requirements, the South Florida Building Code, Chapter 152 of the City's Code of Ordinances and future maps being prepared to determine appropriate finished floor elevations based on 2-feet of sea level rise by 2060.

Policy 10.09.02 Continue to enforce the land development regulations in Chapter 152 of the City's Code of Ordinances which require finished floor elevations be above the highest point of the adjacent road crown elevations for all new development and substantial improvement in areas that are not identified as flood zones on the FEMA FIRM or where the required finished floor elevation would otherwise be lower.

Policy 10.09.03 The City shall maintain the National Flood Insurance Rate Maps and future maps being prepared which identify appropriate base flood elevations based on 2-feet of sea level rise by 2060 in GIS format which enables users to easily identify individual properties.

Policy 10.09.04 The City shall participate in various processes which seek to update the existing 100 year flood plain maps.

Appendix J

PROPOSED CONCURRENCY DESIGN TABLE FOR THE CITY OF POMPANO BEACH

Proposed Concurrency Table for the City of Pompano Beach

	Potable Water Design Flows	Sanitary Sewer Design Flows
Facility Type	Gallons Per Day	Gallons Per Day
Residential:		
Single-Family House	375	315
Duplex	270	225
Triplex	270	225
Townhouse	270	225
Apartment	270	225
Mobile Home	108	90
Multifamily (per bedroom)	150	100
Airport:		
Per Passenger	4	4
Add per employee per 8 hour shift	15	15
Common Area/Concourse/Retail (per 100 sq. ft.)	10	10
Auditorium (per seat)	5	5
Bank (per 100 sq. ft.)	10	10
Banquet Halls (per seat)	25	25
Barber Shop (per seat)	75	75
Beauty Shops (per seat)	170	170
Big Box Retail (Mega Store) (per 100 sq. ft.)	2.5	2.5
Boarding School (per person)	108	90
Boarding House (per person)	54	45
Bowling Alleys (Including Bar & Food Svs. Per Lane)	215	180
Car Wash:		
Manual Washing (per bay)	350	350
Automated Washing (per bay)	5,000	5,000
Churches (per sanctuary seat)	3	3
Churches with Kitchen (per sanctuary seat)	7	6
Country Clubs:		
Per Resident Member Per Room	108	90
Per Seat (Bar, Dining)	27	23
Add per member or patron	25	25
Per employee per 8 hour shift	15	15
With or without Kitchen (per 100 sq. ft.)	20	20
Day Schools:		
With Cafeterias, Gyms & Showers (per person)	27	23
Without Cafeterias, Gyms & Showers (per person)	16	14
With Cafeterias but no Gyms & Showers (per person)	21	18
Day care/nursery (per person)	15	15
Regular School (per person)	10	10
Doctor and Dentist Office:		
Per Practitioner	250	250
Add per employee per 8 hour shift	15	15
Per area (gpd per 100 sq. ft.)	20	20
Factories: (No Processing or Industrial) (8 hour shift)		
With Showers Per Person	37	31
Without Showers Per Person	21	18
Fire Station (per 100 sq. ft.)	10	10
Fitness Center or Gym (per 100 sq. ft.)	10	10
Flea Market open 3 or less days per week:		
Per non-food service vendor space	15	15
Add per food service establishment using single service articles only (per 100 sq. ft.)	50	50
Per limited food service establishment	25	25
Funeral Homes (per 100 sq. ft.)	10	10
Hospitals:		
With Laundry (per bed)	270	225
Without Laundry (per bed)	214	180
Without kitchen wastewater flows	200	200
Add per meal prepared	5	5
Industrial use not discharging a process wastewater and not utilizing potable water for an industrial process (including but not limited to automotive repair, boat repair, carpentry, factory, machine shop, welding) (per 100 sq. ft.)	4	4
Industrial use discharging a process wastewater or utilizing potable water for an industrial process based on system design and evaluation by the Department (per 100 sq. ft.)	4	4
Jail per person	150	150
Kennel (per 100 sq. ft.)	15	15
Landscape & Lawn:		
Per square foot of Area	0.35	0.35

	Potable Water Design Flows	Sanitary Sewer Design Flows
Facility Type	Gallons Per Day	Gallons Per Day
Laundromats Per Machine	428	360
Marina per slip	60	60
Motels & Hotels Per Room	161	135
Nail Salon (per 100 sq. ft.)	30	30
Nursing Homes (per bed)	108	90
Offices (per person, 8 hour Shift)	21	18
Pet Grooming (per 100 sq. ft.)	20	20
Picnic (public) Parks: (per person)		
With Bathhouse Shower & Toilet	11	9
Toilets Only	5	5
Public Institutions Per Person	108	90
Recreational Vehicle (RV) Park (seasonal use) per space	150	150
Restaurants (Including Toilets):		
24 Hour Per Seat	54	45
Not 24 Hour Per Seat	39	33
Drive-In Per Car Space	16	14
Cocktail Lounge and Bar Per Seat	21	18
Fast Food (per seat)	35	35
Takeout (per 100 sq. ft., 350 gpd min.)	100	100
Restaurant using single service articles only and operating 16 hours or less (per day per seat)	20	20
hours (per day per seat)	35	35
Food outlets excluding deli's bakery, or meat department (per 100 sq. ft.)	10	10
Add for deli (per sq. ft)	40	40
Add for Bakery (per 100 sq. ft)	40	40
Add for meat department (per 100 sq. ft)	75	75
Add for water closet	200	200
Rooming Houses Per Day	39	33
Self Service Storage Units (per 100 sq. ft.)	1.5	1.5
Full Service Stations:		
First Two Bays	810	680
Each Additional Bay	375	315
Self Service Stations:		
Per Fuel Pump	108	90
Without Car Wash	450	450
With Single Automated Car Wash	1,750	1,750
Additional Single Automated Car Wash	1,300	1,300
Per Water Closet:		
Open 16 hours per day or less	250	250
Open more than 16 hours per day	325	325
Shopping Centers (No Food Service or Laundry) Per Square Foot of Floor Space	0.1	0.1
SPA (per 100 sq. ft.)	20	20
Stadiums, Frontons, Ball Parks, etc. (per seat)	4	4
Stores (No Food Service or Laundry) Per Square Foot of Floor Space	0.1	0.1
Swimming Pools Per Person	10	10
Theater:		
Drive-In (per car space)	5	5
Indoor (seat)	5	5
Veterinarian:		
Per Practitioner	250	250
Add per employee per 8 hour shift	15	15
Per Kennel	20	20
Per 100 square foot	20	20
Warehouses (No Food Service or Laundry) (per sq. ft.)	0.1	0.1
Wholesale Food Preparation (including but not limited to meat markets and commissaries) (per 100 sq. ft.)	35	35
Work/Construction Camp, semi-permanent (per worker)	54	45