RESOLUTION No. 21-111

A RESOLUTION OF THE MAYOR AND THE CITY COUNCIL OF THE CITY OF DORAL, FLORIDA, SITTING AS THE LOCAL PLANNING AGENCY, RECOMMENDING GOING FORWARD WITHOUT A RECOMMENDATION TO THE LOCAL GOVERNING BODY AN AMENDMENT TO THE CITY OF DORAL COMPREHENSIVE PLAN TO REFLECT THE CITY'S UPDATED 20-YEAR WATER SUPPLY FACILITIES WORK PLAN; APPROVING THE WATER SUPPLY AMENDMENTS TO THE CITY'S COMPREHENSIVE PLAN, AND INCORPORATING BY REFERENCE THE MIAMI-DADE COUNTY WATER SUPPLY FACILITIES WORK PLAN; AUTHORIZING FOR TRANSMITTAL TO THE FLORIDA DEPARTMENT OF ECONOMIC OPPORTUNITY; AND PROVIDING FOR AN EFFECTIVE DATE

WHEREAS, Section 163.3167(9) Florida Statutes, requires each local government to address in its comprehensive plan, the water supply sources necessary to meet and achieve the existing and projected water use demand for an established planning period; and

WHEREAS, Section 163.3177(4)(a), Florida Statutes, requires coordination of the local comprehensive plan with the water management district's regional water supply plan; and

WHEREAS, the City of Doral recognizes the need for better integration between land use planning and water supply planning; and

WHEREAS, Section 163.3177(6)(c), Florida Statutes, requires that local governments prepare and adopt a 10-Year Water Supply Facilities Work Plan and amend their comprehensive plans within 18 months after the water management district approves a regional water supply plan or its update; and

WHEREAS, on April 28, 2021, the City Council of the City of Doral sitting as the Local Planning Agency (LPA) at a properly advertised hearing received testimony and

evidence related to the proposed text amendment to the City's Comprehensive Plan as required by state law and local ordinances.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF DORAL, FLORIDA SITTING AS THE LOCAL PLANNING AGENCY THAT:

Section 1. Recitals. The foregoing recitals are confirmed, adopted, and incorporated herein and made as part hereof by this reference.

Section 2. Decision. The Local Planning Agency hereby recommends going forward without a recommendation to the Local Governing Body (City Council) the adoption of the 20-Year Water Supply Facilities Work Plan and amends the Comprehensive Plan to promote and facilitate better coordination between water supply and local land use planning as required by Florida law. A copy of the 20-Year Water Supply Facilities Work Plan containing the proposed text amendments to the Comprehensive Plan is attached hereto as "Exhibit A."

Section 3. Effective Date. This Resolution shall become effective immediately upon its adoption by the Local Planning Agency.

The foregoing Resolution was offered by Vice Mayor Cabrera who moved its adoption. The motion was seconded by Councilmember Mariaca and upon being put to a vote, the vote was as follows:

Mayor Juan Carlos Bermudez	Yes
Vice Mayor Pete Cabrera	Yes
Councilwoman Digna Cabral	Yes
Councilwoman Claudia Mariaca	Yes
Councilman Oscar Puig-Corve	Yes

TRANSMITTED WITHOUT A RECOMMENDATION TO THE LOCAL GOVERNING BODY (CITY COUNCIL) THIS 28 DAY OF APRIL, 2021.

JUAN CARLOS BERMUDEZ, MAYOR

ATTEST:

CONNIE DIAZ, MMC
CITY CLERK

APPROVED AS TO FORM AND LEGAL SUFFICIENCY
FOR THE USE AND RELIANCE OF THE CITY OF DORAL ONLY:

LUIS FIGUEREDO, ESQ.
CITY ATTORNEY

EXHIBIT “A”

EXHIBIT A

City of Doral, Florida

Water Supply Facilities Work Plan Update

April 8, 2021

Hazen

Hazen and Sawyer
4000 Hollywood Boulevard, 750N
Hollywood, FL 33021 • 954.987.0066

Table of Contents

Section 1.0 – History and Statutory Overview

The City of Doral was incorporated in 2003 as Miami-Dade County's 34th municipality located in the west-central portion of the County. The City has a land area of approximately 15 square miles bounded by the Town of Medley and unincorporated Miami-Dade County to the north, unincorporated Miami-Dade County to the south, east, and west and the City of Sweetwater to the southwest. A map of the City's boundary is provided in Figure 1-1.

As one of the most diverse and dynamic municipalities in the State of Florida and the United States, the City of Doral is a multi-cultural community comprised of residential, recreational, business, and industrial neighborhoods.

The City's government has operated under the Mayor-Council-Manager form of government since incorporation. Policymaking and legislative authority are vested in a governing council consisting of the Mayor and four other Council Members. The City Council, which is elected at large, is responsible for passing ordinances and resolutions, adopting the annual budget, and appointing the City Manager, City Clerk and City Attorney. The City Manager is responsible for carrying out the policies and ordinances of the Council, for overseeing the daily operations of the government, and for appointing the heads of various departments.

Chapter 163.3177(6)(c)3, Florida Statutes (F.S.), requires local governments to prepare and adopt Water Supply Facilities Work Plans into their comprehensive plans within 18 months after the South Florida Water Management District (SFWMD) approves a regional water supply plan or its update. The Water Supply Facilities Work Plan must address the development of traditional and alternative water supplies and management strategies, including conservation and reuse. The data and analyses, including population projections and water demand, must span at least a 10-year planning period and be consistent with the 2018 Lower East Coast Water Supply Plan Update.

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

Due to the COVID-19 Pandemic that restricted the normal operations of governments and private businesses beginning the first quarter of 2020, local governments were provided additional time to prepare their Work Plans.

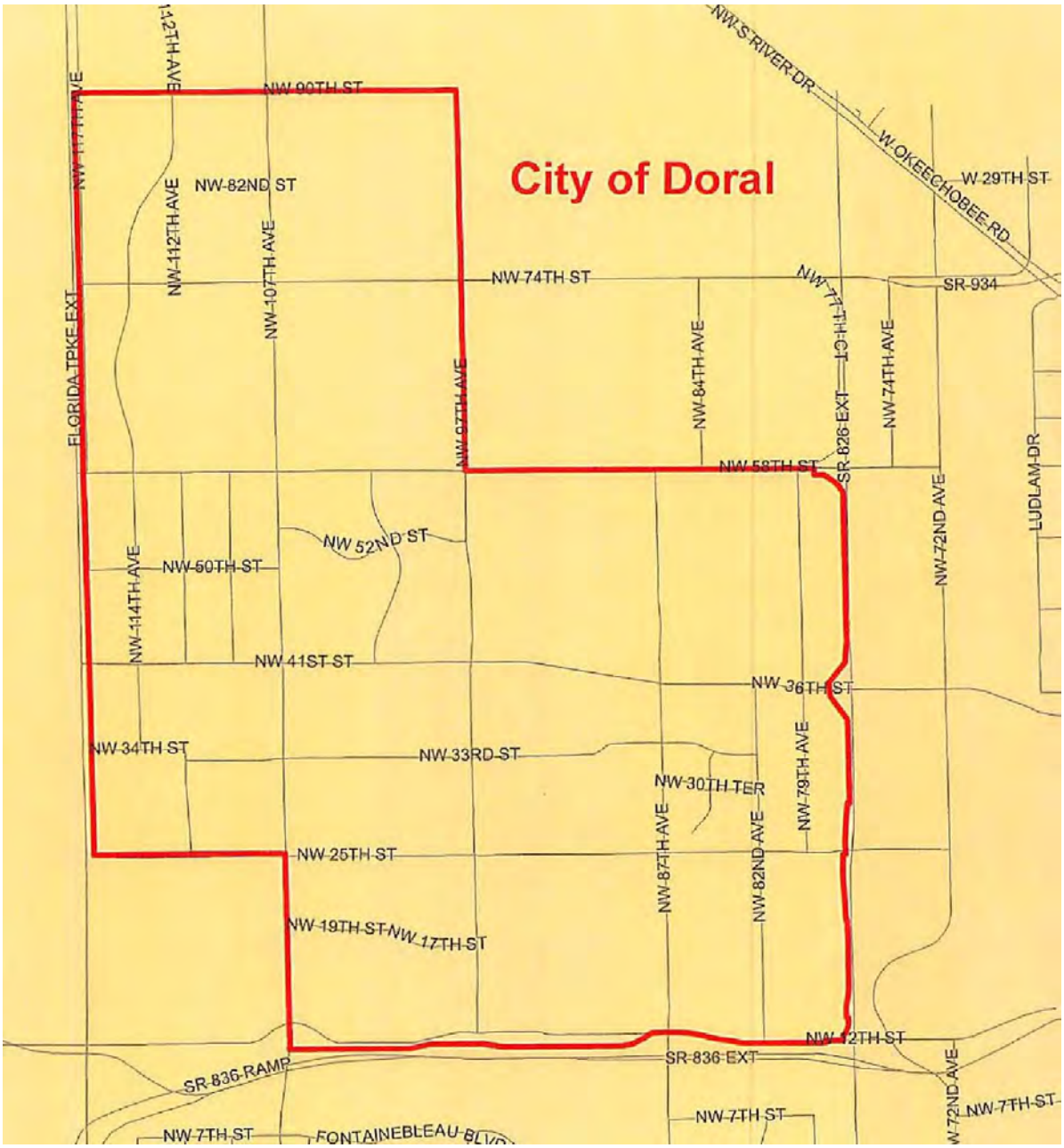

Figure 1-1: City of Doral, Florida Boundary (Source: City of Doral)

Section 2.0 – Work Plan Objectives

The goal of the water supply planning process is to determine the local water needs and develop sound and workable solutions and polices to meet those needs. The purpose of the City of Doral Water Supply Facilities Work Plan (Work Plan) is to identify and plan, in coordination with the Miami-Dade Water Sewer Department (WASD), water supply sources and facilities needed to serve existing and new development within the City over the next ten years.

The residents of the City of Doral obtain their potable water and sewer service directly from WASD, which is responsible for ensuring enough capacity to meet the water needs of existing and future water customers. In addition to serving the City, WASD is the designated regional supplier of potable water for most of the cities in Miami-Dade County. In that capacity, the WASD supplies the City of Doral's residential and non-residential property owners with potable water on a retail basis and bills these customers for this service. WASD owns, operates, and maintains a central potable water distribution system, along with the facilities for collection and treatment of water, which then transmits the potable water to its citizens throughout most of Miami-Dade County.

To maintain a water supply system and conservation program, the City recognizes there must be effective coordination with WASD and the SFWMD and has an excellent working relationship with both to ensure compliance with all regulations and guidelines. In addition, the City's Public Works and Planning and Zoning Departments, through the development approval process, coordinate with WASD to ensure enough water supply is available for existing and future customers and supporting infrastructure is adequately maintained.

The City's residents and businesses obtain their water directly from Miami-Dade County. Therefore, the City's Water Supply Facilities Work Plan references the water demands and initiatives identified in the County's 10-Year Water Supply Facilities Work Plan dated October 2020 provided in Appendix A. This update to the 2014 – 2033 Miami-Dade County Water Supply Facilities Work Plan is anticipated to be adopted in September 2021. The City's Work Plan and comprehensive plan are consistent with State guidelines addressing traditional and alternative water supplies, service delivery, and conservation and reuse programs to serve existing and new development over the next 10 years.

The City's Work Plan is divided into seven sections:

Section 1 – History and Statutory Overview

Section 2 – Work Plan Objectives

Section 3 – Provision of Water Supply

Section 4 – Water Supply Capital Improvements

Section 5 – Regional Issues

Section 6 – Goals, Objectives, Policies

Section 7 - References

Section 3.0 – Provision of Water Supply

3.1 Water Supply Provided by Local Government

The City of Doral does not provide water or sewer services to the residences and businesses within its jurisdictional boundaries. The water and sewer infrastructure serving the City is owned and operated by the WASD. The WASD distribution system supplies adequate water pressures within the City's boundaries so that high service pumps are not required to be owned or maintained by the City to maintain adequate delivery pressures. Within the City, there are no self-supplied water users other than permitted groundwater wells and on-site lakes that provide public supply and landscaping to a cemetery complex.

3.2 Water Supply Provided by Other Entities

The WASD provides potable water service to 86 percent of Miami-Dade County's population and is the designated regional supplier of potable water to the City of Doral. In that capacity, the WASD supplies the City of Doral's residential and non-residential property owners with potable water on a retail basis at a customer cost determined by WASD.

WASD owns, operates, and maintains a central potable water distribution system, along with the facilities for collection and treatment of water, which then transmits the potable water to its citizens throughout most of Miami-Dade County including those in Doral. A visualization of how Doral's residents obtain their potable water is provided in Figure 3-1. Some of Florida's rainfall slowly seeps, or percolates, into the ground to recharge, or refill the underground layers of sand, gravel, and rock. These layers, called aquifers, hold water. WASD drills wells into two of these aquifers, the Biscayne and the Floridan aquifers, to pump out water for treatment and distribution to its customers.

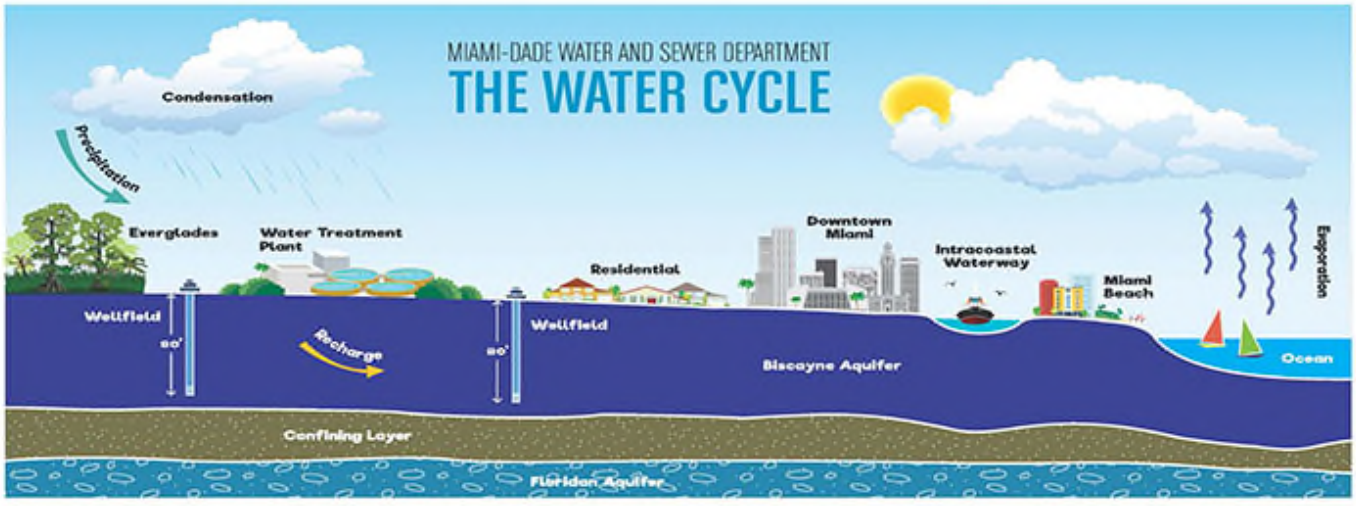

Figure 3-1 The Water Cycle in Miami-Dade County Florida (From Miami-Dade County)

The WASD water service area, including its wholesale customers is depicted in **Figure 3-2**. WASD's water distribution system is supported by three regional treatment plants, five smaller treatment plants located in the southern portion of Miami-Dade County, and the Hialeah Reverse Osmosis Water Treatment Plant. The distribution systems serving these treatment plants are comprised of loops and interconnected transmission lines.

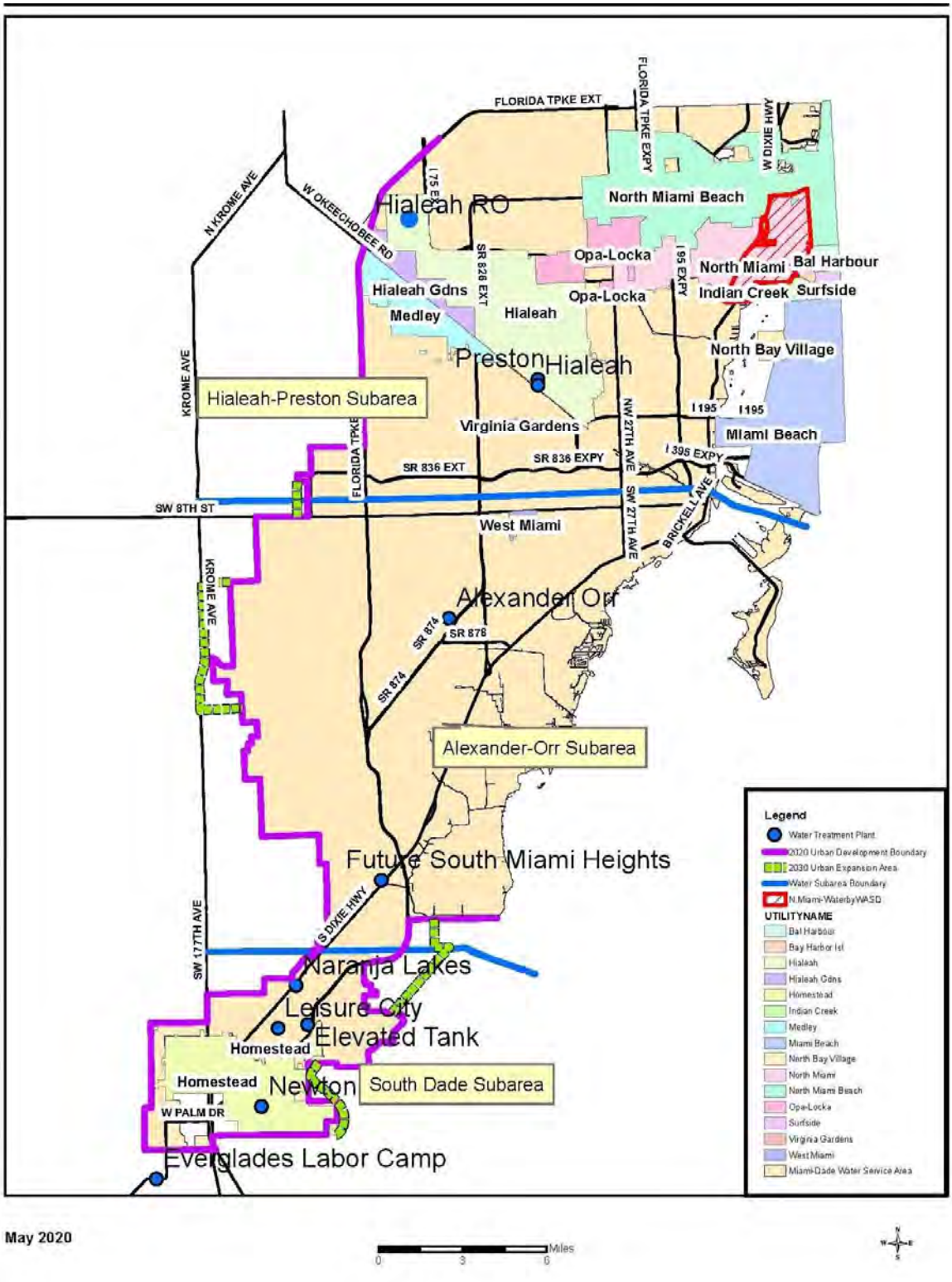

Figure 3-2: WASD Subareas, Water Treatment Plants, and Wholesale Water Customers

The City of Doral is served by the Hialeah-Preston Subarea which is comprised of dedicated low-pressure pipelines, remote storage tanks, pumping facilities and high pressure, systems. The southwestern portion of the Hialeah-Preston water distribution facilities subarea, which includes the City of Doral, is supplied by a 36-inch diameter main that connects to the 54-inch diameter main heading out of the John E. Preston Water Treatment Plant at West 25th Street in Hialeah. The main heads west on NW 74th Street then turns south on NW 107th Avenue. It eventually interconnects with the Alexander Orr, Jr. subarea piping network on SW 56th Street around SW 117th Avenue.

As indicated in the WASD Water Supply Facilities Work Plan, the water supply and treatment systems in the Hialeah-Preston Subarea have sufficient installed capacity to produce more potable water than is currently required to meet the needs of all WASD retail water customers in this Subarea, including the retail customers in the City of Doral. The supply capacity of the existing Hialeah-Preston Subarea wellfields is 343.43 mgd with a permitted raw water withdrawal allocation of 155.40 mgd. The capacity of the two Hialeah-Preston Subarea water treatment plants is 225.0 mgd. The design capacities of these water supply and treatment systems have been coordinated with future demands and allocations.

On February 9, 2015, the South Florida Water Management District approved a revision to WASD's Water Use Permit #13-00017-W (Application #14-627-12). The purpose of this modification was to provide WASD with a total annual allocation of 386.07 mgd (349.50 mgd from the Biscayne Aquifer and 36.60 mgd from the Floridan Aquifer). The new expiration date for WASD's Water Use Permit (WUP) #13-00017 is February 9, 2035.

The WASD service area includes all portions of Miami-Dade County within the Urban Development Boundary (UDB), excluding all or portions of North Miami, Aventura, Sunny Isles Beach, Biscayne Park, Miami Gardens, Homestead and Florida City. The retail municipal customers served by WASD are those located in all or portions of Aventura, Coral Gables, Cutler Bay, Doral, El Portal, Key Biscayne, Miami, Miami Gardens, Miami Lakes, Miami Shores, Miami Springs, Palmetto Bay, Pinecrest, South Miami, and Sweetwater. WASD's wholesale water customers are the cities, towns, and villages of Bal Harbour, Bay Harbor Islands, Hialeah, Hialeah Gardens, Indian Creek Village, Medley, Miami Beach, North Bay Village, North Miami, Opa-Locka, Surfside, Virginia Gardens and West Miami. The areas within the County's Urban Expansion are included in the planning horizon.

WASD's current WUP provides the County with sufficient water supplies through 2030, and additional water supply projects will be pursued to address longer-term needs for WASD's customers and the environment. WASD is working on a WUP modification and will propose to meet the future water demands through wellfield optimization, the C-51 Reservoir, and a new South Dade Wellfield.

In the 20-Year Work Plan, WASD is committed to meet the water demand for all municipalities within its service area. The City of Doral is primarily served by the J.E. Preston Water Treatment Plant. Along with the Hialeah Water Treatment Plant, these plants are interconnected and act as a single system. The plants operate under a Title V Florida

Department of Environmental Protection (FDEP) permit number 0250281-0005-AV. Both facilities treat raw water from the Biscayne Aquifer under consumptive use permit number 13-00017-W and utilize the same basic process for water treatment. The treatment process includes lime softening, chlorination, ammonization, fluoride, filtration, and air striping.

The Miami-Dade County Water Supply Facilities Work Plan dated October 2020 is hereby referenced in its entirety and is provided in Appendix A. The County Work Plan and subsequent revisions are incorporated into the City's Work Plan and Comprehensive Plan through Policy 5A.6.3. The intent of the County Work Plan is to meet statutory requirements and to coordinate the WASD's water supply initiatives with the SFWMD's Lower East Coast Water Supp.ly Plan Update.

3.2.1 Retail Water Demand Forecast in the City of Doral

The City of Doral population and water demand projections provided in the Miami-Dade County's Water Supply Facilities Work Plan dated October 2020 are provided in Table 3.1.

Table 3.1 – WASD 2020-Updated Potable Water Demand Forecasts for the City of Doral, Florida, 2020 to 2040

Municipality	Projection Year	Total Population	2018 Per Capita (gallons per person per day)	Annual Average Daily Water Demand, mgd
Doral	2020	62,789	126.94	7.97
Doral	2025	69,407	126.94	8.81
Doral	2030	76,024	126.94	9.65
Doral	2035	82,642	126.94	10.49
Doral	2040	89,260	126.94	11.33

Source: Miami-Dade County

Independent of the County's population forecast for the City of Doral, the City investigated the potential population growth implied by the expected completion of new housing units within the City from 2020 to 2025, the historic population, and an estimated annual population growth rate of 1.5 percent after 2025. The historic population is provided in Table 3.2.

Table 3.2 Historic Population in the City of Doral, Florida

Year	Population (a)
2015	55,660
2016	59,304
2017	64,167
2018	68,244
2019	70,420

(a) From the City of Doral based on population estimates for the City from the University of Florida Bureau of Economic and Business Research.

The estimated annual numbers of completed new housing units from 2020 to 2025 are provided in Column (2) of Table 3.3. The number of new housing units was estimated based on-site plans approved by the City. Using an estimated 3.3 persons per housing unit, the estimated implied population growth is provided in Column (3) and the implied population is provided in Column (4)

Table 3.3 Implied Population from Increase in New Housing Units City of Doral, 2020 to 2025

Year	Estimated Number of New Housing Units	Implied Population Growth (a)	Implied Population
(1)	(2)	(3) = (2) x 3.3	(4) = Previous Year Population + (3)
2020	1,546	5,102	75,522
2021	2,538	8,375	83,897
2022	842	2,779	86,676
2023	544	1,795	88,471
2024	544	1,795	90,266
2025	1,921	6,339	96,606

(a) supported by the increase in the number of new housing units

Using the 2020 and 2025 population forecasts from Column (4) of Table 3.3 and increasing the population each year after 2025 by 1.5 percent provides a forecast of the City of Doral's population through 2040 as provided in Column (2) of Table 3.4. Using this population forecast and the City of Doral's per capita water use of 126.94 gallons per person per day, the forecast of annual average daily water demand of WASD's retail water customers in the City of Doral is provided in Column (4).

Table 3.4 - Retail Water Use Forecast in the City of Doral, 2020 to 2040

Year	Population Forecast	2018 Per Capita (gallons per person per day) (a)	Annual Average Daily Water Demand, mgd
(1)	(2)	(3)	(4) = (2) x (3) / 1,000,000
2020	75,522	126.94	9.59
2025	96,606	126.94	12.26
2030	104,072	126.94	13.21
2035	112,115	126.94	14.23
2040	120,779	126.94	15.33

(a) City of Doral water demand in Gross Gallons Per Person Per Day from Miami-Dade County that is reflected in the Miami-Dade County 20-Year Water Supply Facilities Work Plan

A comparison of the two water demand forecasts is provided in Table 3.5. The WASD demand forecast is lower than the City's implied forecast by 1.62 mgd in 2020 and is as much as 4.00 mgd lower by 2040. Moving forward, the City will annually monitor its actual population growth, adjust the forecast as needed, and notify WASD if the differences are significant.

Table 3.5 - Comparison of Two Retail Water Demand Forecasts for the City of Doral

Year	Annual Average Daily Water Demand, mgd		
	From WASD	Implied Potential Demand from City	Difference
(1)	(2)	(3)	(4) = (2) - (3)
2020	7.97	9.59	-1.62
2025	8.81	12.26	-3.45
2030	9.65	13.21	-3.56
2035	10.49	14.23	-3.74
2040	11.33	15.33	-4.00

3.2.2 WASD Water Treatment Plants

WASD owns and operates four main water treatment plants and five smaller water treatment plants located throughout the county. A brief description of the four main water treatment plants is as follows.

The Hialeah Water Treatment Plant is located at 700 West 2nd Avenue, Hialeah, Florida and was originally constructed in 1924, with upgrades in 1935, 1946 and 1991. This facility has a maximum installed design capacity of 60.0 million gallons per day. The treatment process includes lime softening with sodium silicate activated by chlorine, re-carbonation, chlorination, ammonization, fluoridation, filtration, and air stripping. There are plans to rerate and upgrade this plant to a capacity of 70.0 mgd, if necessary.

The Hialeah Reverse Osmosis (RO) Water Treatment Plant was released for operation by the Florida Department of Environmental Protection (FDEP) in November 2013. The design, construction and operation of this plant is part of a Joint Participation Agreement (JPA) between the City of Hialeah and Miami-Dade County. The plant is approved to operate at a capacity of 7.5 mgd. An additional 2.5 mgd is scheduled to be completed by December 31, 2021. The main source of water for the Hialeah RO WTP is the Floridan Aquifer. Currently, this plant serves the City of Hialeah and unincorporated areas within WASD's service area. This plant is located at 4250 W. 114th Terrace, Hialeah, Florida.

The John E. Preston Water Treatment Plant is located at 1100 West 2nd Avenue, Hialeah, Florida and was originally designed as a 60 mgd plant in 1968, with upgrades in 1980 (upgraded to 110 mgd), 1988 and 1991. In 1991, the plant was modified with an air stripping capacity of 185 mgd to remove volatile organic compounds (VOCs). In 2005, plant process modifications to provide enhanced softening for reduction of color and total organic carbon came on-line. The current rated capacity is 165 mgd with a treatment process similar to the Hialeah Water Treatment Plant.

The Alexander Orr, Jr. Water Treatment Plant is located at 6800 SW 87th Avenue, Miami, Florida and was originally constructed in 1954. The Alexander Orr, Jr. Water Treatment Plant was expanded on several expansions over the past 50 years. This facility has a

maximum installed design capacity of 256mgd with a rated capacity of 214.74 mgd. This plant receives its source water from the Alexander Orr, Jr. Wellfield, Snapper Creek Wellfield, Southwest Wellfield, and the West Wellfield. The plant's treatment process is very similar to the process used at the Hialeah and John E. Preston Water Treatment Plants.

3.2.3 WASD Public Potable Water Wells

There are no private potable water facilities in the City of Doral. WASD's wellfields and their corresponding Cones of Influence are in or near the City. These wellfields consist of 45 individual wells and have a total designed installed capacity of approximately 295 mgd. Of these wells, 23 provide raw water to the Hialeah Water Treatment Plant while the remaining 22 wells service the J.E. Preston Water Treatment Plant. To protect the quality of the groundwater in the area, the City of Doral has adopted the Miami-Dade County Wellfield Protection Program, which restricts the types of land uses allowed within the area of the wellfield cones of influence. The following are some of the restrictions associated with the Wellfield Protection Program:

- Only uses that do not generate hazardous waste are allowed within the Cone of Influence.
- All permitted land uses within the Cone of Influence shall be required to connect to the WASD central sewer collection system.
- Developments within the Cone of Influence shall be required to meet the minimum requirements for percentages of pervious area.
- Land uses within the Cone of Influence shall be restricted to those uses that do not create water pollution.

3.2.4 WASD Finished Water Storage Facilities

The Hialeah-Preston Finished Water Storage Facilities combine reservoir ground storage, clear wells, and ground and elevated storage tanks to provide a total of 64 million gallons of storage.

3.3 Water Conservation

The City shall promote and further the County's Water Efficiency Use Plan which requires compliance with water use efficiency standards for new residential, commercial, and industrial development and allows for sub-metering in multi-family residential developments. The requirements set forth in Miami-Dade County Ordinance became effective July 1, 2009. Miami-Dade WASD implements all Best Management Practices included in the Water Efficiency Use Plan in addition to various irrigation, Florida Friendly Landscaping, and plumbing fixture efficiency ordinances.

All residences and businesses in the City of Doral receive potable water from Miami-Dade County and are subject to the County's ordinances regarding water conserving practices. The City does not have access to the accounts or the water use data of the County's water

customers, including those located in the City of Doral. Therefore, many water conservation practices instituted in the City of Doral are those that follow the County's water use efficiency plan and its ordinances pertaining to the efficient use of water including year-round landscape irrigation restrictions, landscape standards, use of sub-metering, and the use of water conservation rate structures. In addition, the City has adopted ordinances that address water use related to building construction and landscape design. These plans and ordinances are summarized as follows.

3.3.1 Miami-Dade County Water Conservation Plans and Ordinances

The City of Doral, located in Miami-Dade County, is subject to the following County plans and ordinances.

Miami-Dade Water Use Efficiency Plan: The Miami-Dade WASD's 20-year Water Use Efficiency Goal-Based Plan (Efficiency Plan) was approved by the SFWMD in May 2007. Included in the Efficiency Plan is the Water Conservation Best Management Practices (BMP) Implementation Schedule, Costs, and Savings Projections through the year 2026.

WASD is implementing the BMPs included in the 2019 Annual Report for the Water Conservation Plan to improve the management of traditional water supplies, encourage development of alternative water supplies and improve water use efficiency. Several initiatives were adopted by WASD to encourage efficient use of water by residential and non-residential users. Some initiatives included plumbing retrofits, landscape irrigation evaluations, and residential and commercial water use evaluations and rebates.

To ensure future water savings, the Water Use Efficiency Standards for new residential and commercial developments enacted by the Miami-Dade Board of County Commissioners on January 1, 2009 are being implemented through local building codes. The standards include technical amendments to the Building Code to require maximum water conservation flow rates for plumbing fixtures. Because of these efforts, as of December 31, 2019, the County saw an 18.6 mgd reduction in finished water demand from the year prior to the implementation of the Efficiency Plan in 2006 (from 341.62 mgd to 323.04 mgd).

Miami-Dade County Water Conservation Plans and Development Codes: The County adopted a Water Conservation Plan that was added to its Water Use Efficiency Section as mandated by County Ordinance 06-177, Section 32-83.1 of the Miami-Dade County Code. The Plan identifies BMPs for the service area. (Doral's Comprehensive Plan – Policies: 1.5.3, 5A.3, 5A.3.2)

Since January 1, 2009, the county's building code, specifically Section 8-31 and 32-84, requires the installation of water efficient fixtures and high efficiency appliances. In 2007, the County developed a water conservation program that provides rebates to residents that install high efficiency faucets, toilets and showerheads in properties constructed prior to 1996. It also includes rebates for water efficient upgrades to irrigation systems in single family and large properties throughout the County.

Miami-Dade County Permanent Landscape Irrigation Restriction: Lawn and landscape irrigation throughout the county has been limited to two days per week year-round as required by Section 32-8.2 of the Miami-Dade County Code of Ordinances. Irrigation is not permitted between the hours of 10:00 a.m. and 4:00 p.m.

Miami-Dade County Landscape Standards: Development within the county must comply with landscape standards in Sections 18-A and 18-B of the County Code which encourages Florida Friendly Landscaping to reduce outdoor water use.

Miami-Dade County Multi-Family Sub-Metering: The County Code was also modified to authorize the use of submetering in multifamily residential developments, requiring a meter be installed in each individual dwelling unit for water billing purposes instead of being billed using a single master meter. Use of submeters enhances water use monitoring and encourages water conservation.

Water Conservation Based Rate Structure: Miami-Dade County has adopted a water conservation-based rate structure for its retail water customers.

3.3.2 City of Doral Ordinances and Codes Promoting Water Conservation

The City has adopted the following ordinances and codes to promote water conservation by the City's residents. Because the City does not have access to customer water use data, the City is unable to develop estimates of the amount of water conserved.

Use of Florida-Friendly Landscape Principles: The City of Doral Comprehensive Plan and Land Development Code recommends use of Florida-Friendly landscape materials and the minimum percent of required pervious area that must follow the principles of Florida Friendly Landscape provisions as set forth in the South Florida Water Management District's Xeriscape Plant Guide II. (Doral's Comprehensive Plan - Objective: 5A.5. Policies 1.4.2, 1.4.3, 5A.3.2, 6.1.6)

Requirement of Ultra-Low Volume Plumbing in New Construction: The City of Doral has adopted the Florida Building Code (FBC) which contains plumbing flow restriction requirements. The County Code prohibits the cities within its jurisdiction from enacting standards less stringent from the FBC. The City of Doral Building and Inspection Services also includes, in their procedures, provisions for new construction to have water conservation control devices installed per the Florida Plumbing Code, as a condition for granting certificates of occupancy. (Doral's Comprehensive Plan – Policy 6.1.6)

Rain Sensor Overrides for New Lawn Sprinkler Systems: The City of Doral has adopted the FBC, which requires the installation of rain sensors on new irrigation systems. Additionally, the City of Doral abides by all County's landscape Code requirements, including the use of rain sensors on automatic lawn sprinklers systems. (Doral's Comprehensive Plan – Policy 1.5.4)

City of Doral Adoption of the SFWMD's Water Shortage Restrictions: In 2007, the City of Doral adopted Ordinance No. 2007-13 entitled "Water Restrictions" to protect the water resources of the City from harmful effects of over-utilization during periods of water shortage and to assist the SFWMD as it implements its water shortage plan. The provisions are found in Chapter 47 – Division 2. – Water Restrictions of the City of Doral Code of Ordinances. This ordinance applies to all persons using the City's water resources that are subject to the "water shortage" or "water shortage emergency" as determined by the SFWMD, whether from a publicly- or privately-owned water utility system, private wells, or private connections with surface water bodies. The use of treated effluent or saltwater is excluded from the requirements of this ordinance. The ordinance references the South Florida Water Management District's Water Shortage Plan as provided in Chapter 40E-21, Florida Administrative Code.

This ordinance includes requirements for restrictions on water use during times an "emergency situation" is declared by the SFWMD or when the City Council determines a reduction in water consumption is necessary to alleviate a local water shortage within the WASD water system. Water restrictions may include reduction of hours and days allowed for irrigation and the prohibition on the washing of vehicles and outdoor surfaces, the operation of ornamental fountains and air conditioning systems that do not recirculate the water. Other restrictions include limitations on filling and using swimming pools, limitations on water leakage through defective plumbing, restrictions on hotels and restaurants as to the minimum amount of water necessary to conduct operations and other restrictions, as necessary. (Doral's Comprehensive Plan - Policy 5A.5.1)

City of Doral's Public Information Program: The City distributes information regarding the importance of water conservation and best practices to its residents and businesses through the City's webpage and publications of the WASD and the SFWMD. City staff include professionals with in-depth knowledge of water resources who are available to speak to local schools and community groups who are interested in promoting water conservation and management initiatives. The City also supports and promotes "Green" events through the local schools or community groups. (Doral Comprehensive Plan – Policy 5A.5.2, 6.1.8, 6.1.9)

Intergovernmental Coordination: The City will coordinate future water conservation efforts with WASD and the SFWMD. The City will continue to support and expand existing goals, objectives, and policies in the comprehensive plan that promote water conservation in a cost-effective and environmentally sensitive manner. The City will continue to actively support the SFWMD and its water supplier(s) in implementing new regulations and programs designed to conserve water during the dry season. (Doral's Comprehensive Plan – Objectives 5A.3, 5A.5.1, 6.1.4)

3.4 Reclaimed Water

Because reclaimed water is not presently available, the City does not promote the use of reclaimed water for irrigation purposes within the City. If reclaimed water for irrigation becomes available, the City will coordinate with WASD to promote its use.

Historically, Florida's utilities, local governments, and water management districts have led the nation in implementing water reuse programs that increase the quantity of reclaimed water used and public acceptance of reuse programs. Section 373.250(1), Florida Statutes provides that "water reuse programs designed and operated in compliance with Florida's rules governing reuse are deemed protective of public health and environmental quality." In addition, Section 403.064(1), Florida Statutes, provides that "reuse is a critical component of meeting the state existing and future water supply needs while sustaining natural systems."

According to WASD's 2020 Water Supply Facilities Plan Update, Section 4.5.1.2 Wastewater Reuse, "The County's projected finished water demands are now markedly lower than anticipated when the first 20-year water use permit application was submitted. As such, wastewater reuse to address water supply demands is no longer required, and other alternative water supplies (Floridan aquifer, water conservation, C-51 reservoir, etc.) have been determined to be more viable and shall be considered in the future. WASD is currently implementing a total of 16.49 MGD of reuse at each of the Wastewater Treatment Plants, primarily for in-plant (process water) use. In addition, WASD will be providing up to 15 MGD of reclaimed water from the South District Wastewater Treatment Plant to the FPL facilities at Turkey Point, per Miami-Dade County Resolution No. R-579-20 approved by the BCC on June 16, 2020."

The City of Doral supports water reuse initiatives under consideration by the SFWMD and Miami-Dade County and WASD's efforts to implement reuse projects. The City supports the County's implementation of new regulations or programs that are cost-effective and environmentally sustainable, which are designed to increase the volume of reclaimed water used and public acceptance of reclaimed water. (Doral's Comprehensive Plan - Policies 1.5.5, 6.1.5, Objective 5A.5)

3.5 Intergovernmental Coordination

The City will continue to coordinate future water supply planning and water conservation efforts with WASD and the SFWMD. Specifically, the City will continue to coordinate with Miami-Dade County and WASD regarding the following issues.

- Work with the Miami-Dade County WASD to examine opportunities within Doral to utilize reclaimed water on area golf courses, parks and medians, and if feasible, identify an initial public demonstration project (Doral's Comprehensive Plan – Policy 1.5.5)

- Ensure that the City's potable water demand is included in the Miami-Dade County Comprehensive Development Master Plan (CDMP) and WASD's 20-Year Water Supply Facilities Work Plan (Doral's Comprehensive Plan – Policy 5A.1.4)

- Coordinate with the Miami-Dade County WASD to provide potable water facilities to meet existing and projected demands based on Level of Service (LOS) standards (Doral's Comprehensive Plan – Objective 5A.1)

- Ensure that potable water facility deficiencies under control of the City are corrected to maintain the adopted level of service standards (Doral's Comprehensive Plan – Policy 5A.1.5)

- Ensure that potable water service continues to be planned and provided in conformity with the City's Future Land Use Element and the Miami-Dade County CDMP (Doral's Comprehensive Plan - Objective 5A.2)

- Coordinate future land use designations to ensure that sufficient water supply is available to serve existing and projected demand (Doral's Comprehensive Plan - Policy 5A.2.1)

- Coordinate with Miami-Dade County WASD to meet existing and future demands (Doral's Comprehensive Plan – Policy 5A.2.2)

- Coordinate raw water wellfield expansion and well locations (Doral's Comprehensive Plan – Policy 5A.2.3)

- Coordinate with Miami-Dade County to identify the County's commercial and industrial enterprises that utilize, produce, or dispose of hazardous chemicals as a means to track potential sources of water contaminants (Doral's Comprehensive Plan – 5A.4.4)

- Annually communicate the projected population and non-residential growth to WASD to ensure long term demand is reflected in WASD's water supply reports and permits with the SFWMD and other Federal and State agencies. (Doral's Comprehensive Plan – Policy 6.1.2)

- Encourage the creation and expansion of storage and distribution facilities for reclaimed water to institutional, commercial, and residential properties to reduce the use of potable water for irrigation (Doral's Comprehensive Plan – Policy 6.1.5)

- As needed, coordinate with Miami-Dade County WASD to implement a leak detection program that would identify users with unaccounted for water loss greater than 10 percent (Doral's Comprehensive Plan – Policy 6.1.7)

- Coordinate with Miami-Dade County WASD to develop strategies to improve the resiliency of existing water resources to protect future water quality and minimize the potential for flood damage and water shortage. (Doral's Comprehensive Plan – Policy 6.4.15)

The City coordinates with Miami-Dade County and the SFWMD regarding the following issues.

- Implement comprehensive water conservation measures citywide to ensure that a sufficient supply of water is available to meet current and future demand for potable water (Doral's Comprehensive Plan – Objective 5A.3))

- Promote public information programs sponsored by the SFWMD to increase public awareness and acceptance of water conservation techniques through newsletters, public service announcements, and displays at public awareness events (Doral's Comprehensive Plan – Policy 5A.3.1)

- Determine and assess impacts of proposed developments on the County's potable water supply (Doral's Comprehensive Plan – Policy 5A.4.1)

- Implement water restrictions and implement emergency water conservation measures when necessary (Doral's Comprehensive Plan – Policy 5A.5.1, 6.1.4)

- Conserve and maintain sufficient fresh water supplies, especially during dry periods and implementing water demand management policies and programs (Doral's Comprehensive Plan – Policy 6.1.3)

- Distribute water conservation booklets and brochures produced by the SFWMD and other environmental agencies at City Hall and other public facilities (Doral's Comprehensive Plan – Policy 6.1.8)

The City will continue to ask the SFWMD to review drafts of its Water Supply Facilities Work Plan Update each time the LEC Water Supply Plan is updated.

The City has continuous communication with Miami-Dade County, WASD and the SFWMD with respect to the issues listed above and as new issues arise. As it becomes evident that new issues will become important to water resource, demand, or supply management, they will be incorporated into future Water Supply Facility Work Plan Updates.

Section 4.0 – Water Supply Capital Improvements

4.1 Capital Improvements Schedule

The Miami-Dade WASD's Water Supply Facilities Work Plan dated October 2020 describes the water supply facilities that are planned to meet future water demands through 2030. The County's current forecast of finished water demand is significantly lower than was anticipated when its 20-year water use permit (WUP) application was submitted to the SFWMD in 2007. The decrease in water demand is due to factors internal and external to WASD that significantly reduced Miami-Dade County's per capita water consumption and overall drinking water production over the past 10 years. As such, the development of reclaimed water to address alternative water supply is no longer required or needed. The reduced water demand forecast can primarily be attributed to the following factors.

- The population growth rate has been lower than originally forecast.
- WASD's water conservation program reduced per capita water consumption.
- Water use for irrigation fell after residential and commercial year-round irrigation restrictions became permanent by the SFWMD and the County.
- Landscape watering requirements fell after the County adopted ordinances requiring Florida Friendly Landscaping.
- Florida Building Code changes requiring higher efficiency fixtures for new construction increased customer water use efficiency.
- Evolving trends in housing demographics (apartment development versus single family homes), and water use practices reduced the demand for potable water.
- Water demand fell due to increases in water and sewer rates.

The Miami-Dade County Schedule of Capital Improvements for Sewer Facilities and Water Facilities is provided in Appendix B of the County Work Plan and in the County's Adopted FY 2019-2025 Capital Budget and Multi-Year Capital Plan. The purpose of the capital improvements is to upgrade and improve the system; renovate and upgrade existing facilities; improve the wellfields and pump stations; automate the water treatment plants; acquire land, extend the system; and prepare engineering studies.

The status of the County's alternative water supply (AWS) projects that may benefit the County's retail customers in the City of Doral is provided in Table 4-1. These projects will undergo further refinement as needed and updates to address longer-term demands will be reflected in future WUP modifications submitted to SFWMD. All planned projects are based on current wholesalers remaining on the WASD system through 2040.

Table 4-1: Miami-Dade County's Alternative Water Supply Project Developments that May Benefit its Retail Water Customers in the City of Doral

Project / Milestone	Average Finished Water daily flow	Milestone Completion Date
Hialeah Floridan Aquifer R.O. WTP, Phase 1-a, 10.0 mgd WTP and initial 6 Floridan aquifer supply wells (7.5 mgd, limited by water supply)	(7.5 mgd)	
• Notice To Proceed Design / Permit		Completed
• Notice To Proceed Construction		Completed
• Turnover / Project Completion		Completed
Hialeah Floridan Aquifer R.O. WTP, Phase 1-b, additional 4 Floridan aquifer supply wells. (10.0 mgd, maximum treatment capacity)	(2.5 mgd)	
• Notice To Proceed Design / Permit		Completed
• Notice To Proceed Construction		Completed
• *Turnover / Project Completion*		*12/31/2021*
South Miami Heights WTP (R.O. portion) Phase 1	(12.45 mgd)	
• Notice To Proceed Design / Permit		Completed
• *Notice To Proceed Construction*		*12/31/2021*
• *Turnover / Project Completion*		*12/31/2025*
South Miami Heights WTP (R.O. addition) Phase 2	(5.0 mgd)	
• Notice To Proceed Design / Permit		Completed
• Notice To Proceed Construction		12/31/2028
• Turnover / Project Completion		12/31/2031

4.2 Funding

The City of Doral has not identified any financial responsibilities related to the collection, storage, or distribution of potable water, including water conservation. The costs of operating, maintaining, and improving the WASD water and sewer systems, including the County's conservation programs, are offset by County-established water and sewer rates, County bonds, and government grants provided to the County. The retail customer's water bill is based on the established water rates and the volume of water measured by water meters installed at each customer's service location.

The WASD water and sewer system is financed through an enterprise fund of Miami-Dade County. This fund is separate from all other county funds. The County annually reviews the water and sewer rates charged to customers and adjusts these rates as needed to provide sufficient revenues to offset the administrative, operation and maintenance, debt service and other expenses set forth in the Miami-Dade County WASD annual budget.

Section 5.0 – Regional Issues

The City is aware of and studies the regional issues that impact or have the potential to impact water supply, water demand, and utility infrastructure. The City works with other local governments and utilities within the region to address these issues. This section summarizes the regional issues being followed by the City including:

- Regional Climate Action Plan;
- Climate Change;
- Sea Level Rise;
- Saltwater Intrusion;
- Extreme Weather Events;
- Infrastructure Development;
- C-51 Reservoir;
- Lake Okeechobee Surface Water Allocation Limitations;
- Lowering Lake Okeechobee Level; and,
- Use of brackish groundwater from the Floridan Aquifer.

Each regional issue is presented in the subsections that follow.

5.1 Regional Climate Action Plan

Southeast Florida's unique geographic characteristics make it one of the most vulnerable regions to be impacted by climate change and sea level rise. These characteristics 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 (Compact) and have jointly developed and adopted a Regional Climate Action Plan (RCAP) including 21 recommendations that address "Water Supply, Management, and Infrastructure".

The water supply-related recommendations from the Regional Climate Action Plan 2.0 are summarized in Table 5.1.[1] These recommendations are intended to advance water management strategies and infrastructure improvements needed to mitigate the adverse impacts of climate change and sea level rise.

[1] http://southeastfloridaclimatecompact.org/regional-climate-action-plan/

Table 5.1 - Water Supply Recommendations of the 2019 Regional Climate Change Action Plan

Item	Recommendations
WS-1	Foster innovation, development, and exchange of ideas for managing water.
WS-2	Ensure consistency in water resource scenarios used for planning.
WS-3	Plan for future water supply conditions.
WS-4	Coordinate saltwater intrusion mapping across Southeast Florida.
WS-5	Maintain regional inventories of water and wastewater infrastructure.
WS-6	Develop a spatial database of resilience projects for water infrastructure.
WS-7	Modernize infrastructure development standards in the region.
WS-8	Address the resilience of the regional flood control system.
WS-9	Update the regional stormwater rule.
WS-10	Integrate combined surface and groundwater impacts into the evaluation of at-risk infrastructure and the prioritization of adaptation improvements.
WS-11	Encourage green infrastructure and alternative strategies.
WS-12	Integrate hydrologic and hydraulic models.
WS-13	Practice integrated water management and planning.
WS-14	Advance comprehensive improvements to regional and local stormwater management practices.
WS-15	Foster scientific research for improved water resource management.
WS-16	Expand partnerships and resources to further innovation in water resource management.
WS-17	Advance capital projects to achieve resilience in water infrastructure.
WS-18	Coordinate innovation and regional funding.
WS-19	Recognize adaptable infrastructure.
WS-20	Support the Comprehensive Everglades Restoration Plan (CERP).
WS-21	Expand regional surface water storage.

As WASD is the water supplier to the City of Doral residents and businesses, Miami-Dade County has incorporated these recommendations into its Comprehensive Planning. The recommendations being implemented by the City of Doral are those that are within the City's authority. They are incorporated throughout this Water Supply Facilities Work Plan Update and related comprehensive planning element updates.

The actions that the City of Doral has taken to address the recommendations of the Southeast Florida Regional Climate Change Compact are summarized as follows.

City's Green Statement: The City of Doral has been a leader statewide and nationally since 2003 when, at the City's founding, the new City leaders began work on a new Comprehensive Plan. This Plan took the existing urban sprawl-type development pattern that had developed in Miami-Dade County and transformed the Doral area into a city with downtown focus, mixed use opportunities, business orientation, local transit, and traditional neighborhoods.

Under the strong green leadership of Mayor Juan Carlos Bermudez and the City Council, the Mayor signed the U.S. Mayor's Climate Protection Agreement in 2005. The City continued its green push in 2008 with the development and approval of its "Green Master Plan" which was awarded the 2009 Excellence in Planning Award by the Florida Chapter of the American Planning Association and the 2009 Outstanding Planning Innovation Award of the Florida Planning and Zoning Association.

Florida Green Building Coalition (FGBC): The City of Doral is FGBC Certified (Silver certification level). In keeping with the organization's mission, FGBC has developed green certification programs that apply to construction projects and local government operations. Seeking FGBC certification demonstrates a commitment to providing your customers with products or services that are green and sustainable. Local Florida governments have found that this program protects the environment and improves operational efficiencies that reduce the taxpayer's cost of government.

Green Master Plan: The City of Doral published its Green Master Plan in 2008. The goal of this Plan is to conserve natural resources, enhance quality of life, bolster economic vitality, and leave a sustainable legacy to future generations of City residents. Preparing for a future with limited resources is one of the most important planning challenges that decision makers face. Confronted with this challenge, the City of Doral realized the necessity to plan for a sustainable future. The City has signed the U.S. Mayors' Climate Protection Agreement and has developed the Green Master Plan to guide operations and growth in an environmentally responsible manner. This far-reaching approach builds on the City's previous environmental efforts with the goal to conserve natural resources, enhance quality of life, bolster economic vitality, and leave a sustainable legacy to future generations of City residents.

Green Element of the Comprehensive Plan: In 2011, the City of Doral's Comprehensive Plan (CP) was amended to include the City's Green Element. The "Element" is composed of two parts: (1) Goals, Objectives & Policies (GOPs), and (2) Data, Inventory, and Analysis (DIA). In this Element, the words "green" and "sustainable" are synonymous and when used in the Comprehensive Plan denote "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." This definition was developed as part of the Brundtland Commission Report in 1987 and is an accepted industry standard.

The placement of the Green Element as the initial element in the City's Comprehensive Plan is intended to send the very real signal that the Green Element is the "glue" that gives sustainable purpose and guidance to the other Comprehensive Plan elements, including land use. The City's Green Element component of the Comprehensive Plan meets and exceeds the requirements of State House Bill 697 which requires cities and counties to include consideration of greenhouse gas emissions and energy efficiency in their local comprehensive plans (Section 163.3177, F.S.).

5.2 Climate Change

Investigations and evaluations conducted at the national, regional, and local levels have reinforced the need to plan for the predicted impacts of more frequent and severe drought and increases in tidal and storm-related flooding. To protect the City's water supply infrastructure, ongoing planning efforts should be flexible to adapt to these climate changes.

The City of Doral, together with its municipal and regional partners, understands that local governments and water utilities must integrate water supply and climate change considerations through coordinated planning efforts. The City works to provide relevant updates to the Water Supply Facilities Work Plan and to enhance the Goals, Objectives, and Policies (GOPs) of its comprehensive plan.

The City is a leader in developing planning tools and identifying achievable and cost-effective goals that meet the needs of its community. In 2013, the City signed a resolution endorsing the Mayor's Climate Action Pledge in support of the Southeast Florida Regional Climate Change Compact and the Regional Climate Action Plan.

The City remains a participant in the Southeast Florida Regional Climate Change Compact. The Compact outlines an ongoing collaborative effort among the Compact participants to foster sustainability and climate resilience on a regional scale. The Compact participants include local communities, regulatory agencies, and the counties of Broward, Miami-Dade, Monroe, and Palm Beach.

5.3 Sea Level Rise

The City of Doral is located well-inland from the Atlantic Ocean and, at this time, no impacts are expected from sea level rise. However, development of cost-effective sea level rise adaptation strategies to ensure the sustainability of the water supply in Miami-Dade County is critical to the wellbeing of all county residents, including those residents in Doral. A unified projection by the Southeast Florida Regional Climate Change Compact developed in 2015, is illustrated in Figure 5-1. It shows a 6- to 10-inch increase in sea level in the near term, and a 14- to 26-inch rise by mid-century.

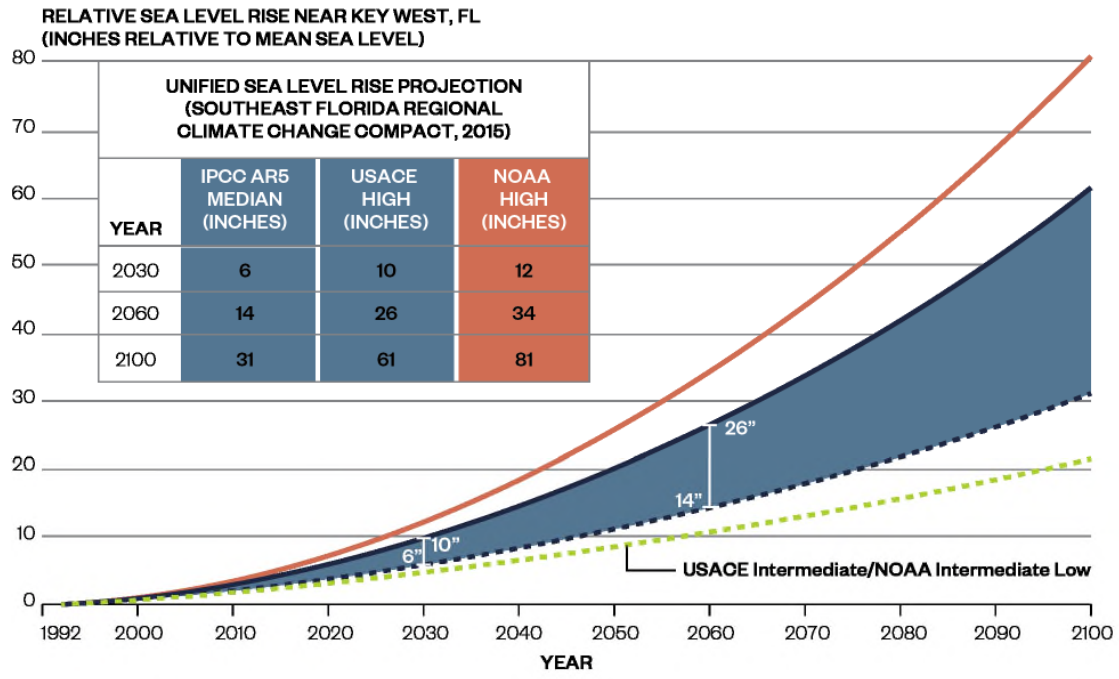

Figure 5-1 – Sea Level Rise Projection (2015)

The sea level rise projection was recently updated by the Compact (in December 2019) that increases the projected magnitude of sea level rise. The revised projection is provided in Figure 5-2. This update is now being used as the basis for planning throughout the region.

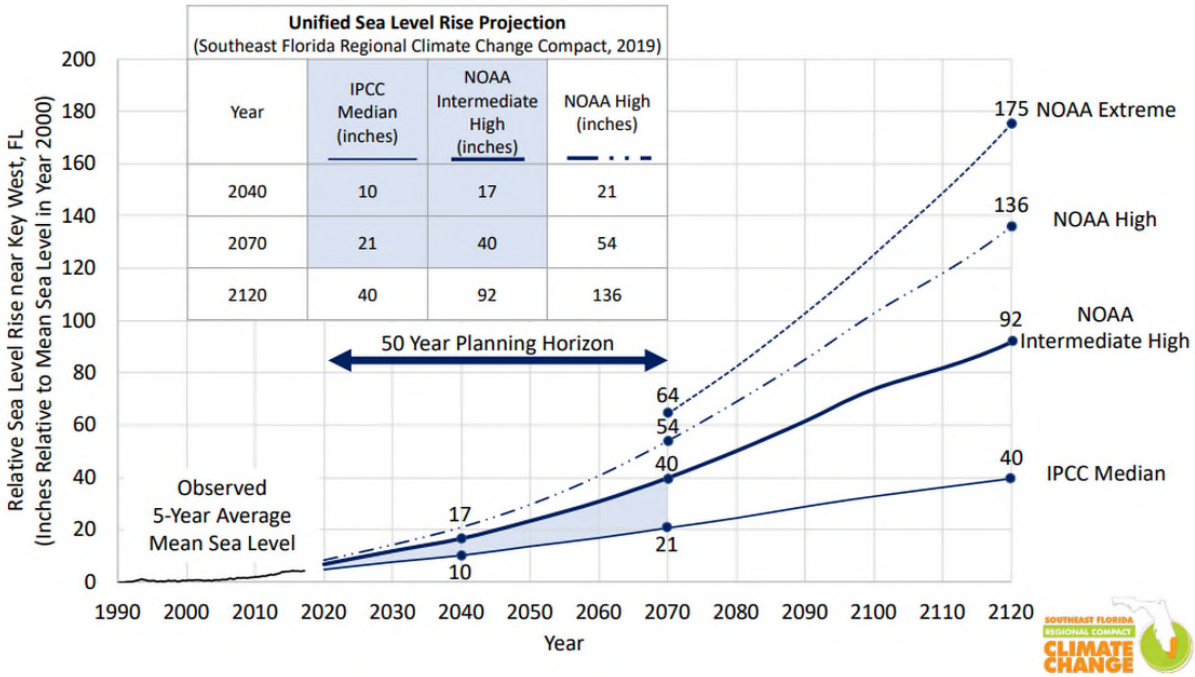

Figure 5-2 – Sea Level Rise Projection (2019)

In terms of infrastructure, every aspect that is underground or touches the ground will need to be assessed for its vulnerability and, if necessary, protected. This includes basic services, such as provision of drinking water, sewage treatment, electricity and waste disposal.

5.4 Saltwater Intrusion

The Biscayne Aquifer is WASD's, and therefore the City's, primary water supply. This aquifer is shallow, surficial, and highly transmissive. Coastal saltwater intrusion of the aquifer has occurred in eastern parts of Miami-Dade County. In 2018, the U.S. Geological Survey (USGS), in cooperation with Miami-Dade County, mapped the approximate inland extent of saltwater intrusion in eastern Miami-Dade County. This approximation required acquisition and compilation of data collected by the FDEP, Florida Keys Aqueduct Authority, Florida Power & Light Company, MacVicar Consulting Inc., Miami-Dade County Regulatory and Economic Resources, the SFWMD, and the USGS. Data from the selected monitoring wells were entered into a geographic information system (GIS) for analysis and mapping.

The approximate saltwater interface is represented by the 1,000-mg/L isochlor at the base of the Biscayne aquifer. The word "approximate" is used because the spatial distribution of monitoring wells is generally insufficient to create a precise representation. The resulting 1,000 mg/L Isochlor Line in Miami-Dade County is illustrated in **Figure 5-3** along with the location of the water supply wellfields owned by WASD and several self-supplied cities. At the toe of the saltwater front, chloride concentrations exceed 1,000 mg/L and thus may restrict the use of and/or require abandonment of wellheads located east of the saltwater intrusion line. Miami-Dade County monitors its movement and the potential impact on the County's water supply.

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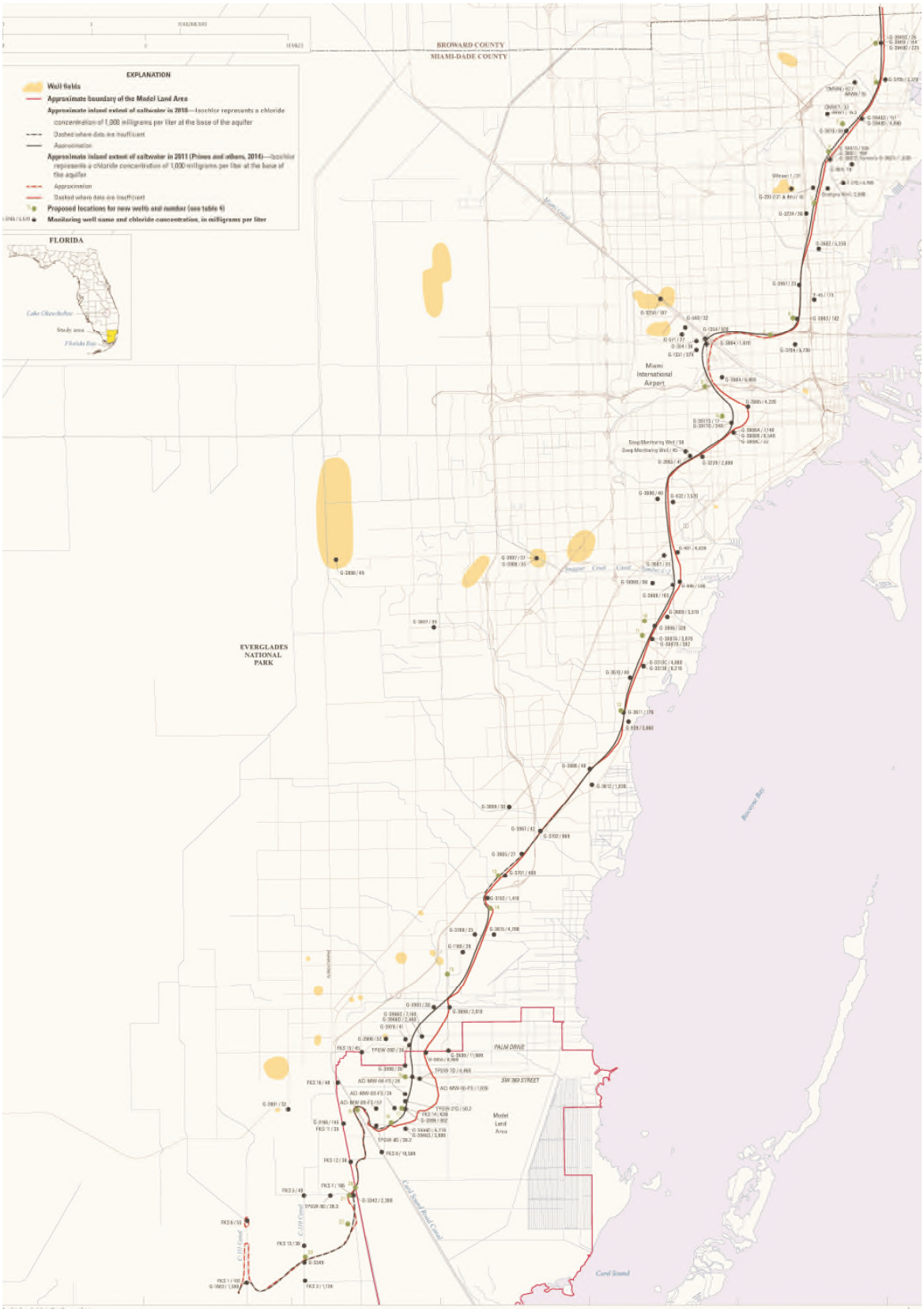

Figure 5-3 – 1,000 mg/L Isochlor Line in Miami-Dade County (USGS)

5.5 Extreme Weather Events

An increase in frequency and severity of extreme weather events may be an impact of climate change. 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 deficits. Conversely, more intense rainfall will cause flooding, increased runoff, impacts to the natural systems and provide more 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 systems (ASR) are potentially viable alternative water supply projects and climate adaptation strategies.

5.6 Infrastructure Development

To ensure the long-term sustainability of key facilities in the face of climate change, sea level rise and extreme weather events, it becomes critical to diversify water supply sources, improve treatment technologies, and develop adaptive stormwater and wastewater infrastructure design criteria. Strategic infrastructure planning should incorporate these opportunities and work within the GOPs 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 elevations, as a direct and indirect response to sea level, will challenge the function of drainage systems and is expected to exacerbate future flooding for even mild storm events. Future conditions will be more severe with extreme rainfall events increasing damage to low-lying utility infrastructure and contributing 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.

Options that provide for a diversification of water projects and protection of resources will be fundamental and may include changing treatment technologies; developing regional water storage such as the C-51 Reservoir; improving (or relocating) infrastructure in low lying areas; and enhancing operational flexibility. Miami-Dade County’s planning effort regarding water supply infrastructure includes the use of water capacity from the C-51 Reservoir as an alternative water supply source.

5.7 C-51 Reservoir

The C-51 Reservoir, Phase 1 is a diversion and impoundment permitted by the FDEP Permit No. EI 50-301070-003. The reservoir will capture and store excess water from the SFWMD's C-51 Canal. The stored water will be discharged back into regional conveyance systems to provide offsets for potential impacts to Lower East Coast Waterbodies by C-51

Reservoir, Phase 1 participants, consistent with the SFWMD's Lower East Coast RWA Rule.

In July 2020, Miami-Dade County entered into an "Agreement for Capacity Allocation in Phase 1 of the C-51 Reservoir" with Palm Beach Aggregates, LLC (The C-51 Reservoir, Phase 1 Permittee) to purchase a Capacity Allocation in Phase 1 of the C-51 Reservoir for 15.00 mgd as an alternative water supply for the WASD. The County is currently preparing a water use permit modification application to the SFWMD that this water supply be used as an offset to obtain additional permitted withdrawals from the Biscayne Aquifer.

The C-51 Reservoir project is a public-private partnership to construct up to 60,000 acre-feet of storage for use as an alternative water supply source in southeast Florida. The project is designed as two construction phases. Under Phase 1, 14,000 acre-feet of storage will be constructed. Under Phase 2, 46,000 acre-feet will be constructed. The reservoir will divert water away from the Lake Worth Lagoon and improve the management of freshwater flows which was formally identified as a priority restoration strategy in the 1992 US Army Corps of Engineers Restudy of the C & SF Flood Control Project.

Over the past decade, the SFWMD, Lake Worth Drainage District, Palm Beach Aggregates, local governments, water managers, and water utilities in Broward and Palm Beach counties 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 the water into the C-51 Canal during dry periods to meet water demands.

The site of the C-51 Reservoir 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 storage capacity. The C-51 Reservoir is included in the 2018 Lower East Coast Water Supply Plan Update as an alternative water supply to meet forecasted increases in regional water demand in 2040. Beyond water supply, the reservoir captures excess stormwater flows and enhances stormwater management including the reduction of harmful discharges and associated nutrient loads to the Lake Worth Lagoon and mitigation of saltwater intrusion by maintaining higher canal stages and recharging coastal wellfields.

Hydrologic modeling indicates that the C-51 Reservoir can capture enough basin runoff to reduce excess stormwater flows from the western C-51 Basin to the Lake Worth Lagoon by about 40 percent with an associated reduction in nutrient loads. The SFWMD would operate the reservoir and could redistribute the stored water through the existing canal network to provide Biscayne Aquifer recharge that can be used to increase SFWMD permitted water quantities of water utilities in southeast Florida. In addition, the stored water could be used to help sustain regional water resources. The C-51 Reservoir is modeled to support approximately 150 mgd in stormwater reuse for beneficial purposes while achieving critical water quality improvements in the Lake Worth Lagoon.

The proposed project is expected to provide the following benefits.

- Reduce harmful water quality and quantity discharges to the Lake Worth Lagoon via the S-155 structure.

- Improve water quality in the Everglades Protected Area from additional storage and, in conjunction with the L-8 Flow Equalization Basin, optimize flows to the Stormwater Treatment Areas (STAs).

- Aid the SFWMD in meeting the objectives of the Loxahatchee River Watershed Restoration Project.

- Improve the quality of water delivered to the STAs by blending water from the C-51 Reservoir with water from the L-8 Flow Equalization Basin.

- Mitigate stormwater impacts and flooding in western and central Palm Beach County.

- Mitigate saltwater intrusion and protect wellfields in coastal communities.

- Serve as a regional alternative water supply source.

- Support water resource protection and potential adaptation strategies to mitigate the effects of sea level rise and drought.

From a financial standpoint, the C-51 Reservoir is expected to provide the following benefits.

- Achieve “Economies-of-Scale” as a regional water resource development project providing diverse benefits to the region.

- Capitalize on the current construction and engineering work at the existing L-8 Flow Equalization Basin, including use of the L-8 Flow Equalization Basin’s intake structure and pumping facilities.

- Capitalize on the SFWMD’s operations of the L-8 Flow Equalization Basin resulting in operational coordination and reduced costs.

- Provide a cost-competitive solution relative to end-of-pipe water quality treatment, environmental degradation and associated economic losses, flood impacts, and other types of alternative water supplies and treatment technologies.

- Capitalize on current mining activities that create large pits in southeast Florida.

- Rely largely upon existing conveyance infrastructure.

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

In 2017, the Florida Legislature approved the project as a priority water supply project under enabling legislation Senate Bill 10 and the SFWMD designated the C-51 Reservoir Phase 1 as a pilot alternative water supply development project, pursuant to Section 373.037, F.S.

Water utilities have executed agreements with the property owner, Palm Beach Aggregates, to purchase storage capacity. To date, agreements have been executed for all 35 mgd of the Phase 1 storage capacity: Miami-Dade County (15 mgd); Broward County (6 mgd); City of Sunrise (5 mgd); City of Fort Lauderdale, (3 mgd); City of Margate (2 mgd); City of Pompano Beach (2 mgd); City of Hallandale Beach (1 mgd) and City of Dania Beach (1 mgd). These utilities have received or are processing modifications to their water use permits to reflect this AWS source as a means for meeting future water demands. Senate Bill 92 (2019) clarified the language and intent of the project and allowed the SFWMD to negotiate for any portion of the project not already committed to partners for water supply.

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/surficial aquifer recharge near water utility wellfields. 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. 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.

A commitment for Phase 1 construction financing has been extended to May 31, 2020. It is hoped that construction can commence in September and be completed by September 2022. 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.

5.8 Lake Okeechobee Surface Water Allocation Limitations

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

In 2007, the SFWMD adopted the Lower East Coast Regional Water Availability criteria to prohibit increases in surface water and groundwater withdrawn from the North Palm Beach County/Loxahatchee River Watershed Waterbodies and Lower East Coast Everglades Waterbodies above base condition water uses permitted as of April 1, 2006. This also includes canals that are connected to and receive water from these water bodies. New direct surface water withdrawals are prohibited from the Everglades and Loxahatchee River watersheds and from the integrated conveyance systems. These criteria are components of the Minimum Flows and Levels (MFL) recovery strategies for the Everglades and the Northwest Fork of the Loxahatchee River.

The City of Doral is not directly impacted by the Lake Okeechobee surface water allocation limitations but is indirectly impacted by the Lower East Coast Regional Water Availability criteria as it applies to the Lower East Coast Everglades Waterbodies. These criteria impact the amount of permitted water quantities available to the WASD from the Biscayne Aquifer.

5.9 Lowering Lake Okeechobee Level

In January 2019, Florida's Governor announced his promotion of a plan to lower the minimum level of the Lake Okeechobee Regulation Schedule to 10.5 feet. The current Lake Okeechobee Regulation Schedule (LORS) ranges from a minimum level of 12.5 feet to a maximum of 15.5 feet.

While lowering Lake levels could provide environmental benefits to the Lake and the coastal estuaries, dropping the minimum level to 10.5 feet would reduce the amount of water stored in Lake Okeechobee, potentially reducing the amount of water available to recharge the Biscayne Aquifer. Should this happen, the risk of water shortages in the Lower East Coast, including in the City of Doral, would increase. The County continues to monitor this issue and, when appropriate, will develop a policy to address any potential impacts to its water utility.

5.10 Use of Brackish Groundwater from the Floridan Aquifer

The use of brackish water from the Floridan Aquifer for potable use after treatment is considered an alternative water supply. Miami-Dade County is currently developing the Floridan Aquifer and expects to obtain up to 27.45 mgd of potable water from this AWS by the year 2040.

Section 6.0 – Goals, Objectives, and Policies

There are several elements (Green, Infrastructure, Conservation, Intergovernmental Coordination, and Capital Improvement) in the City of Doral Comprehensive Plan that directly address water resources conservation and management. As part of the update of the City's Water Supply Facilities Work Plan, the City will revise and add new objectives and policies to the Comprehensive Plan to ensure consistency with Miami-Dade Water and Sewer Department Water Supply Facilities Work Plan dated October 2020 and the SFWMD's Lower East Coast Regional Water Supply Plan, adopted on November 8, 2018.

The following GOPs have been adopted in the original Work Plan and have been reviewed to see if updates or revisions are needed.

- Coordination of land uses and future land use changes with the availability of water supplies and water supply facilities
- Revision of potable water level of service standards for residential and non-residential uses
- Provision for the protection of water quality in traditional and alternative water supply sources
- Revision of priorities for the replacement of facilities, correction of existing water supply and facility deficiencies, and provision for future water supply and facility needs
- Provision for conserving potable water resources, including the implementation of reuse programs and potable water conservation strategies and techniques
- Provisions for improved or additional coordination between a water supply provider and the recipient local government concerning the sharing and updating of information to meet ongoing water supply needs
- Coordination between local governments and the water supply provider in the implementation of alternative water supply projects, establishment of level of service standards and resource allocations, changes in service areas, and potential for annexation
- Coordination of land uses with available and projected fiscal resources and a financially-feasible schedule of capital improvements for water supply and facility projects
- Additional revenue sources to fund water supply and facility projects
- Coordination with the respective regional water supply plan

- Update the Work Plan within 18 months following the approval of a regional water supply plan

- Concurrency requiring water supplies at the building permit stage

The City of Doral established a Concurrency Management System (CMS) to ensure the availability and sufficiency of public facilities and services when development impacts occur and provide a program to prevent the levels of service (LOS) from falling below the adopted LOS standards. Furthermore, it assures the proper timing, location, and design of supportive urban service systems concurrent with the impacts of new development. The following benefits may also be realized with the adoption of a CMS:

- Support consistency of the Capital Improvements Element with the Future Land Use Element;

- Provide for the orderly and cost-effective expansion of public facilities;

- Supplement capital improvement expenditures and taxing structures for capital improvements; and,

- Reduce the possibility of damage to the environment from the use of overburdened facilities.

The Concurrency Management System, which is incorporated in the Land Use Element and Capital Improvement Element, includes guidelines for interpreting and applying LOS standards to applications for development orders and development permits. It also establishes development review procedures in the City's Land Development Code. These procedures may make development approval contingent on the City's ability to provide facilities and services or may require that the developer provide facilities and services to maintain adopted LOS standards. Petitioners must supply public facility impact information with their development applications. City staff reviews and verifies the project information, comparing it with public facility capacity data and anticipated committed development impacts to ensure that adopted LOS standards will be maintained if the development application is approved. If LOS will not be maintained, the petition is denied unless the applicant presents revised plans demonstrating that the new development shall:

- Be served with all requisite public facilities concurrent with the impacts of development;

- Provide LOS for all requisite facilities that are compliant with the City's adopted LOS standards; and
- Shall not cause a reduction in the levels of service from existing infrastructure below minimum adopted thresholds.

The proposed amendments to the policies relevant to the provision of water supply to City of Doral residents and businesses, including water conservation practices, contained in the 2019 City of Doral Comprehensive Plan are provided below in strikeout and underline and in red font. Where there is no strikeout or underline, the policy is not proposed to be changed.

GREEN ELEMENT

Policy 1.3.5: All buildings shall utilize low water use bathroom and shower facilities, including toilets, in compliance with the highest industry standard in water-conserving plumbing fixtures.

Policy 1.4.2: Evaluate the City's current Landscape Code in comparison to the Florida Friendly (FF) Landscape Irrigation and Design Standards prepared by the Florida Department of Environmental Protection. By January 2023~~2016~~, adopt by ordinance any new or amended provisions necessary to bring the Code into full compliance with FF principles and standards. The revision should also include stronger requirements for shading of paved surfaces such as walkways, sidewalks and parking lots.

Policy 1.4.3: Adopt Florida Friendly Landscape Standards for all City parks and public building sites. Prepare an assessment by January 2022~~18~~ of landscape improvements needed to ensure the landscapes in all parks and other significant City parcels are Florida Friendly.

Objective 1.5 **Conserve and Nurture Healthy Water Resources**
Achieve significant annual reductions in the average potable water usage by residents, visitors and businesses, and steady improvement in the water quality of Doral's surface water bodies.

Evaluation Measure: Annual improvement in surface water quality in the city canal system.

Policy 1.5.1: By October 2022, the City will adopt mandatory year-round landscape irrigation conservation measures and variances consistent with the "Model Code Language for Local Governments" provided by the South Florida Water Management District (SFWMD). ~~Implement the recommendations of the City's 10-Year WaterSupply Facilities Work Plan updated and adopted in 2015, and use its long-range conservation strategies as the basis to reduce water usage citywide by 16% to 126.82 gallons per capita per day or lower by 2025.~~

Policy 1.5.3: Review water-saving strategies and standards recommended by the

U.S. EPA Water Sense Program, and implement any appropriate revisions to the City's applicable building policies and procedures to meet the Program goals and objectives.

Policy 1.5.4: Require that all automatic landscape irrigation systems in the City be equipped with a fully-operational rain shut-off device.

Policy 1.5.5: Work with the ~~MDC~~ Miami-Dade County Water and Sewer Department (WASD) to examine opportunities within Doral to utilize reclaimed water on area golf courses, parks and medians, and if feasible, identify an initial public demonstration project.

Policy 1.8.7: Give residents and businesses multiple easily-accessible venues to learn about feasible water-conserving techniques and concepts. Encourage them to take advantage of regional and county water conservations programs including Residential Plumbing Fixture Kit, Shower Head Exchange and other similar programs.

INFRASTRUCTURE ELEMENT

A. Potable Water Sub-Element

Goal 5A: Provide potable water facilities that meet the City's demands in a manner that promotes the public health, sanitation, environmental protection, and operational efficiency.

Objective 5A.1: **Potable Water Level of Service (LOS)**
Continue to coordinate with Miami-Dade County Water and Sewer Department (WASD) to provide potable water facilities to meet the existing and projected demands based on level of service (LOS) standards consistent with State Statutes and implement procedures to ensure that any future potable facility deficiencies are corrected.

Evaluation Measure: Level of service for potable water facilities and provision of adequate facilities prior to development.

Policy 5A.1.1: The level of service standard for potable water is as follows.~~:~~

- *Regional Treatment.* The regional treatment system shall operate with a rated maximum daily capacity no less than two percent above the maximum daily flow for the preceding year.
- *User LOS.* The system shall maintain the capacity to produce and deliver ~~126.82~~ 127 gallons per capita per day.
- *Water Quality.* Water quality shall meet all federal, state, and county standards for potable water.

Policy 5A.1.2: The LOS standards adopted in Policy 5A.1.1 shall be used as the criteria to measure the available capacity of the potable water system. A development order will not be approved unless adequate capacity will be available concurrent with the impacts of development based on the following:

- The necessary facilities and services are in place at the time the final development order is issued; or
- The final development order is issued subject to the condition that the necessary facilities and services will be in place when the impacts of development occur; or
- The necessary facilities are under construction at the time the final development order is issued; or
- The necessary facilities and services are guaranteed in an enforceable development agreement and guarantees the necessary facilities and services will be in place at the time of development.

Policy 5A.1.3: Water supply and distribution mains must assure adequate flow for Miami-Dade County Fire/Rescue and consumer needs. Miami-Dade County requires water pressure between 20 and 100 pounds per square inch (psi) to be delivered to users, with a schedule of minimum fire flows based upon land uses served.

Policy 5A.1.4: Coordinate with Miami-Dade County to ensure that the City's potable water demand is included in the Miami-Dade County Comprehensive Development Master Plan (CDMP) and WASD's 20-Year Water Supply Facilities Work Plan.

Policy 5A.1.5: The City shall coordinate with Miami-Dade County to ensure that any future City's potable water facility deficiencies are corrected to maintain the adopted level of service standards.

Objective 5A.2: **Potable Water Service Coordination**
Potable water service shall continue to be planned and provided in conformity with the Future Land Use Element and the Miami-Dade County CDMP.

Evaluation Measure: Potable water service plans and Infrastructure Element consistent with the Future Land Use Element and the Miami-Dade County CDMP.

Policy 5A.2.1: Coordinate future land use designations to ensure that sufficient water supply is available to serve existing and projected demand.

Policy 5A.2.2: Coordinate with Miami-Dade County WASD to meet existing and

future demands.

Policy 5A.2.3: Coordinate raw water wellfield expansion and specific well location with Miami-Dade County and regional agencies.

Objective 5A.3: **Comprehensive Water Conservation Program**
Coordinate with Miami-Dade County and the South Florida Water Management District to implement comprehensive water conservation measures citywide to ensure that a sufficient supply of water is available to meet current and future demand for potable water.

Evaluation Measure: Implementation of water conservation requirements and public educational programs.

Policy 5A.3.1: Promote public information programs sponsored by the ~~South Florida Water Management District (~~SFWMD~~)~~ in an effort to increase public awareness and acceptance of water conservation techniques through newsletters, public service announcements, and displays at public awareness events.

Policy 5A.3.2: By September 2022~~2018~~, review existing water conservation regulations and revise the land development code as necessary to ensure implementation of water conservation techniques, including:

a) Subsurface and other water conserving irrigation techniques;
b) Florida-friendly Landscaping ~~and Xeriscape~~ techniques;
c) Lawn watering restrictions;
d) Application of low water use plumbing fixtures in all construction; and,
e) Any other effective methods commonly in practice or required by law.

Objective 5A.4: **Potable Water Supply Protection**
To protect the potable water supplies and sources, regulate land use and development to protect the functions of natural drainage features and natural groundwater aquifer recharge.

Evaluation Measure: Implementation and enforcement of land development regulations to protect the functions of natural drainage features and natural groundwater aquifer recharge.

Policy 5A.4.1: Coordinate with the Miami-Dade County WASD and ~~South~~

~~Florida Water Management District (~~SFWMD~~)~~ in determining and assessing impacts of proposed developments on the County's potable water supply.

Policy 5A.4.2: Potable water supply shall be protected from the operation of septic tanks and other wastewater treatment systems through control of the location of such facilities, type of treatment, method of discharge, and monitoring.

Policy 5A.4.3: Septic tanks and drainfields shall be placed no closer to wells, surface water areas, and conservation areas than the minimum distances provided in the Water Quality Assurance Act. City development regulations shall be consistent with these minimums and shall increase distances where soils are particularly unsuitable for on-site sewage systems.

Policy 5A.4.4: Coordinate with Miami-Dade County to identify ~~On an annual basis, monitor~~ the County's ~~inventory of~~ commercial and industrial enterprises that utilize, produce, or dispose of hazardous chemicals ~~as a means~~ to track potential sources of water contaminants.

Objective 5A.5: **Water Conservation**

To promote the increased conservation and reuse of water, development plans shall be reviewed for inclusion of native vegetation, low water demand landscape material, and water reuse opportunities ~~in order~~ to reduce outdoor water consumption.

Evaluation Measure: Number of developments approved with native vegetation, low water demand landscape material, and water reuse plans.

Policy 5A.5.1: Coordinate with Miami-Date County and SFWMD to implement water restrictions.

Policy 5A.5.2: As part of the City's public awareness efforts, make available lists of vegetation classified by water demand for use by residents and developers.

Objective 5A.6 **Potable Water Supply Planning**

The City of Doral hereby incorporates by reference and shall comply with its ~~20-year~~ Water Supply Facilities Work Plan (Work Plan) adopted on _____ as required by Sec. 163.3177(6)(c), F.S. The City's Work Plan will be updated, at a minimum every 5 years within 18 months after SFWMD's ~~South~~

~~Florida Water Management District's~~ approval of an updated Lower East Coast Regional Water Supply Plan. The SFWMD ~~South Florida Water Management District~~ Governing Board approved its Lower East Coast Water Supply Plan Update on November 8, 2018 ~~September 12, 2013~~.

Policy 5A.6.1 The City's Water Supply Facilities Work Plan is designed to assess current and projected po~~r~~table water demands, evaluate the sources and capacities of available water supplies; and identify those water supply projects, using all available technologies, necessary to meet the City's water demands.

Policy 5A.6.2 Comply with the City's ~~20-Year~~ Water Supply Facilities Work Plan and incorporate the Miami-Dade County ~~20-Year~~ Water Supply Facilities Work Plan dated October 2020 ~~adopted on February 4, 2015~~ by reference into the City of Doral Comprehensive Plan.

Policy 5A.6.3 Coordinate appropriate elements of the Comprehensive Plan with the SFWMD's ~~South Florida Water Management District's~~ Regional Water Supply Plan adopted November 8, 2018 ~~September 12, 2013~~ and with the Miami-Dade County Water Supply Facilities Work Plan dated October 2020 ~~adopted February 4, 2015~~. The City shall amend its Comprehensive Plan and Work Plan as required to provide consistency with the SFWMD ~~District~~ and Miami-Dade County Water Supply Facilities Work Plans.

CONSERVATION ELEMENT

Objective 6.1: **Potable Water Conservation**
Conserve potable water as a resource of the City and the region as a whole ~~in order~~ to reduce per capita water demand and better meet present and projected needs of all consumers.

Evaluation Measure #1: Annual record of per capita water demand.

Evaluation Measure #2: Number of City-supported water conservation programs.

Policy 6.1.1: Continue to enforce all federal, state, and regional, and county water quality standards in the City.

Policy 6.1.2: Annually communicate the projected population and non-residential growth to the Miami-Dade Water and Sewer Department (WASD) to ensure long term demand is reflected in WASD's water

supply reports and permits with the South Florida Water Management District (SFWMD) and other Federal and State agencies.

Policy 6.1.3: Cooperate with local, regional, state and federal agencies concerning the proper management of freshwater resources ~~in order~~ to conserve and maintain sufficient fresh water supplies, especially during dry periods, including cooperation with the Miami-Dade County WASD and the SFWMD for the implementation of water demand management policies and programs.

Policy 6.1.4: Coordinate with Miami-Dade County WASD and the SFWMD to implement emergency water conservation measures when necessary.

Policy 6.1.5: Coordinate with the Miami-Dade County WASD to encourage the creation and expansion of storage and distribution facilities for reclaimed water to institutional, commercial, and residential properties in an effort to reduce the use of potable water for irrigation purposes.

Policy 6.1.6: Incorporate criteria in the Land Development Code that requires compliance with the policies of the SFWMD ~~South Florida Water Management District~~ to conserve the potable water supply, including groundwater recharge, water-saving devices, and Florida-friendly landscaping ~~xeriscape~~ concepts.

Policy 6.1.7: As needed, coordinate with WASD to ~~Consider~~ implement~~ation of~~ a leak detection program that would identify users with unaccounted for water loss greater than 10 percent.

Policy 6.1.8: Continue to distribute ~~provide~~ water conservation booklets and brochures produced by the SFWMD and other environmental agencies by making them ~~are~~ readily available at City Hall and other public facilities ~~to residents and businesses~~.

Policy 6.1.9: Make available copies of the Florida-Friendly Landscaping Guide to Plant Selection & Landscape Design lists of plant species classified by water demand for use by residents and developers as part of the City's public awareness efforts.

Policy 6.4.15: Coordinate with Miami-Dade County WASD to develop strategies to improve the resiliency of existing water resources ~~in order~~ to protect future water quality and minimize the potential for flood damage and water shortage.

INTERGOVENMENTAL COORDINATION ELEMENT

The following two policies were proposed in the 2015 Doral Water Supply Facilities Work Plan but are not included in the City's 2019 Comprehensive Plan. A recommendation of this 2020 Water Supply Facilities Work Plan is to incorporate these policies into the City's Comprehensive Plan to further the region's goals of climate adaptation and community resilience.

Policy 9.1.19: Coordinate with Miami-Dade County, South Florida Regional Planning Council, South Florida Water Management District and other governmental entities in the development of goals, objectives, and policies to address climate change in south Florida.

Policy 9.1.20: Participate with the Southeast Florida Regional Climate Change Compact, neighboring municipalities, and Miami-Dade County to make our community more climate change resilient through the adoption of strategies, policies and programs.

CAPITAL IMPROVEMENTS ELEMENT

Table 10.1 Recommended Level of Service Standards for the City of Doral

Public Facility	Level of Service Standard
Potable Water (a)	*Regional Treatment* - The regional treatment system shall operate with a rated maximum daily capacity no less than two percent above the maximum daily flow for the preceding year.
	User LOS - The system shall maintain the capacity to produce and deliver 127 ~~6.82~~ gallons per capita per day.
	Water Quality - Water quality shall meet all federal, state, and county standards for potable water.
	Water Flow - Water supply and distribution mains must assure adequate flow for Miami-Dade County Fire/Rescue and consumer needs. Miami-Dade County requires water pressure between 20 and 100 pounds per square inch (psi) to be delivered to users, with a schedule of minimum fire flows based upon land uses served.

(a) These public facilities and services are provided by Miami-Dade County and are subject to the level of service standards established in the Miami-Dade County Comprehensive Development Master Plan (CDMP). The City of Doral will adopt these same levels of service standards to be consistent with the CDMP, as amended.

Section 7.0 – References

1. 2018 Lower East Coast Water Supply Plan Update, South Florida Water Management District, West Palm Beach, Florida, November 8, 2018
2. Miami-Dade Water and Sewer Department 10-Year Water Supply Facilities Work Plan, October 2020 Report
3. Water Supply Facilities Work Plan Updates – SFWMD Technical Assistance Guide, South Florida Water Management District, West Palm Beach, Florida, January 2019

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APPENDIX A

Miami-Dade County Water and Sewer Department

10-Year Water Supply Facilities Work Plan

October 2020

Miami Dade Water and Sewer Department

10-Year Water Supply Facilities Work Plan

October 2020

Report

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Executive Summary

This update to the Miami-Dade Water and Sewer Department's (WASD) Water Supply Facilities Work Plan has been prepared in accordance with the requirements set forth in Section 163.3177(6)(c)3 of the Florida Statutes for a 10-year planning horizon. Said statutory provision requires that local governments to adopt a water supply work plan that identifies traditional and alternative water supply projects, and conservation and reuse measures necessary to meet projected water demands. The work plan is updated on a five-year cycle and within 18-months of an adopted update to the South Florida Water Management District's regional water supply plan. The most recent Lower East Coast (LEC) Regional Water Supply Plan was adopted by the South Florida Water Management District Governing Board in November 2018.

The 10-Year Water Supply Facilities Work Plan Update describes WASD's existing water supply systems. The document also provides a plan for implementing additional water supply initiatives (including the development of traditional and alternative water supplies), as necessary, to serve existing and future development

This Water Supply Facilities Work Plan Update includes the following primary sections:

- Section 1 - Introduction
- Section 2 – Water Service Area
- Section 3 – Existing Water Supply Facilities
- Section 4 – Population and Water Demand Projections
- Section 5 – Planned Water Supply Facilities
- Section 6 – Climate Change and Sea Level Rise Plan

The plan focuses on the evolution of water demands within Miami-Dade County and required actions to meet anticipated future needs. It should be noted that the County's projected finished water demands are now significantly lower than anticipated when the first 20-year water use permit (WUP) application was submitted to South Florida Water Management District (SFWMD) in 2007.

The decrease in water demands has been a result of numerous drivers internal and external to WASD. Over more than a decade, Miami-Dade County's per capita water consumption and overall drinking water production have decreased significantly. The evolution of water demands can primarily be attributed to the following factors:

- Deceleration of population growth
- WASD's water conservation program yielding reduced per capita water consumption
- Permanent year-round landscape irrigation restrictions
- Landscape ordinances requiring Florida Friendly landscaping
- Florida Building Department Code changes requiring high efficiency fixtures and appliances for new construction
- Evolving trends in housing demographics (multifamily construction versus single family homes), and water use practices
- Increases in water and sewer rates

Miami-Dade County has been highly proactive in driving water efficiency and water conservation with the intent of reducing per-capita consumption. Over the past several years, the scale of redevelopment within the County has been significant, leading to the replacement of older housing stock and commercial and industrial space with new and more efficient construction. Since 2009, the county's building code, specifically Section 8-31 and 32-84, requires the installation of water efficient fixtures and high efficiency appliances. In 2007, the County developed a water conservation program that provides rebates to residents that install high efficiency faucets, toilets and showerheads in properties constructed prior to 1996. It also includes rebates for water efficient upgrades to irrigation systems in single family and large properties throughout the County. Additionally, lawn watering has been limited to two days per week (more stringent than the State's three days a week rule) and development within the county must comply with landscape standards in sections 18-A and 18-B which encourage Florida Friendly Landscaping, reducing outdoor water use. The County code was also modified to authorize the use of submetering in multifamily residential developments, requiring a meter installed in each individual dwelling unit instead of being billed by a single master meter. Use of submeters enhances monitoring and encourages water conservation.

Miami-Dade County Comprehensive Development Master Plan (CDMP) land use policies have also been instrumental in driving decreases in water demand and wastewater generation. Over the past two decades, land use policy has incentivized high density development in areas of existing infrastructure and public services (i.e. transit, sanitary sewer, etc.). This in turn has led to a pivot from growth in suburban single-family homes with higher average water consumption, to multifamily buildings including condominiums, apartments, and in some cases, micro-apartments which have much lower water demands. These strategies have led to a significant decrease in per capita water consumption throughout the county.

Beyond the greater County policy efforts to maximize efficiency and reduce water consumption, WASD has been very successful in executing its Water Use Efficiency Plan (Plan). The Plan, developed as a strategy to decrease consumption while avoiding costly alternative water supply projects, was developed in 2007 and includes a water conservation element implementing best management practices (BMPs) for both indoor and outdoor water use throughout the County. High efficiency fixture rebates, targeting properties constructed before 1996, offer residents a financial incentive to reduce indoor water use by installing high efficiency toilets, faucets and showerheads. Landscape irrigation rebates evaluate existing in-ground irrigation systems and recommend changes that reduce outdoor water use. In addition to indoor and outdoor BMPs, the conservation program also includes an education component, to organizations throughout the County (i.e. homeowner associations, county agencies, municipalities, schools, colleges, universities, not for profits, etc.) to inform residents about the importance of water conservation.

As a result of these efforts, the County has achieved 15.80 MGD of water savings through fiscal year 2019, well ahead of its water saving goal of 19.62 MGD by 2026. The Plan also contains a water loss reduction component including an annual leak detection survey of the county's entire water distribution system. In addition to standard operating procedures, advanced technology is used to detect leaks including the implementation of mobile and fixed network systems. Leaks detected are categorized by priority with the highest priority leaks being repaired first. As a result, several hundreds of leaks are identified and repaired annually.

Since the 2007 WUP, WASD has requested several modifications to the permit to reflect new population data, revised water demand projections and alternative water supply projects to support the projected water demands. The most recent WUP modification was issued on September 21, 2015 with an

expiration date of February 9, 2035. This Water Supply Facilities Work Plan has been prepared considering water supplies available to WASD in the utility's current WUP and confirms that currently available water supplies are sufficient to meet demands through the 10-year planning period. As conditions evolve in the future, WASD will proceed to request WUP modifications accordingly to address demands and new opportunities with relation to water supply, including partnership in the C-51 Reservoir project and wellfield optimization among others.

This work plan also details WASD's assessment and planning for sea level rise and climate change with relation to water supply. The primary concern to WASD's water supply is saltwater intrusion into the Biscayne aquifer, the primary source of drinking water in Miami-Dade County. Results of the evaluations and analyses completed to date indicate that within the next thirty years, WASD will be able to continue uninterrupted operation of its wellfields and water treatment facilities as designed. Groundwater modeling indicates that even considering high levels of projected sea level rise, WASD's wellfields will not be impacted by saltwater intrusion. Further modeling is currently underway to extend the planning scenarios through the year 2070. These simulations incorporate anticipated impacts from climate change, such as increases/decreases in annual precipitation and extreme weather events.

Section 1

Introduction

Miami-Dade County (County) is continuing to experience growth, albeit at a more moderate rate than past decades. The Miami-Dade Water and Sewer Department (WASD) provides drinking water to approximately 2.4 million customers in the County. Because of population growth, complex environmental issues and regulatory and statutory requirements, WASD is updating its comprehensive water supply development plan for a 10-year planning horizon. The previous Water Supply Facilities Work Plan was prepared in November 2014 (Revised January 2015) and adopted by the County's Board of County Commissioners on February 4, 2015.

1.1 Background

Florida Statute (F.S.) Chapters 163-Intergovernmental Programs and 373-Water Resources, require coordination of water supply and land use planning. The statutes link regional water supply plans prepared by the water management districts and the comprehensive plans prepared by local governments, to provide a comprehensive planning framework for the State of Florida.

F.S. Sections 373.709 163.3177(6)(c)3 require that local water supply work plans be updated within 18 months after a water management district's governing board approves an updated regional water supply plan. The update intends to reflect changes in the regional plan that may affect local water supply and corresponding work plans. The current statutory provisions direct local governments to undertake the following actions with regards 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, assign 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 July 1, 2005.] Local governments should update their comprehensive plans and land development regulations as soon as possible to address this water supply concurrency requirement.

This Water Supply Facilities Work Plan Update has the objective of satisfying portions of the above statutory requirements (other portions are satisfied through existing policies in the County's Comprehensive Development Master Plan) and, as stated in Item 1 above, to coordinate with the Lower East Coast (LEC) regional water supply plan. The 2018 LEC Water Supply Plan Update was adopted by the South Florida Water Management District (SFWMD) Governing Board in November 2018.

1.2 Purpose and Objectives

The purpose of this Water Supply Facilities Work Plan Update is to present WASD's current water supply systems and to provide a plan for implementing water supply facilities, including the development of traditional and alternative water supplies as necessary, to serve existing and future development. The water supplies presented within the plan were developed after incorporating demand reductions related to water conservation.

The plan incorporates information related to wholesale and retail municipal customers that purchase water from MDWASD, as well as water suppliers that provide water to

portions of Miami-Dade County: City of North Miami, City of North Miami Beach, City of Hialeah, City of Homestead and Florida City. WASD will continue to coordinate and provide information to local governments in Miami-Dade County to assist with the preparation of their respective Work Plan updates.

This Work Plan is a stand-alone document that will be adopted by reference into the County's Comprehensive Development Master Plan. The update to the Work Plan is to be revised every five years and within 18 months after the SFWMD Governing Board approves an updated LEC regional water supply plan.

This Water Supply Facilities Work Plan Update includes the following primary sections:

- Section 1 - Introduction
- Section 2 – Water Service Area
- Section 3 – Existing Water Supply Facilities
- Section 4 – Population and Water Demand Projections
- Section 5 – Planned Water Supply Facilities
- Section 6 – Climate Change

Section 2

Water Service Area

2.1 WASD Service Area

The Miami-Dade Water and Sewer Department's water service area consists of an interconnected system (see Section 2.1.4, **Table 2-1**) and thus functions as a single service area. However, for the convenience of discussing existing facilities, the service area may be divided into three subareas by water treatment facilities: the Hialeah-Preston area serving the northern part of Miami-Dade County, the Alexander Orr, Jr. area serving the central and portions of southern Miami-Dade County and the South Dade area (formerly known as the Rex Utility District) serving the southernmost portions of Miami-Dade County as shown in **Figure 2-1**.

Within the WASD service area, there are 15 wholesale customers. Fourteen (14) of the fifteen (15) wholesale customers have executed 20-year water use agreements, and one (1) has executed a 30-year water agreement. The water use agreement between WASD and the City of Hialeah was executed on July 27, 2018. The City of North Miami Beach ceased purchasing water from WASD in 2008 and has a 30-year wholesale agreement with WASD to purchase water on an as needed basis. The City of North Miami has a wholesale water agreement with WASD to supply water to approximately 30 percent of its service area. The City of Miami Springs is no longer a wholesale customer of WASD, as the water and sewer infrastructure was transferred to the County in July 2008. **Table 2-2** identifies the 15 wholesale customers and the execution and termination date of their respective wholesale agreements.

In addition to WASD, there are five (5) other water suppliers within Miami-Dade County that provide water to portions of unincorporated Miami-Dade County and within respective municipal boundaries. These include Florida City, City of Homestead, City of Hialeah, City of North Miami and City of North Miami Beach.

All municipal water producers within Miami-Dade County have water use agreements with WASD, with the exception of Florida City. In 2010, the City of Homestead entered into a 20-year water use agreement with WASD to purchase up to 3 MGD to meet the demands of its retail water customers. The water furnished is received by the City of Homestead at the interconnection point located at SW 137th Avenue and 288th Street.

2.1.1 Hialeah-Preston Subarea

The Hialeah-Preston (H-P) subarea is comprised of dedicated low-pressure pipelines, remote storage tanks, pumping facilities and high-pressure systems. This system delivers water to Hialeah, Miami Springs, the City of Miami and other portions of northeastern Miami-Dade County, shown on Figure 2-2, generally north of Flagler Street. The Hialeah Reverse Osmosis (R.O.) plant was

completed in October 2013 and is providing water to a portion of the City of Hialeah and unincorporated Miami-Dade County.

2.1.2 Alexander Orr, Jr. Subarea

The Alexander Orr, Jr. (AO) subarea is comprised of a high-pressure system consisting of two major piping loops. This system delivers water to nearly all of Miami-Dade County south of approximately Flagler Street and north of SW 272nd Street, including the areas of Virginia Key, Fisher Island, the Village of Key Biscayne and, upon request, to the City of Homestead as shown on **Figure 2-3.**

2.1.3 South Dade Subarea

The South Dade subarea consists of small distribution systems that evolved around each individual water treatment plant (WTP) and their distinct service areas. These systems deliver water almost exclusively to unincorporated Miami-Dade County south of S.W. 272nd Street and east of S.W. 197th Avenue.

In addition to WASD, Homestead and Florida City also provide water to the South Dade area of the County. Florida City provides water service within its incorporated boundaries and to a small portion of unincorporated Miami-Dade County. Florida City also purchases water from the City of Homestead to service a small portion of Florida City's service area on the southeast corner of U.S. 1 and S.W. 328th Street. The City of Homestead provides water within its municipal boundary and for a portion of unincorporated Miami-Dade County including the Redavo development located at SW 296th Street and SW 187th Avenue. This development is within WASD's service area and consists of 107 homes with an approximate population of 310. **Figure 2-4** shows the current South Dade subarea.

Figure 2-1: WASD Water Service Area and Wholesale Customers

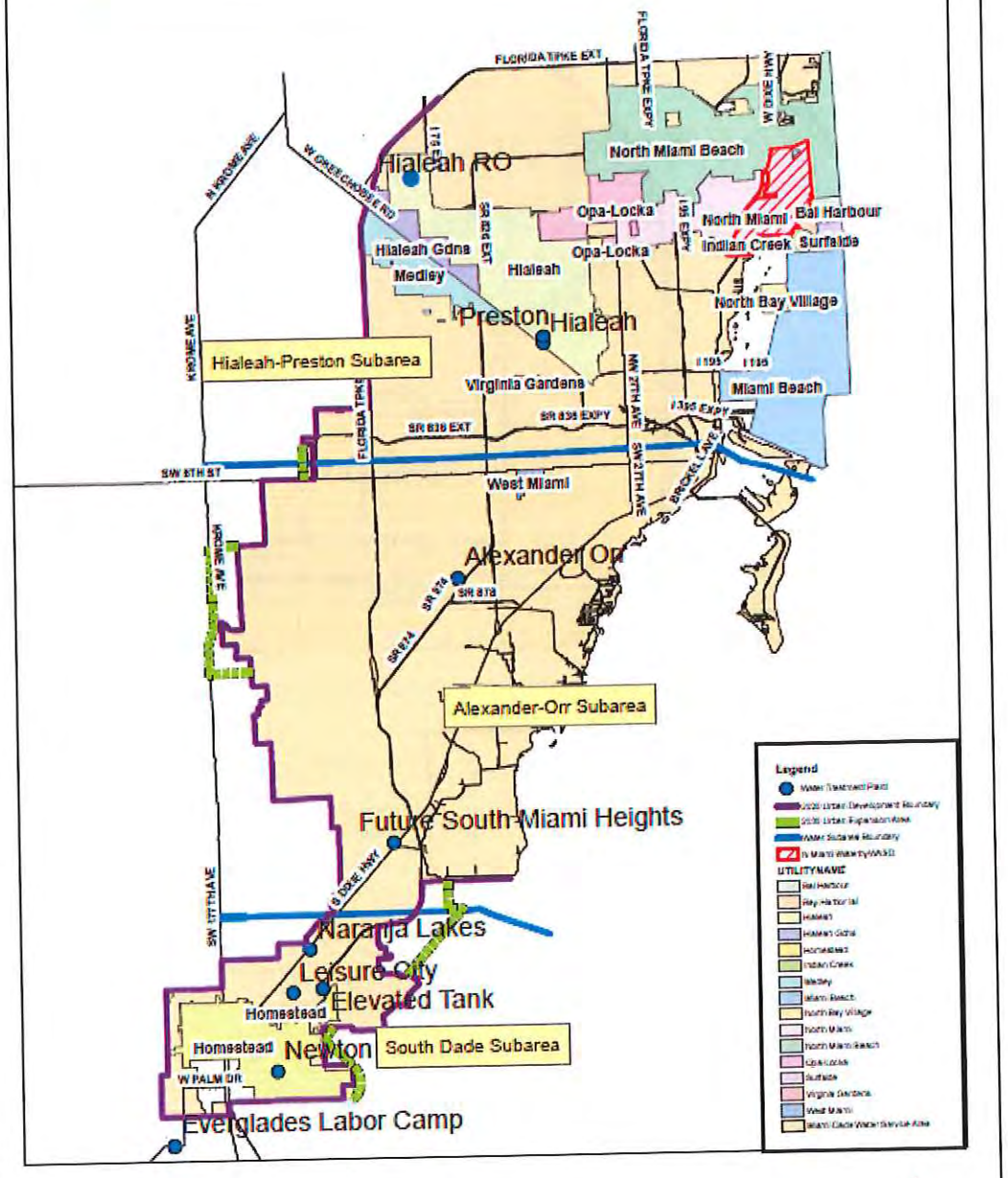
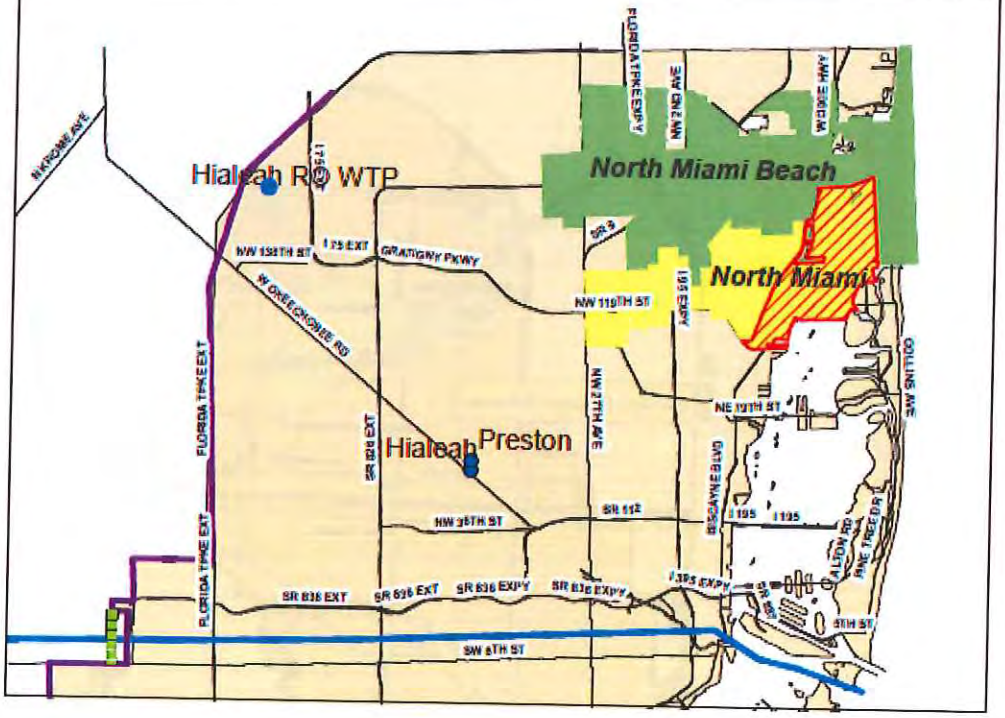


Figure 2-2:
Hialeah-Preston/Hialeah R.O. Sub-Area and Water Treatment Plants (WTP)



Legend

- Water Treatment Plant
- 2030 Urban Expansion Area
- 2020 Urban Development Boundary
- Water Subarea Boundary
- Miami-Dade Water Service Area
- N.Miami-WaterbyWASD

Other Water Suppliers

- North Miami
- North Miami Beach

October 2020

Figure 2-3
Alexander-Orr Sub-Area and Water Treatment Plants

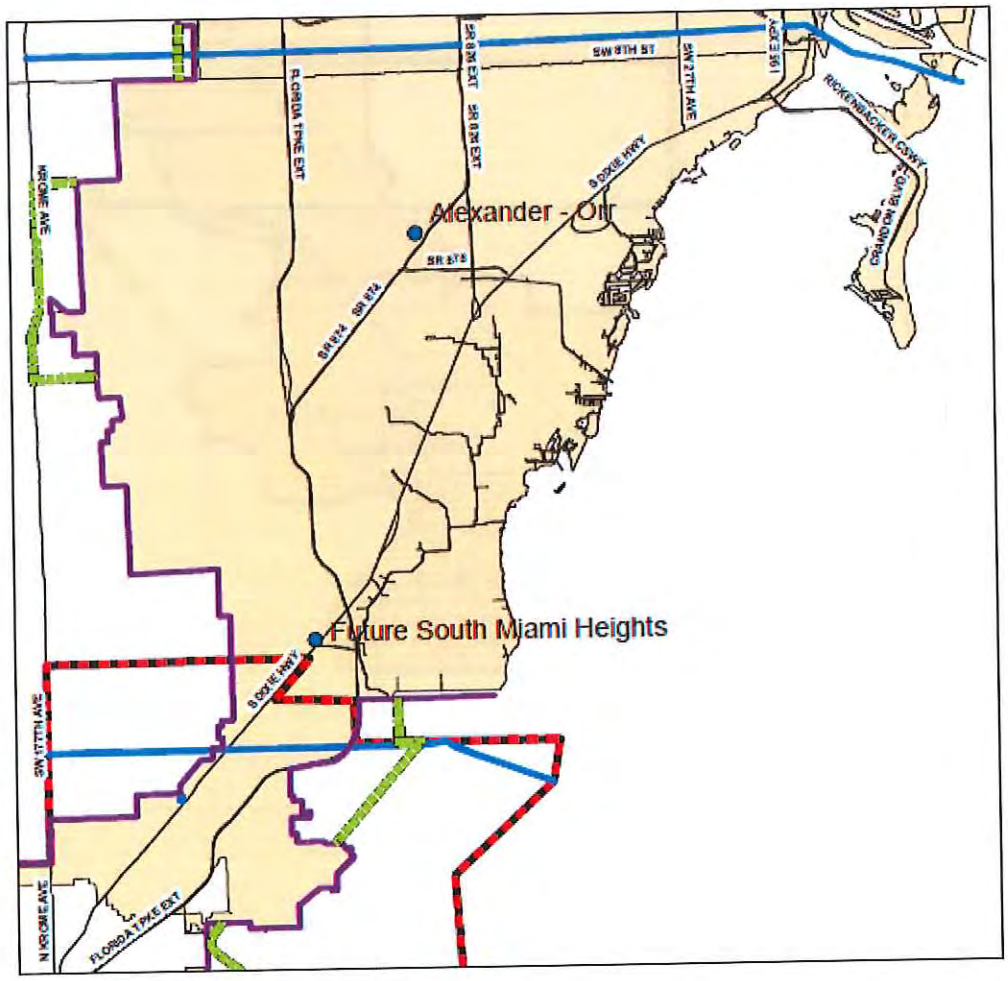
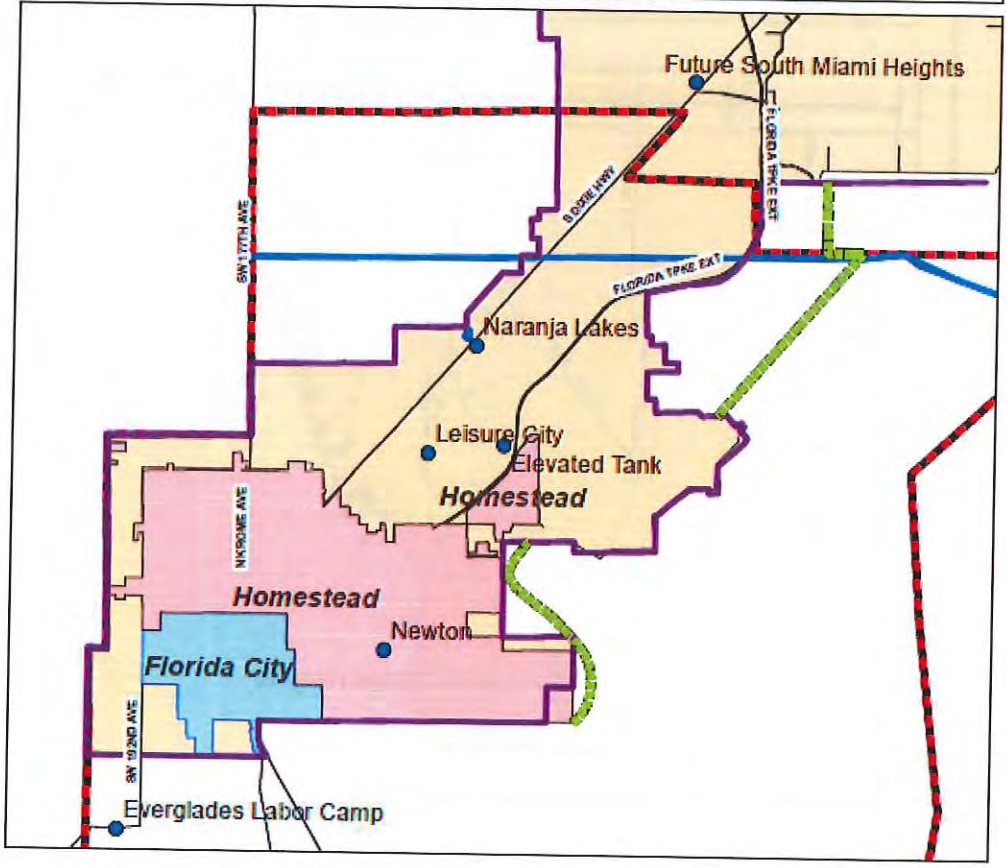


Figure 2-4
South Dade Sub-Area and Water Treatment Plants



Legend

- Water Treatment Facility
- Water Subarea Boundary
- 2020 Urban Development Boundary
- 2030 Urban Expansion Area
- Future South District South Area Boundary
- Miami-Dade Water Service Area

Other Water Suppliers

- Florida City
- Homestead

N
W E
S

October 2020

0 1.25 2.5 Miles

2.1.4 Interconnects

The Hialeah-Preston and Alexander Orr, Jr. WTPs are connected via their distribution systems. The major physical barrier separating the Hialeah-Preston and Alexander Orr, Jr. facilities is the Miami River/8th Street Canal. Table 2.1 lists the interconnects between Hialeah-Preston and Alexander Orr, Jr. distribution systems.

Table 2.1
Hialeah-Preston and Alexander Orr, Jr. Distribution System Interconnects

Location	Interconnect Pipeline Diameter (inches)
NW 1st Pl / NW 1 Ave / SW 2 Ave	48/42
Biscayne Blvd	24
NW 10th Ave and North River Dr / NW 14 Ave	30/24
NW 11th Ave and South River Dr / NW 14 Ave	20/24
NW 27th Ave and South River Dr	20
NW 30th Ave and NW 20th St / Delaware Pkwy	36/30
NW 72nd Ave /Tamiami Blvd	16/24
NW 87th Ave	24/16
NW 107th / 109th /112th Ave	36
NW 107th / 114th Ave	16

The Hialeah-Preston distribution system is interconnected with the Cities of North Miami and North Miami Beach service areas as well.

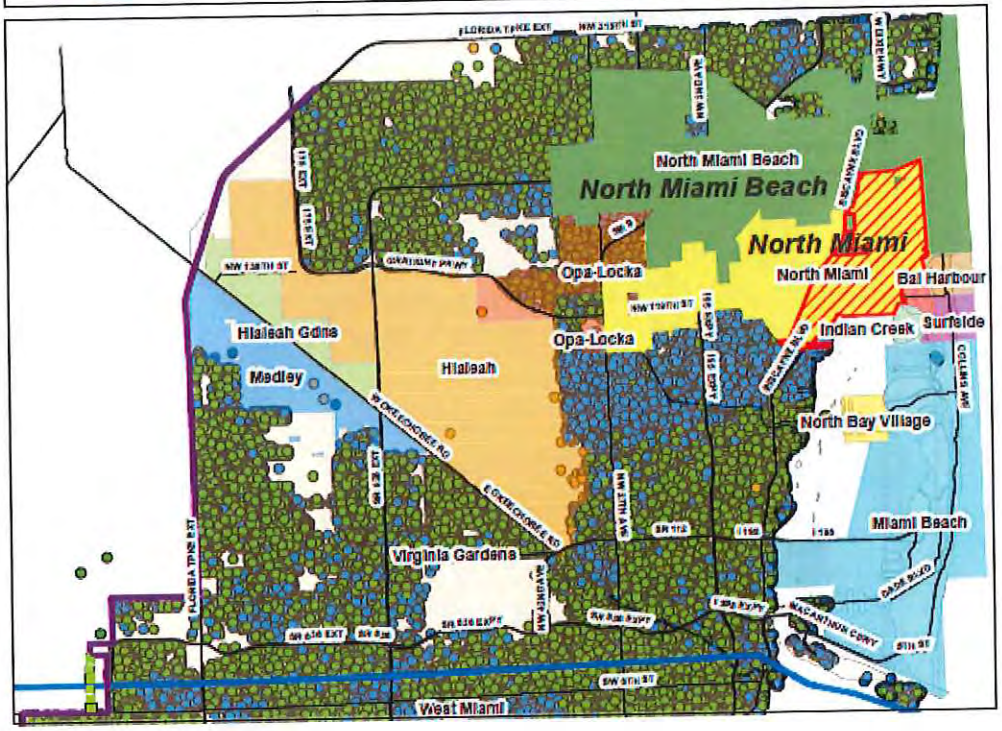
The Alexander Orr, Jr. WTP supplies the southern portion of the Main Regional System. The South Miami-Dade Water System is also located in the southern portion of the Miami-Dade County. Currently, the South Dade subarea is isolated from the Main Regional Water System by the closing of key water system valves. There is generally no intermixing between the two systems, however when required, valving allows the shifting of flows.

2.1.5 Self-Supply Water Systems

There are various self-supply water systems within WASD's service area. **Figures 2-5, 2-6 and 2-7** depict the properties within WASD's retail sub- service areas that have a water account. Within the sub-service areas, there are pockets that are either vacant land, bodies of water or properties connected to well water. The properties within WASD's Wholesale Customers service area that are connected to water are not included, as account information for those areas is not available to WASD. However, WASD will be coordinating with its wholesale customers to obtain account data and will be undertaking a future GIS (Geographic Information System) project to identify the self-supply water systems within WASD's retail and wholesale customers service area.

At this time, WASD has no planned projects to bring infrastructure to those properties connected to well water. Water infrastructure for future development within WASD's retail service area is constructed and conveyed to the Department by the developer.

Figure 2-5
Hialeah-Preston/Hialeah R.O. Sub-Area - WASD Water and Sewer Accounts



Legend
Source: County GIS

- 2020 Urban Expansion Area
- 2020 Urban Development Boundary
- Water Subarea Boundary
- N.Miami-Water by WASD
- Miami-Dade Water Service Area

Other Water Suppliers

- North Miami
- North Miami Beach

Wholesale Customer Water Service Area

- Bal Harbour
- Bay Harbor Is
- Hialeah
- Hialeah Gdns
- Indian Creek
- Medley
- Miami Beach
- North Bay Village
- North Miami
- North Miami Beach
- Opa-Locka
- Surfside
- Virginia Gardens

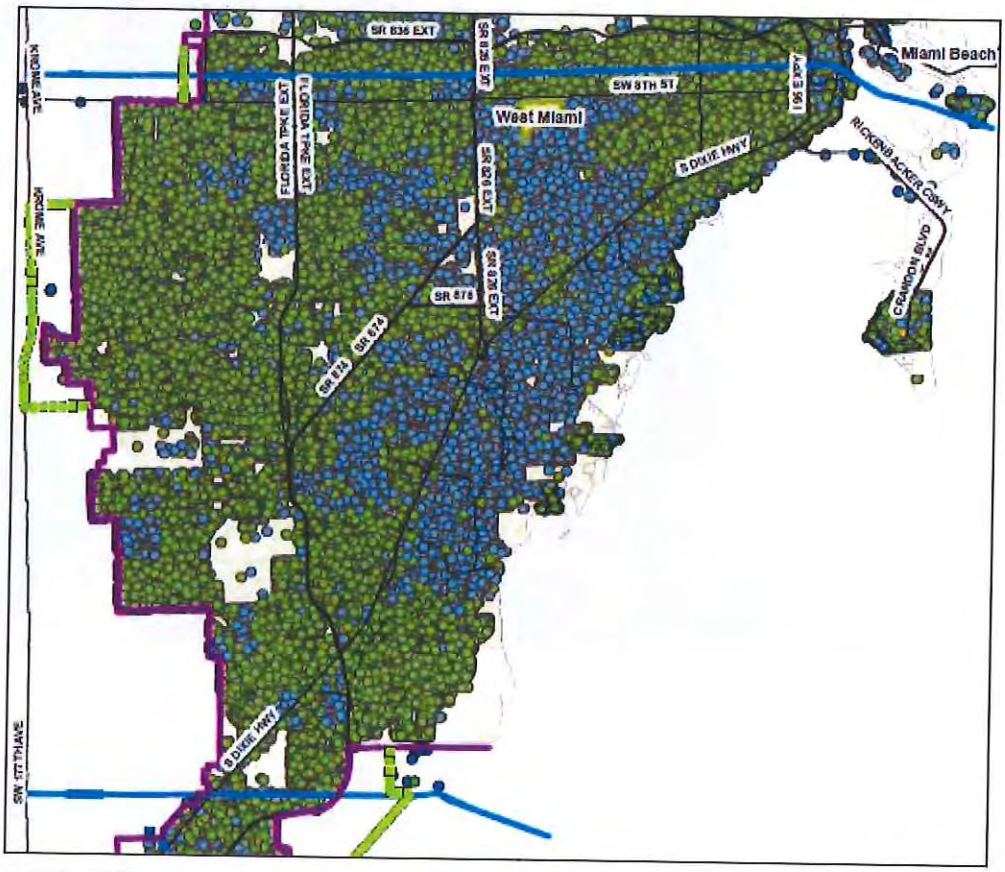
WASD Account Type

- Sewer
- Water
- Water and Sewer

0 1.75 3.5 Miles

October 2020

Figure 2-6
Alexander-Orr Sub-Area - WASD Water and Sewer Accounts



Legend
Source: County GIS
- 2030 Urban Expansion Area
- 2020 Urban Development Boundary
- Water Subarea Boundary
- Miami-Dade Water Service Area

Wholesale Customer Water Service Area
- West Miami

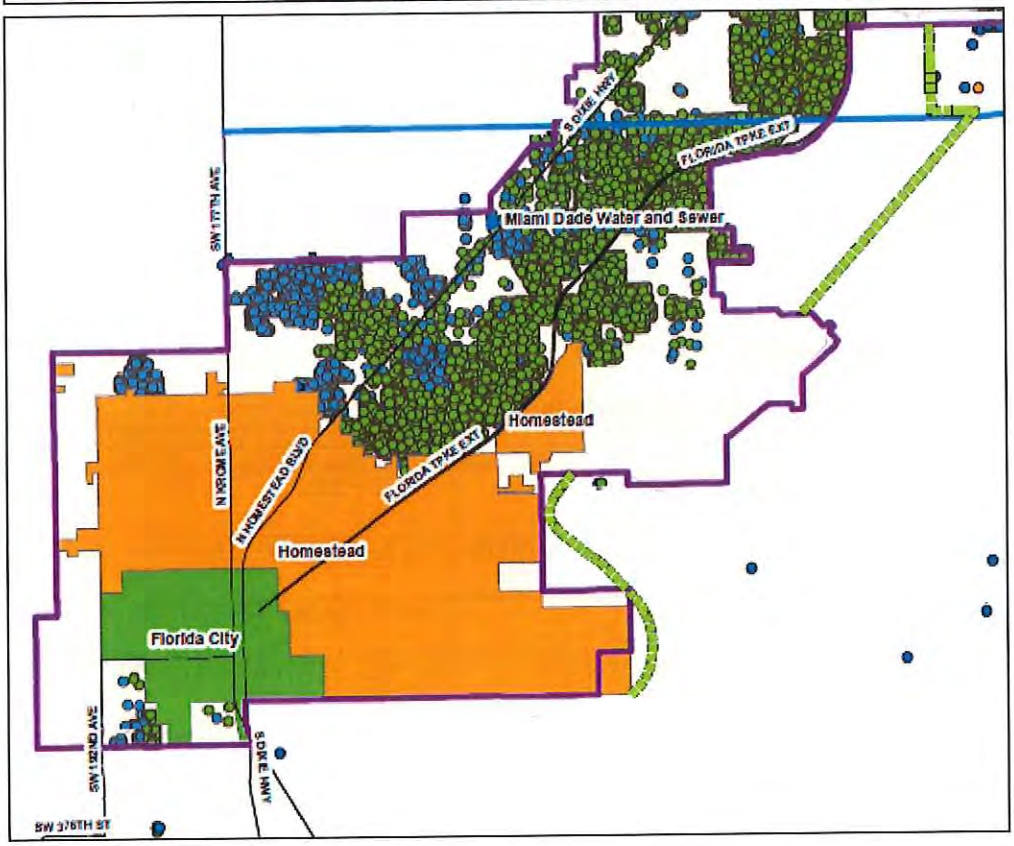
WASD Account Type
- Sewer
- Water
- Water and Sewer

N W E S

October 2020

0 2 4 Miles

Figure 2-7
South Dade Sub-Area - WASD Water and Sewer Accounts



Legend
Source: County GIS
- 2030 Urban Expansion Area
- 2020 Urban Development Boundary
- Water Subarea Boundary
- Miami-Dade Water Service Area

Florida City Water Service Area
- Florida City

Wholesale Customer Water Service Area
- Homestead

WASD Account Type
- Sewer
- Water
- Water and Sewer

N
W E
S

October 2020

0 1 2 Miles

2.2 Wholesale Customers

All 15 wholesale water customers within the WASD's service area have large user agreements. These agreements, with the exception of the City of North Miami Beach, are for a 20-year period. The water agreement with the City of North Miami Beach is for a period of 30-years. In 2007, the City of Miami Springs indicated its desire to pursue the transfer of the Miami Springs water and sewer department to the County. Said transfer was approved by the Miami-Dade County Board of County Commissioners (BCC) on July 17, 2008. **Table 2-2** identifies the 15 wholesale customers and the execution and termination date of their large user contracts.

As outlined in the Miami-Dade County Code of Ordinances, Chapter 2, Article XXXVII, Section 2-347, if a private or municipal water or sewer utility proposes to expand its assigned service area, the Director or designee shall determine whether the Department shall release the portion of the service area requested.

Table 2-2 WASD Wholesale Water Agreements for 20 Year Period

Municipality	Execution and Termination Date
Bal Harbour Village (BLH)	07/26/2007-07/26/2027
Town of Bay Harbour Islands (BHI)	07/26/2007-07/26/2027
City of Hialeah (CH)	07/27/2008 – 07/27/2028
City of Hialeah Gardens (HG)	05/04/2007 – 05/04/2027
City of Homestead (HOMSTD)	07/09/2010 – 07/10/2030, 3 MGD Max.
Indian Creek Village (IC)	07/26/2007 – 07/25/2027
Town of Medley (MED)	05/04/2007 – 05/04/2027
City of Miami Beach (MB)	07/29/2008 – 07/29/2028
City of North Bay Village (NB)	06/14/2007 – 06/14/2027
City of North Miami (NM)	07/26/2007 – 07/26/2027
City of North Miami Beach (NMB)	, 03/19/2001 – 03/19/2031, as needed basis
City of Opa-Locka (OPLOC)	05/04/2007 – 05/04/2027
Town of Surfside (SURFS)	07/26/2007 – 07/26/2027
Village of Virginia Gardens (VG)	06/14/2007 – 06/14/2027
City of West Miami (WM)	06/14/2007 – 06/14/2027

2.3 Other Water Suppliers (Non-WASD)

Other water suppliers located in Miami-Dade County have facilities and provide water to portions of Miami-Dade County. These facilities are in the extreme northern and southern portions of the County as shown in **Figure 2-8**. Other water suppliers within the County include:

- City of North Miami
- City of North Miami Beach
- City of Homestead
- City of Hialeah
- Florida City

The Florida Keys Aqueduct Authority (FKAA) has facilities in the southern portion of the County to serve Monroe County. These facilities include supply wells, a treatment facility and a transmission main to serve Monroe County.

2.3.1 City of North Miami

The City of North Miami provides water service to parts of northern Miami-Dade County within its municipal boundaries, as well as areas outside of its municipal boundaries extending into the northwestern portions of unincorporated Miami-Dade County.

The City's service area consists of a high-pressure distribution system comprised of three main distribution lines, which are interconnected. The service area is generally bounded by NE 163rd Street to the north, Biscayne Bay to the east, NW 105th Street to the south, and NW 27th Avenue to the west. It serves a population of over 81,000 people in a 13 square-mile area. The City of North Miami provides water service within its municipal boundaries, as well as to the Village of Biscayne Park, a small area of Miami Shores, and portions of unincorporated Miami Dade County. The City currently purchases approximately 45% of their water from WASD for redistribution.

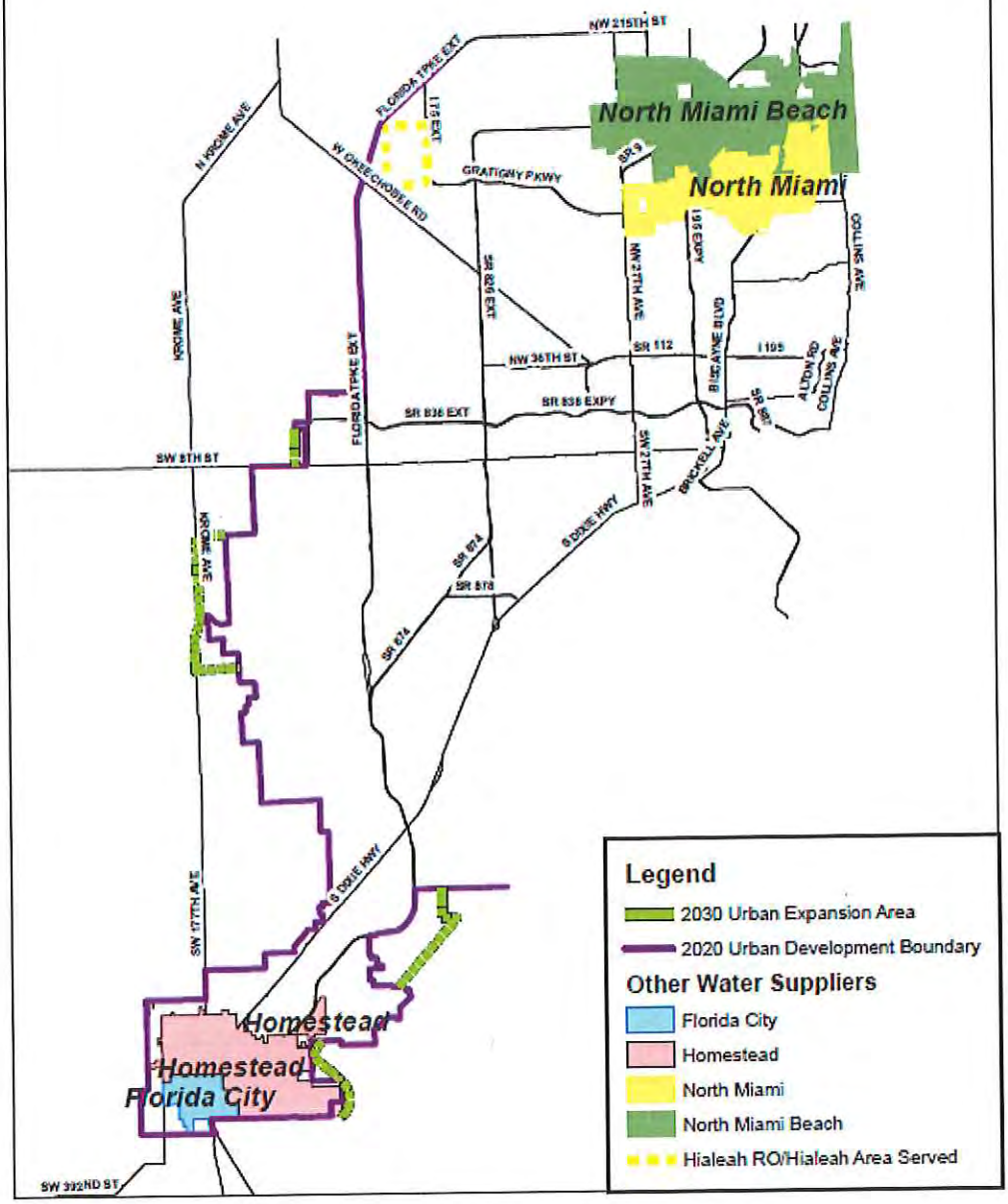
2.3.2 City of North Miami Beach

The City of North Miami Beach provides water service to parts of northern Miami-Dade County within its municipal boundaries, as well as outside of its municipal boundaries extending into the northeastern and northwestern portions of unincorporated Miami-Dade County. The City of North Miami Beach provides water service within its municipal boundaries, and to portions of the City of Aventura, Town of Golden Beach, portions of the City of Miami Gardens, City of Sunny Isles

Beach, and portions of unincorporated Miami-Dade County. The City of North Miami Beach has emergency interconnections with Bal Harbor Village, City of Hallandale Beach, and City of North Miami.

The City's distribution system consists of a high-pressure system, distributing potable water service to more than 174,000 people in northeast Miami-Dade County. The service area is generally bounded by the Snake Creek Canal and Ives Dairy Road to the north, NW 37th Avenue to the west, NE and NW 135th Street to the south, and Collins Avenue to the east. Only about 25 percent of the City's service area is within City limits.

Figure 2-8: Other Water Suppliers in Miami-Dade County



2.3.3 City of Homestead

The City of Homestead provides water within most of its municipal boundaries and to a small part of southern Miami-Dade County including a portion of Florida City and parts of unincorporated Miami-Dade County. The City of Homestead sells water to WASD to serve a housing development consisting of 107 homes within Unincorporated Miami-Dade County. This development, named Redavo, has an estimated population of 310 individuals. The City of Homestead and Miami-Dade County have an active water use agreement.

Pursuant to the terms of a Consent Decree between the City of Homestead and the SFWMD, dated December 7, 2009, the City is required to reduce its withdrawal from the Biscayne Aquifer by approximately 3 MGD to meet the conditions of the City's Water Use Permit. On July 9, 2010, the City of Homestead entered into a 20-year water wholesale agreement with WASD to purchase up to 3 MGD of water to meet the demands of its retail customers.

It should be noted that WASD provides water service within portions of the municipal boundary of the City of Homestead. Furthermore, the City of Homestead sells water to Florida City to service a small portion of Florida City's service area on the southeast corner of U.S. 1 and S.W. 328th Street.

The City of Homestead's service area consists of a high-pressure water distribution system that services approximately 10,240 acres in southern Miami-Dade County, with an estimated population of 76,000. The service area is generally bounded by SW 296th Street to the North, SW 137th Avenue to the east, SW 344th Street to the south, and SW 192nd Avenue to the west.

2.3.4 City of Hialeah

The City of Hialeah provides water service to portions of Northwest Miami-Dade County within its municipal boundaries. The City produces potable water via the Hialeah Reverse Osmosis (RO) Water Treatment Plant. On December 27, 2007, the Miami-Dade County and the City of Hialeah entered into a Joint Participation Agreement (JPA) to design, construct, and operate the Hialeah RO Water Treatment Plant. The JPA specified that the County and the City would be equal partners in funding the project. The facility initiated operation in November of 2013.

The water treatment facility has a current production capacity of 7.5 MGD, allocated equally to the City of Hialeah and Maim-Dade County (3.25 MGD each). The portion of the City of Hialeah served by the Hialeah RO water treatment plant consists of approximately 1,900 acres and is located between NW 170th Street on the north, NW 138th Street on the South, I-75 on the east, and NW 107th Avenue on the west.

2.3.5 Florida City

Florida City provides water service to parts of southern Miami-Dade County within its municipal boundaries and to a small portion of unincorporated Miami-Dade County. The City's service area is comprised of a high-pressure distribution system that services approximately 1,520 acres in southern Miami-Dade County. The service area has an approximate population of 13,000 and is generally bounded by SW 328th Street to the north, SW 172nd Avenue/SW 167th Avenue to the east, SW 352nd Street/SW 360th Street to the south, and SW 187th Avenue to the west.

2.3.6 Florida Keys Aqueduct Authority

The Florida Keys Aqueduct Authority (FKAA) has facilities in southern Miami-Dade which serve residents in Monroe County. The FKAA does not provide service within Miami- Dade County, despite some of their water supply, treatment, and transmission facilities being located within Miami-Dade County. These facilities include supply wells, a treatment facility and a transmission main to Monroe County.

2.3.7 Large and Small Public Water Supply Systems

Additional public water supply systems exist within Miami-Dade County. Miami-Dade County has conducted a preliminary survey of these public water systems. A list of these public water supply systems provided by the Florida Department of Health is contained in Appendix G.

Section 3

Existing Water Supply Facilities

3.1 Water Supply Wellfields (Sources of Water)

The Miami-Dade Water and Sewer Department's (WASD) water system is served by the Hialeah-Preston Water Treatment Plant (WTP), Alexander-Orr WTP, the Hialeah Reverse Osmosis (RO) WTP, and five (5) small treatment plants in the southern portion of Miami-Dade County. The existing water supplies serving these treatment plants originate from two major aquifer systems in Miami-Dade County: The Surficial and Floridan Aquifer Systems. The Surficial Aquifer System, also known as the Biscayne Aquifer, is the major source of drinking water and occurs at or near the land surface in most of the County and is the principal water-bearing unit of the Surficial Aquifer System in the region (Causaras, 1987). Groundwater from the Floridan Aquifer (FA) is the drinking water source for the Hialeah RO WTP.

The 20-Year Water Use Permit (WUP) for Miami-Dade County was approved by the South Florida Water Management District (SFWMD) Governing Board on November 15, 2007. Subsequent modifications have been submitted by WASD and approved by SFWMD, with the latest having been dated September 21, 2015. The water use permit limits WASD's annual allocation to 140,915.50 million gallons (MG) and the maximum monthly allocation to 12,330.11 million gallons through the permit expiration date of February 9, 2035. These allocations are further limited by the wellfield operational plan described in Limiting Condition 27 of the water use permit. A copy of the approved water use permit and limiting conditions is presented in Appendix H.

Currently, WASD is preparing to submit a WUP modification that will include updated water demand projections based on revised 2015 Transportation Analyses Zone (TAZ) population data and request an extension of the permit duration through the year 2040.

3.1.1 Relevant Regional Issues

The SFWMD Lower East Coast Water Supply Plan (2018) identified several regional water supply issues including the limited availability of fresh surface and groundwater which further withdrawals could have impacts on the regional system, wetlands, pollution, existing legal users (ELU) and saltwater intrusion. In addition, Resource Allocation Areas (RAA) rules and Minimum Flows and Levels (MFLS) further are needed to be assessed with regards to allocations for the Lower East Coast Everglades Waterbodies, which includes Miami-Dade County. Miami-Dade WASD has been working with the SFWMD permitting staff to address these issues in the WASD Water Use Permit Modification, to be submitted to the SFWMD in 2020. WASD has completed extensive modeling using the peer reviewed U.S. Geological Survey model integrated surface/groundwater numerical flow model (USGS, 2014). In conjunction with the

USGS model, WASD has developed an optimization decision tool (ODT) model that is designed to minimize impact to regional water supply issues listed above. WASD has entered into an agreement with Palm Beach Aggregates, Inc. in July 2020 for 15 mgd of water allocation from the C-51 reservoir project. WASD has worked with SFWMD staff to incorporate the C-51 allocation into our proposed base Biscayne Aquifer allocation. Modeling results reviewed with SFWMD staff indicate the proposed allocation with supplemental C51 deliveries will not impact regional flows, wetlands, and ELU, and will benefit the regional system. Modeling also indicates there will be no impact that would alter the rate or direction of movement of potential pollutant concentrations. Modeling results indicate the allocation will not have a notable effect on the position of the freshwater-seawater interface in Miami-Dade County. Miami-Dade County personnel including staff from WASD are on the Biscayne Bay and Southeastern Everglades Ecosystem Restoration (BBSEER), which includes the CERP component of Biscayne Bay Coastal Wetlands Phase II project, and will assess water supply along with other environmental issues as part of the Project Development Team (PDT) of BBSEER.

Miami-Dade WASD in agreement with the City of Hialeah maintains the Hialeah Reverse Osmosis Facility that will provide 10 mgd of finished brackish Floridan Aquifer water. WASD continues to monitor the water quality and production rates of the facility with the City of Hialeah to optimize wellfield management to minimize drawdowns and prevent undesirable water quality changes. WASD will propose the South Miami Heights (SMH) Floridan Aquifer Reverse Osmosis Facility as the alternative backup water supply for the C-51 reservoir and unforeseen future water demands should it be needed. WASD will propose to keep the existing 23 mgd Floridan Aquifer allocation for SMH on our SFWMD 20-year Water Use Permit modification.

Miami-Dade WASD is in the process of rehabilitating its existing 25 mgd Aquifer Storage and Recovery (ASR) facilities at the West and Southwest wellfields. Once rehabilitation is complete, cycle testing will commence under the supervision of the Florida Department of Environmental Protection (FDEP) Underground Injection Control permits already obtained from FDEP. Once cycle testing has demonstrated their feasibility and recovery rates, the ASR systems will be integrated into WASD operations to store wet season flows that can be used then for future water supply in dry conditions.

The State of Florida Ocean Outfall requirements do not affect Miami-Dade WASD's water supply plan. WASD does not intend to develop wastewater reuse into its water supply plan at this time due to the extreme costs rendering reuse infeasible in Miami-Dade County.

3.1.2 Wellfields and Capacities

The existing WASD water supply system is comprised of eight (8) major Biscayne Aquifer wellfields in the Hialeah-Preston and Alexander Orr, Jr. subareas, twelve (12) Biscayne Aquifer water supply wells located at five individual water systems (formerly Rex Utility District water system) in South Miami-Dade County and ASR wells at the Alexander Orr, Jr. Subarea, as shown in **Table 3-1, Table 3-2** and **Figure 3-1**. Each of the wellfields is described below.

3.1.3 Hialeah-Preston Subarea Wellfields

The Hialeah-Preston WTPs are supplied by four water supply wellfields, shown on **Figure 3-1**. The total designed installed capacity from the four wellfields in the Hialeah-Preston subarea is approximately 295 million gallons per day (MGD). Appendix A provides detailed information about well construction and capacities of the Hialeah-Preston area wellfields.

The new Hialeah RO WTP is supplied by six (6) FA wells, as noted on **Figure 3-2.** The total installed capacity for the six wells is 12 MGD. A total of four (4) additional FA wells with a total capacity of 8 MGD are anticipated to be placed into service by December 31, 2020.

In addition to these wellfields, four abandoned wells at a Medley Wellfield with a design capacity of 48.96 MGD have been rehabilitated and are available on a stand-by basis in the event of an emergency.

Table 3-1 Biscayne Aquifer Wellfield Data

Wellfield	Wellfield	
	Installed Design Capacity (MGD)	Number of Wells
Hialeah-Preston		
Hialeah	12.54	3
John E. Preston	53.28	7
Miami Springs	79.30	20
Northwest[a]	149.35	15
Subtotal	**294.47**	**45**
Medley Wellfield (emergency only) [b]	**48.96**	**4**
Alexander Orr		
Alexander Orr	74.40	10
Snapper Creek	40.00	4
Southwest	161.20	17
West	32.40	3
Subtotal	**308.00**	**34**
Existing South Dade		
Elevated Tank	4.32	2
Everglades Labor Camp	5.04	3
Leisure City	4.18	4
Naranja	1.15	1
Newton	4.32	2
Subtotal	**19.01**	**12**
South Miami Heights		
Former Plant	*4*	*1*
Roberta Hunter Park	*6*	*4*
Subtotal	***10.00***	*5*
WASD System Total (Biscayne Aquifer)	**670.44**	**95**
Proposed WASD System Total (Biscayne Aquifer)	**680.44**	**100**

Source: WASD Water Use Permit No. 13-00017-W, Exhibit 10B and Exhibit 13, Re-issue September 21, 2015

(a) Northwest wellfield capacity at 150 MGD when pumps operate at low speed.
(b) Wells in this wellfield had been abandoned. They have been restored with the purpose of using them only during an emergency.

Table 3-2 Floridan Aquifer Wellfield Data

Wellfield	Wellfield	
	Design Capacity (MGD)	**Number of Wells**
Alexander Orr WTP (use of FA Wells for ASR)		
Southwest	10.00	2
West	15.00	3
Subtotal	25.00	**5**
Hialeah RO WTP (use of FA Wells for RO)		
Hialeah RO, Phase 1-a [(a)]	12.00	6
Future Hialeah RO, Phase 1-b[(b)]	8.00	4
South Miami Heights WTP (Future use of FA Wells for RO)		
Future South Miami Heights	*24.00*	*7*
Existing WASD System Total (Floridan Aquifer)	**37.00**	**11**
Future WASD System Total (Floridan Aquifer)	**69.00**	**22**

Source: WASD Water Use Permit No. 13-00017-W, Exhibit 10B and Exhibit 13, Re-issue September 21, 2015

(a) Phase 1-a, 10 MGD Hialeah RO WTP with initial 6 Floridan aquifer wells.
(b) Phase 1-b, 10 MGD Hialeah RO WTP with additional 4 Floridan aquifer wells. Wells constructed to be active by 12/31/2020.

Figure 3-1: WASD Wellfields, Wellfield Protection Areas

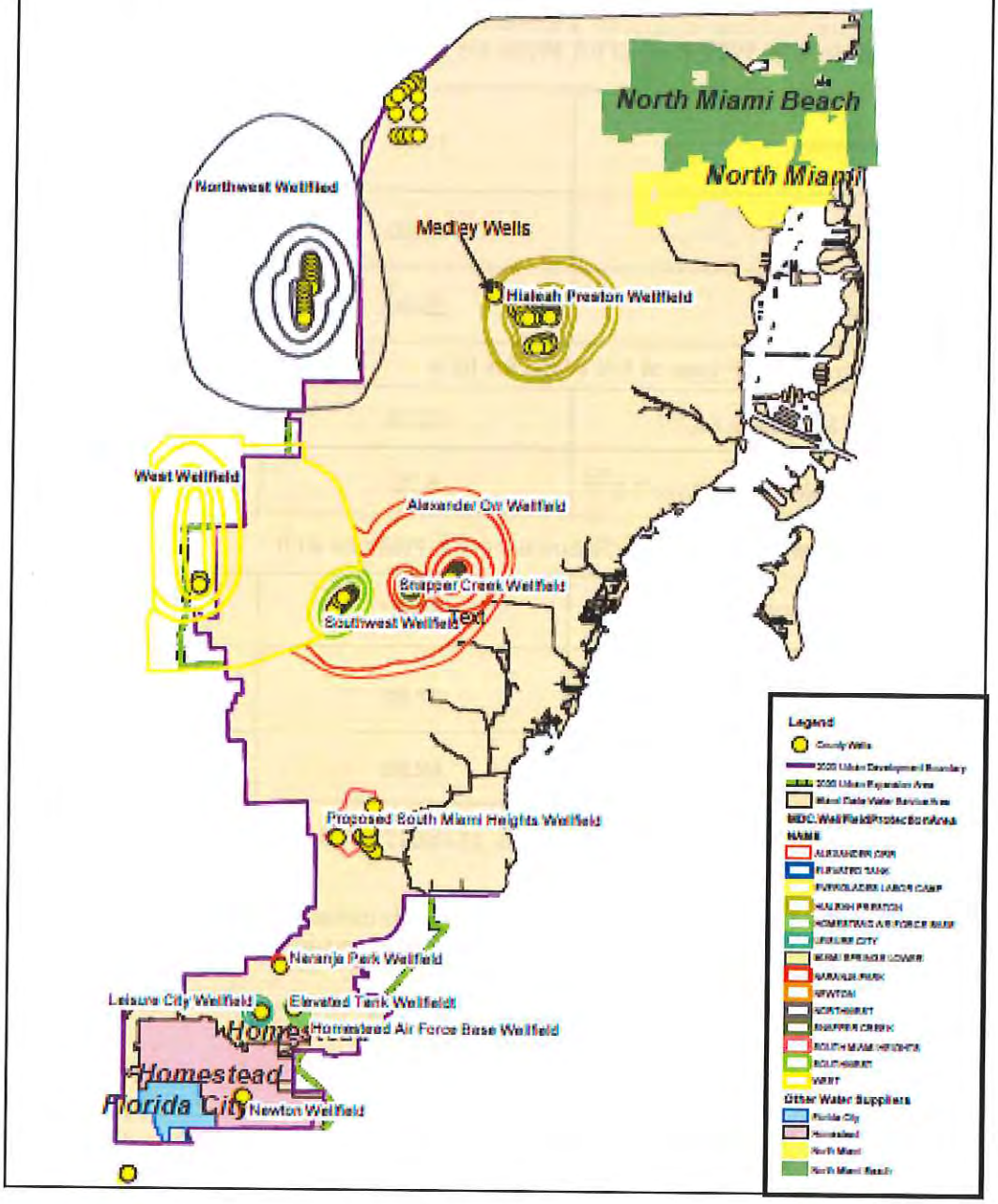
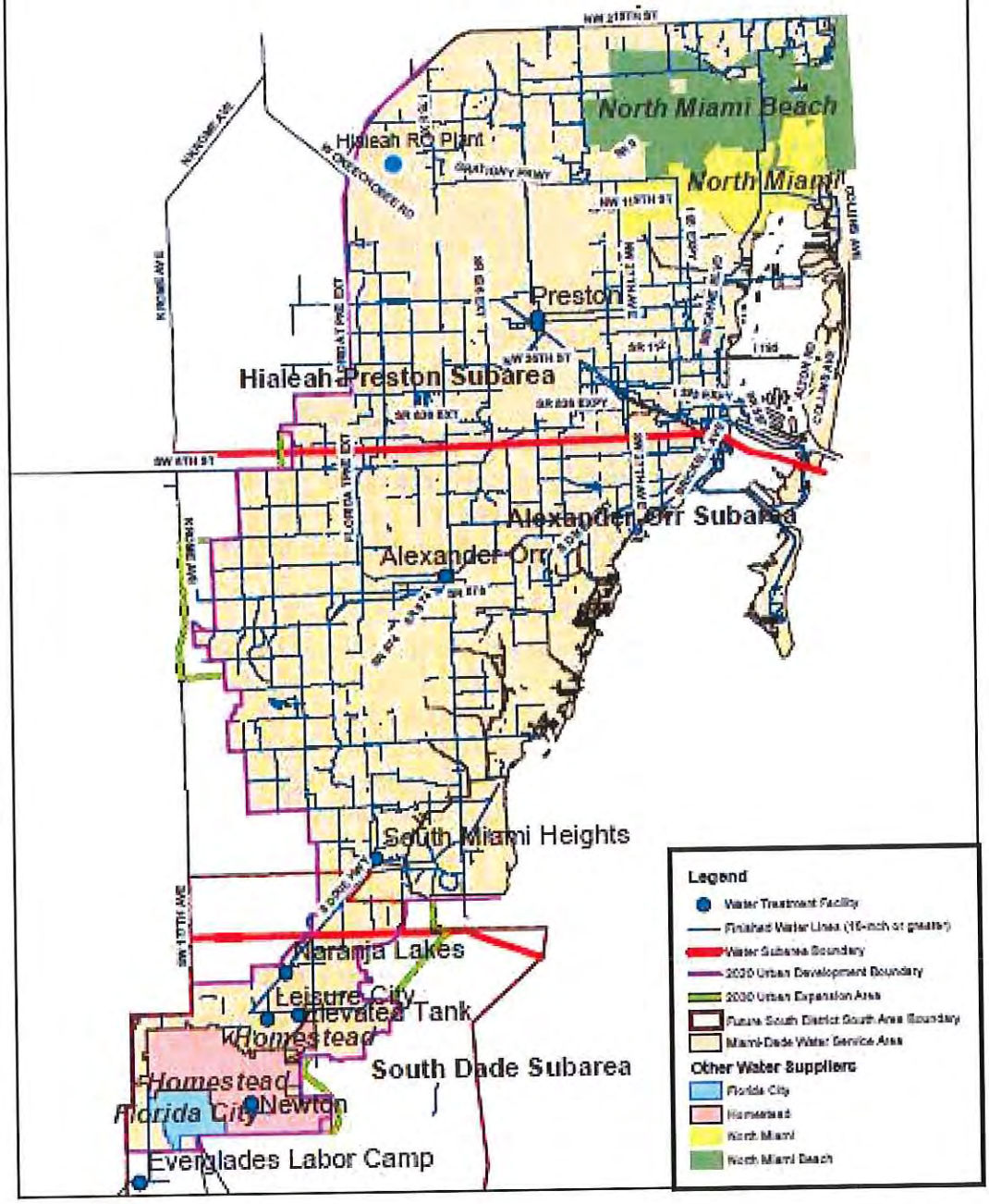


Figure 3-2: WASD Water Treatment Plants and Finished Water Lines



3.1.3.1 Hialeah Wellfield

The three active wells located in the Hialeah Wellfield were constructed in 1936. Each well is 14 inches in diameter, 115 feet deep and have casing depths of 80 feet. The total wellfield capacity is 12.54 MGD or 8,700 gpm (2,900 gpm for each well).

3.1.3.2 John E. Preston Wellfield

The seven active wells located in the John E. Preston Wellfield were constructed in 1966 and 1972. Each well is 42 inches in diameter, 107 feet deep and have casing depths of 66. The capacity of wells No. 1 through No. 6 is 5,000 gallons per minute (gpm) each and the capacity of well No. 7 is 7,000 gpm. The total wellfield capacity is 53.28 MGD.

3.1.3.3 Miami-Springs Wellfield

The twenty active wells located in the Miami Springs Wellfield were constructed between 1924 and 1954. These wells are 14 inches and 30 inches in diameter, 80 to 90 feet deep and have casing depths of 80 feet. The total wellfield capacity is 79.30 MGD or 55,070 gpm (ranging between or 2,500 and 5,000 gpm for each well). The Miami Springs wellfield is currently undergoing a multi-phase project to rehabilitate the water wells, wellhouses and pumps, and the electrical system.

3.1.3.4 Northwest Wellfield

The Northwest Wellfield has fifteen active wells that were constructed in 1980. The wells are 40 inches and 48 inches diameter and 80 to 100 feet deep, with casing depths ranging from 46 to 57 feet. These wells have two-speed motors. The total nominal capacity of the wells at the low speed flow rate is 149.35 MGD. The capacity of each well, except well No. 10, is 10 MGD at the low speed flow rate. Well 10 have a low speed capacity of 9.35 MGD. The total nominal capacity for the wells at the high-speed flow is 220.94 MGD.

3.1.3.5 Medley Wellfield

The Medley Wellfield had previously been abandoned. However, four wells were recently rehabilitated for emergency use only. The wells are 42 inches and 48 inches in diameter and 100 to 115 feet-deep, with casing depths ranging from 42 to 48 feet. The total **wellfield** capacity is 48.96 MGD or 34,000 gpm.

3.1.3.6 Hialeah RO Wellfield

The Hialeah RO wellfield has six (6) active wells that were constructed in 2012. The wells are 16 and 17-inches in diameter, with depth ranging from 1,452 to 1,490 and casing depths ranging from 1,060 to 1,080 feet. The capacity of each well is 2 MGD. The total capacity of the wellfield is 12 MGD. An additional four wells with a capacity of 2 MGD each have been installed and are anticipated to be active by December 31, 2020.

3.1.4 Alexander Orr, Jr. Subarea Wellfields

The Alexander Orr, Jr. WTP is supplied by four water supply wellfields as shown on Figure 3-1. The total designed installed capacity from the four wellfields in the Alexander Orr, Jr. service area is approximately 308 MGD. There are Floridan aquifer wells at two of the wellfields. Appendix A provides detailed information about well construction and capacities, of the Alexander Orr, Jr. area wellfields.

3.1.4.1 Alexander Orr, Jr. Wellfield

The ten active wells located in the Alexander Orr, Jr. Wellfield were constructed between 1949 and 1964. These wells are 16 inches and 42 inches in diameter, 100-feet deep and have casing depths ranging from 40 to 50 feet. The capacity of the wellfield is 74.4 MGD (ranging between 4,170 and 7,500 gpm for each well).

3.1.4.2 Snapper Creek Wellfield

The four active wells located in the Snapper Creek Wellfield were constructed in 1976. These wells are 24 inches in diameter, 108 feet deep and have casing depths of 50 feet. The total wellfield capacity is 40.0 MGD or 27,760 gpm (6,940 gpm for each well).

3.1.4.3 Southwest Wellfield

The seventeen (17) active wells located in the Southwest Wellfield were constructed between 1953 and 1997. These wells are 20 inches to 48 inches in diameter, 88 to 104 feet-deep and have casing depths ranging from 33 to 54 feet. The total wellfield capacity is 161.20 MGD (ranging between or 4,900 and 7,500 gpm for each well).

3.1.4.4 West Wellfield

The West Wellfield has three wells that were constructed in 1994. The wells are 24 inches in diameter and 70 feet-deep, with casing depths of 40 feet. The total wellfield capacity is 32.4 MGD or 7,500 gpm per well. This wellfield is limited by the SFWMD to 15 MGD on either an average or maximum daily basis. Well No. 29 pumpage is limited to 5 MGD; Well No. 30 is limited to 10 MGD; and Well No. 31 is to be used as a standby well only to be used with prior written approval from the SFWMD.

3.1.4.5 Floridan Aquifer ASR

Three Upper Floridan Aquifer wells are located in the West Wellfield (WWF) and two are located in the Southwest Wellfield (SWWF). These wells were constructed in 1996 and 1997 and are 30 inches in diameter. The total depth of these wells is between 1,200 feet and 1,300 feet with casing depths between 835 feet and 850 feet. The total capacity of the West Wellfield wells is 15 MGD or 3,500 gpm per well. The total capacity of the Southwest Wellfield wells is 10.08 MGD or 3,500 gpm per well.

Miami-Dade WASD is cycle testing the ASR wells at the SWWF and WWF. WASD anticipates using these wells for storage of fresh Biscayne Aquifer water in the Floridan Aquifer during the wet season for extraction and use in the dry season. WASD operates the ASR system according to Department of Environmental Protection UIC

permits. Injected water from the Biscayne Aquifer is from the Biscayne Aquifer water allocation in the 20-year Water Use Permit 13-00017-W for the WWF and the SWWF.

3.1.5 South Dade Wellfields

The five (5) South Dade WTPs are supplied by five individual water supply wellfields as shown on Figure 3-1. The total designed installed capacity from the five wellfields for the South Dade area is 19.01 MGD. Appendix A provides detailed information about well construction and capacities, of the existing South Dade area wellfields.

3.1.5.1 Elevated Tank Wellfield

The two (2) active wells located in the Elevated Tank Wellfield were constructed in 1982 and 1996. These wells are 12 inches and 16 inches in diameter, 45 to 50 feet deep and have casing depths of 35 and 40 feet. The wellfield's capacity totals 4.32 MGD or 1,500 gpm for each well.

3.1.5.2 Everglades Wellfield

The three (3) active wells located in the Everglades Wellfield were constructed from 2000 to 2001. These wells are 18 inches in diameter, between 50 and 55 feet deep and have casing depths of 40 and 45 feet. The wellfield's capacity totals 5.04 MGD, ranging between or 700 and 1,500 gpm for each well, excluding the three abandoned wells.

3.1.5.3 Leisure City Wellfield

The four (4) active wells located in the Leisure City Wellfield were constructed between 1953 and 1971. These wells are 6 inches and 12 inches in diameter, approximately 30 to 40 feet deep and have casing depths ranging from 25 to 35 feet. The wellfield's capacity totals 4.18 MGD, ranging between or 450 and 1,500 gpm for each well.

3.1.5.4 Naranja Wellfield

The only active well located in the Naranja Wellfield was constructed in 1975. This well is 12 inches in diameter, 40 feet deep and has a casing depth of 35 feet. The wellfield's capacity totals 1.15 MGD or 800 gpm.

3.1.5.5 Newton Wellfield

The two (2) active wells located in the Newton Wellfield were constructed in 2000 and 2001. These wells are 18 inches in diameter, approximately 65 feet deep and have casing depths ranging from 50 to 53 feet. The wellfield's capacity totals 4.32 MGD or 1,500 gpm for each well, excluding two abandoned wells.

3.1.5.6 Future South Miami Heights Wellfield

The future South Miami Heights WTP Phase 1 is planned for the long-term future. The three future South Miami Heights wellfields include: Former Plant Wellfield, 4.0 MGD; Roberta Hunter Park Wellfield, 6 MGD; and South Miami Heights 24 MGD. The future SMH WTP is planned to have a production capacity of 17.45 MGD finish water using a combination of Floridan and Biscayne raw water.

3.1.6 Other Water Supply Wellfields

3.1.6.1 City of North Miami

The City of North Miami Winson Water Treatment Plant (WTP) is currently supplied exclusively from the Biscayne Aquifer. There are presently eight (8) 12-inch diameter wells, ranging in depths from 56 to 124 feet. They were drilled and put into service in 1962. Two wells are located at the WTP site, and another three pairs are located at three different public parks in the vicinity of the WTP. These wellfields provide water supply to a portion of unincorporated Miami-Dade County in addition to within the City of North Miami municipal boundary.

3.1.6.2 City of North Miami Beach

The City of North Miami Beach Norwood Water Treatment Plant is supplied by sixteen (16) Biscayne aquifer and four (4) Floridan aquifer wells. These wellfields provide water supply to a portion of unincorporated and incorporated Miami-Dade County in addition to areas within the City of North Miami Beach municipal boundary.

3.1.6.3 City of Homestead

The City of Homestead is currently supplied by six Biscayne Aquifer withdrawal wells, with a current capacity of 15.22 MGD. There are two 16-inch, two 18-inch, and two 20-inch diameter wells, all 60 feet in depth. The Wittkop Park wellfield, in the northwest part of the service area, has 4 wells, and the Harris wellfield, located just east of Federal Highway, US-1, has two wells. These wellfields provide water supply to a portion of unincorporated Miami-Dade County in addition to area within the City of Homestead municipal boundary.

3.1.6.4 Florida City

The City of Florida City water treatment plant is supplied by four (4) production wells located on a site adjacent to the treatment plant. There are two (2) 12-inch and two (2) 10-inch diameter wells. All four wells withdraw water from the Biscayne Aquifer.

3.2 Water Treatment/Storage Facilities

The WASD water system consists of three large treatment plants, the Hialeah RO plant and the smaller treatment plants in the extremely southern portion of Miami-Dade County, as shown on **Figure 3-2**.

3.2.1 Hialeah-Preston Water Treatment Plants (WTPs)

The Hialeah and John E. Preston WTPs are located at 200 W. 2nd Avenue and 1100 W. 2nd Avenue, respectively. The adjacent facilities in Hialeah share interconnected source water and finished water storage capacity. These two plants serve the Hialeah-Preston subarea, generally the service area that lies north of Flagler Street. The two plants have similar treatment processes, which are described separately below.

3.2.1.1 Hialeah Water Treatment Plant

The Hialeah WTP was originally designed in 1924 with a total capacity of 10 MGD. By 1935, the plant's capacity totaled 40 MGD. In 1946, capacity was increased to 60 MGD. Air strippers with a capacity of 84 MGD were added to the treatment process in 1991 to remove volatile organics from the finished water. A 3.2 MG storage reservoir for both the Hialeah and John E. Preston WTPs was also added in 1991. There are plans to rerate and upgrade the Hialeah WTP to a capacity of 70 MGD, if necessary.

The source water for Hialeah WTP is from the Hialeah-Miami Springs Wellfields, supplemented by the Northwest Wellfield. The Hialeah WTP has a current rated capacity of 60 MGD. The treatment process includes lime softening with sodium silicate activated by chlorine, recarbonation, chlorination, ammoniation, fluoridation, filtration, and air stripping. The plant site is relatively small and is surrounded by residential areas.

3.2.1.2 John E. Preston Water Treatment Plant

The John E. Preston WTP was originally designed as a 60 MGD plant in 1968 and upgraded to 110 MGD in 1980. The plant was re-rated to a total capacity of 130 MGD in 1984. The plant reached its present capacity of 165 MGD with another addition in 1988. In 1991, the plant was modified with an air stripping capacity of 185 MGD to remove VOCs. In 2005, the plant process modifications to provide enhanced softening for reduction of color and total organic carbon came on line.

The main source of water for the Preston WTP is from the Northwest Wellfield. The current rated capacity is 165 MGD with a treatment process similar to that of the Hialeah WTP. This includes lime softening with ferric and other coagulant and chemicals added prior to lime for enhanced softening, recarbonation, chlorination, ammoniation, fluoridation, filtration, and air stripping. The Preston plant is also cited in a residential area of Hialeah.

3.2.1.3 Hialeah Reverse Osmosis (RO) Water Treatment Plant

On December 27, 2007, the Miami-Dade County and the City of Hialeah entered into a Joint Participation Agreement (JPA) to design, construct, and operate a water treatment plant. The JPA specified that the County and the City would be equal partners in funding the project.

The Hialeah RO WTP was released for operation by the Florida Department of Health in November 2013. The Plant is located at 4250 W. 114th Terrace in the City of Hialeah and is approved to operate at a capacity of 7.5 MGD. An additional capacity of 2.5 MGD is

scheduled to be completed by December 31, 2020. The main source of water for the Hialeah RO WTP is the Floridan Aquifer. The Hialeah RO plant is currently in operation serving 50% of its water capacity to the City of Hialeah and 50% to unincorporated areas within the WASD's service area.

3.2.2 Alexander Orr, Jr. Water Treatment Plant

The Alexander Orr, Jr. WTP is located at 6800 S.W. 87th Avenue in Miami. The original design capacity was 40 MGD in 1954. This plant has undergone several expansions during the past 50 years. The raw water pumping capacity was increased by 32 MGD to 262 MGD in 1995 with an additional source from the West Wellfield. Additional reservoir and high-pressure service capacities were also added to bring the total plant design capacity to 256 MGD. The plant rated capacity is 214.74 MGD.

The Alexander Orr, Jr. WTP receives its source water from the Alexander Orr, Jr. Wellfield, Snapper Creek Wellfield, Southwest Wellfield, and the West Wellfield. The Alexander Orr, Jr. WTP treatment process is similar to the other two major plants utilizing lime softening with activated sodium silicate added prior to lime as a coagulant aid, recarbonation, fluoridation, chlorination, ammoniation, and filtration. Unlike the Hialeah and Preston WTPs, this plant does not utilize enhanced softening or air stripping towers. The Alexander Orr, Jr. WTP can also receive groundwater from five Upper Floridan Aquifer wells located in the West Wellfield and the Southwest Wellfield. Finished water is distributed to a service area generally delineated as south of Flagler Street.

3.2.3 South Dade Water Treatment Plants

In 1985, WASD purchased an existing private utility known as the Rex Utility District Water System. Today, this system is referred to as the South Dade Water System. At the time of purchase, the system consisted of six plants and associated wellfields. Since the time of purchase, the Redavo WTP has been taken out of service.

The South Dade Water System is currently made up of five small WTPs that draw groundwater from the 12 wells located at the plant sites. The five small plants serving the South Dade Service Area include Elevated Tank, Everglades Labor Camp, Leisure City, Naranja, and Newton WTPs. These plants are located in the Southern portion of the County as shown on Figure 3-2. The plants utilize in-line disinfection with free chlorine and stabilization with the addition of polyphosphate. The 2019 annual average daily flow (ADF) for the plants was 7.00 MGD. This system serves a population of approximately 43,207 in the Leisure City, Everglades Labor Camp, and Naranja areas excluding the cities of Homestead and Florida City, which provide their own water service. These small treatment plant capacities are limited by the pumping capabilities at each plant.

3.2.4 Other Water Treatment Plants

3.2.4.1 City of North Miami

The City of North Miami Norman H. Winson Water Treatment Plant is located at Sunkist Grove, 12098 NW 11th Avenue, and was commissioned in 1962. The Winsom

WTP utilizes lime-softening and is capable of supplying 9.3 MGD of water to consumers. About 8.50 MGD is presently treated and distributed from the City's WTP which represents approximately 65% of the City's demand. The City purchases approximately 35% of its total water needs from WASD. The Winson WTP provides treated water to a portion of unincorporated Miami-Dade County in addition to areas within the City of North Miami municipal boundary and the Village of Biscayne Park.

3.2.4.2 City of North Miami Beach

The City of North Miami Beach supplies water through the City owned and operated Norwood-Oeffler Water Treatment Plant, located on the northeast corner of NW 191st Street and NW 9th Avenue. The Norwood-Oeffler Water Treatment plant, originally constructed in 1953, is a lime-softening water treatment facility. The plant was upgraded in 2007 to include membrane treatment of raw water from the Biscayne and Floridan Aquifers. The treatment now consists of blending of lime softening and nanofiltration of Biscayne Aquifer water with reverse osmosis for the Floridan Aquifer water. The treated water is stored in two above-ground storage tanks at the Norwood-Oeffler WTP prior to being pumped into the City's water transmission and distribution system. The Water Treatment Plant is currently permitted by the South Florida Water Management District (SFWMD) to withdraw 26.31 MGD of raw water from the Biscayne Aquifer and 12.07 MGD from the Floridan Aquifer. The treatment plant has an approved capacity of 32 MGD. The WTP provides treated water to a portion of unincorporated Miami-Dade County, Golden Beach, Sunny Isles, City of North Miami Beach municipal boundary, and portions of Aventura and Miami Gardens.

3.2.4.3 City of Homestead

The City is supplied by two water treatment plants. The Wittkop Park plant is located at 505 NW 9th Street and is supplied by four Biscayne Aquifer wells with a capacity of 11.2 MGD. The Harris Field water treatment plant is located at 1084 NE 8th Street. This plant is supplied by two Biscayne Aquifer wells and has a capacity of 5.7 MGD. Both water treatment facilities use chlorination for disinfection and have a combined capacity of 16.92 MGD. The Wittkop Park and Harris Field WTPs provide treated water to a portion of unincorporated Miami-Dade County in addition to areas within the City of Homestead municipal boundary.

3.2.4.4 Florida City

The city of Florida City supplies water through a chlorination water treatment facility, with a capacity of 4 MGD. The water treatment plant is located at 461 NW 6 Avenue, adjacent to the City's Loren Roberts Park.

3.2.5 Finished Water Storage

3.2.5.1 Hialeah Preston Subarea

The finished water storage facilities for the Hialeah-Preston subarea consist of both "in-plant" and remote storage facilities. The storage facilities are summarized in **Table 3-3**.

Table 3-3 Hialeah-Preston/Hialeah R.O. Finished Water Storage Facilities

Location	Description	Capacity (MG)
Hialeah WTP	Reservoir – Ground Storage	3.0
Hialeah WTP	Clearwell	1.7
John E. Preston WTP	Ground Storage Tank No. 1	9.0
John E. Preston WTP	Ground Storage Tank No. 2	14.0
John E. Preston WTP	Clearwell	1.1
N.W. 20th Street	Ground Storage Tank	7.5
N.W. 36th Street	Ground Storage Tank	5.0
N.W. 67th Street	Ground Storage Tank	8.2
N.W. 30th Street	Ground Storage Tank	2.5
Carol City	Ground Storage Tank	2.0
Hialeah R.O. WTP	Ground Storage Tank	10.0
Total Storage		**64.0**

Source: WASD Water Facilities Master Plan, 2003 and WASD

3.2.5.2 Alexander Orr, Jr. Subarea

The water storage facilities of the Alexander Orr, Jr. subarea consist of a 59-MG ground storage tank located and a 1.6-MG plant clear well located at the WTP, and a 5-MG ground storage tank at South Miami Heights for a total of 65.6-MG storage.

3.2.5.3 South Dade subarea

The South Dade subarea has storage at individual water treatment plants for disinfection purposes. Additionally, WASD currently has a five (5) MG finished water reservoir and high service pumping facility in operation at its South Miami Heights site (since 2013). This storage tank is used to augment Alexander Orr Jr. WTP storage of finished water for high-demand periods. The various interconnections at several locations between the South Miami-Dade Water System and the Alexander Orr subarea, ensures adequate storage and reliability of service to the South Miami-Dade Water System.

3.2.5.4 Other Water Suppliers

The City of North Miami has two storage tanks that hold treated water prior to being pumped into the distribution system. The total combined storage capacity of the two tanks is 2.25 million gallons, or 17 percent of the current average daily demand. These storage tanks provide storage of treated water to service a portion of unincorporated Miami-Dade County in addition to areas within the City of North Miami municipal boundary.

The City of North Miami Beach stores the treated water in two above-ground storage tanks at the Norwood-Oeffler WTP prior to being pumped into the City's water transmission and distribution system. The storage capacities of the tanks are 4.2 and 2.0 million gallons. The City also uses a 2-million-gallon remote tank bringing the total

storage capacity in the City's water-supply system to 8.2 million gallons. These storage tanks provide storage of treated water to service a portion of unincorporated Miami-Dade County in addition to areas within the City of North Miami Beach municipal boundary.

The City of Homestead stores the finished water in three elevated storage tanks. After treatment, water from five of the six wells is stored in an elevated water storage tank at either Harris Field (0.5 MG), Wittkop Park (0.5 MG), or the Homestead Motorsports Complex (1.0 MG). Water from Well No. 5 at Harris Field is pumped directly into the system after treatment on an as-needed basis. The combined capacity of the storage tanks is 2 MG. These storage tanks provide storage of treated water to service a portion of unincorporated Miami-Dade County in addition to areaswithin the City of Homestead municipal boundary.

Florida City has one storage tank that holds treated water prior to distribution within its service area. The tank's storage capacity is 0.5 million gallons.

3.3 Water Distribution Facilities

The WASD water distribution system is currently supplied by three regional treatment plants, five (5) smaller treatment plants located in the southern portion of Miami-Dade County, and the Hialeah RO WTP. The distribution systems serving these treatment plants are comprised of loops and are interconnected, as shown on Figure 3-2.

3.3.1 Hialeah-Preston Subarea

Finished water from the Hialeah and John E. Preston WTPs is pumped through a system of dedicated low-pressure pipelines to remote storage tanks and pumping facilities. This system provides water service to the southeastern part of the Hialeah- Preston subarea. The low-pressure system initiates at the Hialeah WTP with a 42-inch diameter main heading due east along N.W. 62nd Street, and 36-inch and 42-inch diameter mains running southeast along Okeechobee Road then parallel to the Miami River. The main on N.W. 62nd Street connects to the N.W. 67th Street pumping station, which pumps the water to the south through a 30-inch diameter main running along N.W. 10th Ave. The 30-inch diameter main continues south and connects into the N.W. 36th Street pumping station. This main continues further south and connects into the golf ground pump station.

The 36-inch and 42-inch diameter mains combine into a 54-inch diameter main at N.W. 42nd Avenue. They split again into a 36-inch and a 42-inch diameter main at N.W. 32nd Avenue. These mains connect to the 30th Avenue pump station. The 30th Avenue pump station feeds two 36-inch diameter mains that connect to the 20th Street pumping station to complete the loop. The pipe loop is made predominantly of concrete and cast-iron pipes that were installed in the early 1930's. Some segments of this loop having been in service for more than 60 years. Replacement of these pipes are scheduled as needed in the WASD maintenance program.

The remaining part of this subarea is served by a high-pressure system. Water is pumped into the system by five high service in-plant pumps with a total capacity of 34.1 MGD at 167 feet total dynamic head (TDH). The high-pressure system delivers water service to Hialeah, Miami Springs, and a high-pressure main connected to the City of Miami. The northern section of the subarea is supplied by one major piping loop. The loop begins at the plant with a 72-inch diameter main heading north along West 2nd Avenue, next it turns west at West 20th Street, and then it turns North along West 4th Avenue to NW 191st Street. At this location, it turns east until it reaches N.E. 18th Avenue. It then turns south and connects into a 54-inch diameter main that connects to the N.W. 67th Street pumping station.

The southwestern portion of the subarea is supplied by a 36-inch diameter main that connects to the 54-inch diameter main heading out of the John E. Preston WTP at West 25th Street. The main heads west on N.W. 74th Street then turns south on N.W. 107th Avenue. It eventually interconnects with the Alexander Orr, Jr. subarea piping network on S.W. 56th Street around S.W. 117th Avenue.

3.3.2 Alexander Orr, Jr. Subarea

The distribution system of the Alexander Orr, Jr. subarea is comprised of two major piping loops. The first major loop traverses the south and west portion of the subarea. The loop starts at the WTP with a 60-inch diameter main heading west on S.W. 64th Street and a 48-inch diameter main that runs south along S.W. 87th Avenue (Galloway Road) until S.W. 216th Street. The 48-inch diameter main then heads west along S.W. 216th Street to a tee connection at S.W. 127th Avenue. One branch of the tee runs north on S.W. 127th Avenue to S.W. 184th Street and then turns west to 137th Avenue. The 48-inch diameter main travels north on 137th Avenue to S.W. 152nd Street, where it connects into a 24-inch diameter main running east-west on 152nd Street and a 36-inch diameter main that continues north on 137th Avenue to S.W. 120th Street. There, the 36-inch diameter main turns west, then runs north along Hammocks Boulevard to S.W. 88th Street where it reduces to a 24-inch diameter main that runs north along S.W. 152nd Avenue to 72nd Street. The 24-inch diameter main then runs east-west on S.W. 72nd Street. At S.W. 147th Avenue, it connects with a 36- inch diameter main that runs north to S.W. 56th Street (Miller Road), where it connects with a 42-inch diameter main that runs east on Miller Road. This 42-inch diameter main enlarges to a 48-inch diameter main that eventually connects to the 60-inch diameter main at the intersection of Miller Road and S.W. 117th Avenue to complete the loop. A 36-inch diameter main branches off the 60-inch diameter main at the intersection of Miller Road and S.W. 117th Avenue. This 36-inch diameter main heads north along S.W. 117th Avenue and eventually interconnects the Alexander Orr, Jr. and the Hialeah-Preston subareas.

The second loop starts at the WTP with two 48-inch diameter mains. One main runs north on S.W. 87th Avenue (Galloway Avenue) to S.W. 40th Street (Bird Road) and then turns east. The main continues east along Bird Road, reduces to a 42-inch diameter main at N.W. 57th Avenue, then connects through a 30-inch diameter pipe connection with the second 48-inch diameter main at Bird Road and S.W. 37th Avenue (Douglas Road). The second 48-inch diameter main travels along Highway 874 to S.W. 56th Street, where it turns east then northeast between S.W. 67th Avenue and S.W.

62nd Avenue to S.W. 48th Street. The main runs east on S.W. 48th Street then northeast through several changes in direction, where it connects to the other 48-inch diameter main at Bird Road and S.W. 37th Avenue. The main then travels north along South Dixie Highway and eventually interconnects with the Hialeah-Preston Service Area piping network through a 36-inch diameter pipe that runs along S.W. 2nd Avenue.

3.3.3 South Dade Subarea

The South Dade water distribution system consists of small water mains with diameters ranging from 16 inches to 4 inches. The distribution system is centered around each individual WTP. Each has its own sets of water main loops within the distinct service areas. The Leisure City, Elevated Tank, and Naranja WTPs, however, are so well interconnected that they can be generally considered as one distribution area. More than 63 percent of the South Dade subarea is served by these three plants. The distribution system of these three plants form one major loop that is bounded on the north by S.W. 248th Street, on the south by S.W. 304th Street, on the east by S.W. 117th Avenue, and on the west by S.W. 172nd Avenue.

The Everglades Labor Camp WTP serves a small area that is bounded on the north by S.W. 376th Street, on the south by S.W. 384th Street, on the east by S.W. 192nd Avenue, and on the west by S.W. 194th Path. This distribution system consists of one 12-inch-diameter loop around the service area interconnected with several 8-inch diameter distribution mains. The Everglades Labor Camp and the Newton WTP distribution system are interconnected via an 8-inch diameter main that runs east along S.W. 376th Street then heads north on S.W. 187th Avenue, where it connects with a 12-inch diameter main at S.W. 360th Street. The 8-inch diameter main continues north on S.W. 187th Avenue until S.W. 352nd Street, where it connects into a small distribution loop that terminates with a 16-inch diameter stub-out.

The Newton WTP distribution system consists of a single 12-inch diameter water main that runs east and west on S.W. 336th Street. The eastbound main then branches north and south along S.W. 152nd Avenue. The southbound branch then turns east on S.W. 344th Street and ultimately connects to the FP&L Turkey Point generating plant. The northbound branch continues along S.W. 152nd Avenue, where it connects to the Leisure City WTP distribution system at S.W. 304th Street. A 6-inch diameter main running south from SW 288th Street on S.W. 137th Avenue then east on S.W. 328th Street connects to an 8-inch diameter main that runs south on 117th Street. This 8-inch diameter main connects to the 12-inch diameter main to FP&L Turkey Point generating plant. This main ultimately completes the interconnection of the Newton WTP with the Leisure City, Elevated Tank, and Naranja WTPs' distribution areas.

The westbound branch of the 12-inch diameter main turns south on S.W. 162nd Avenue then heads south and west on Palm Drive. The main then continues south on S.W. 167th Avenue then west on S.W. 360th Street until it connects to the Everglades Labor Camp WTP 8-inch diameter main that runs north on SW 187th Avenue. The South Dade distribution system is interconnected with the Alexander Orr distribution system in the vicinity of SW 127th Avenue.

3.3.4 Other Water Distribution Facilities

3.3.4.1 City of North Miami

The City of North Miami's distribution system consists of two 16-inch and one 12-inch diameter ductile iron pipes. The two 16-inch diameter pipes mostly service the areas east of the WTP. One of the 16-inch pipes eventually connects to a 20-inch pipe and then to two 12-inch pipes. The 20-inch and one of the two 12-inch pipes connects to a large 30-inch transmission main at various points. This 30-inch pipe serves as the main transmission line on the far-east side of the City. The other 16-inch main reduces to a 12-inch pipe. The 12-inch transmission main leaving the WTP travels west, then south, and expands into the distribution system. The City also maintains seven supply interconnections with WASD and emergency interconnections with the City of North Miami Beach and City of Opa-Locka. This distribution system provides treated water to service a portion of unincorporated Miami-Dade County in addition to within the City of North Miami municipal boundary.

3.3.4.2 City of North Miami Beach

The City of North Miami Beach distribution system provides treated water to service a portion of unincorporated Miami-Dade County in addition to within the City of North Miami Beach municipal boundary from the WTP.

The City has eleven high service pumps that deliver finished water to the distribution system at approximately 60 to 80 psi and have a combined capacity of 45 MGD with largest one pump out of service. The City's distribution system is fed by 18-inch, 24-inch, and 36-inch diameter transmission mains.

3.3.4.3 City of Homestead

The City's water distribution system is comprised of an interconnected network of mains ranging from 2-inches to 24-inches in diameter, mostly of ductile iron pipe. The water from the storage tanks flows into the mains, with a pressure of 45 to 60 psi.

On July 9, 2010, the City of Homestead entered into a 20-year water wholesale agreement with WASD to purchase up to 3 MGD of water to meet the demands of its retail customers. The interconnection between the City and WASD occurs at SW 137th Avenue and SW 288th Street.

3.3.4.4 City of Hialeah

The City's water distribution system within the service area of the Hialeah RO Water Treatment Plant is comprised of an interconnected network of mains ranging from 8-inches to 36-inches in diameter, mostly of ductile iron pipe and C-900 PVC.

3.3.4.4 Florida City

Florida City's water distribution system is comprised of an interconnected string of mains ranging from 2-inches to 16-inches in diameter, mostly of ductile iron pipe. The City's distribution system provides service within its municipal boundaries.

3.4 Summary

As shown within this section, the WASD water supply and treatment systems have sufficient installed capacity to produce more potable water than is currently required. The supply capacity and treatment capacity are 724.44 MGD and 525.19 MGD respectively. **Table 3-4** summarizes this information. **Table 3-5** summarizes other suppliers' facilities capacities.

The capacities of these water supply and treatment systems have been coordinated with future demands and allocations. Sections 4 and 5 of this Work Plan address future demands and required water supply facilities.

Table 3-4 Capacity of WASD Wellfields and Water Treatment Facilitates

Facility	Design Capacity (MGD)
Hialeah-Preston Water Treatment Plants	60 + 165 = **225**
Hialeah-Preston Wellfields	**343.43**
Preston	53.28
Hialeah	12.54
Miami Springs	79.30
Northwest(a)	149.35
Medley Wellfield (b)	48.96
Hialeah RO Water Treatment Plant	**10**
Hialeah RO Wellfield (Floridan Aquifer)	**20**
Existing Hialeah RO	12.00
Future Hialeah RO (12/31/2020)	8.00
Alexander Orr Water Treatment Plant	**256**
Alexander Orr Well fields	**308**
Orr Plant	74.40
Snapper Creek	40.00
Southwest	161.20
West	32.40
South Dade Water Treatment Plants	**14.19**
South Dade Wellfields	**19.01**
Elevated Tank	4.32
Everglades Labor Camp	5.04
Leisure City	4.18
Naranja	1.15
Newton	4.32
Future South Miami Heights Water Treatment Plant	***20***
Future South Miami Heights Wellfields	***34***
Former Plant (Biscayne Aquifer)	*4*
Roberta Hunter Park (Biscayne Aquifer)	*6*
South Miami Heights RO (Floridan Aquifer)	*24*
Existing WASD Wellfield Total	**682.44**
Existing WASD Water Treatment Plant Total	**505.19**
Future WASD Wellfield Total	**724.44**
Future WASD Water Treatment Plant Total	**525.19**

(a) Northwest wellfield capacity at 150 MGD when pumps operate at low speed.
(b) Wells in this wellfield had been abandoned. They have been restored with the purpose of using them only during an emergency.
Source: WASD Water Use PermitNo. 13-00017-W, Exhibit 10A and Exhibit 10B, re-issue September 21, 2015 and Regulatory Economic Resources (RER) Plant Operating Permits.

Table 3-5 Other Suppliers' Facilities Capacities

Facility	Installed Capacity (MGD)
City of North Miami	
Norman H. Winson Water Treatment Plant	**9.30**
City of North Miami Wellfields (8 wells)	**14.96**
City of North Miami Beach	
Norwood-Oeffler Water Treatment Plant	**32.00**
City of North Miami Beach Wellfields	
Biscayne Aquifer Wellfields	27.90
Floridan Aquifer Wellfields	12.07
City of North Miami Beach Wellfields Total	**39.97**
City of Homestead	
Wittkop Park – Harris Field Water Treatment	11.2+5.7=**16.9**
City of Homestead Wellfields	
Wittkop Park	11.23
Harris Field	5.76
City of Homestead Wellfields Total	**16.99**
Florida City	
Florida City Water Treatment Plant	**4**
Florida City Wellfields (Total)	**4**

Source: City of North Miami Beach SFWMD Water Use Permit No. 13-00060-W re-issue on June 11, 2012, Water Supply Facilities Work Plan (City of North Miami, March 2008), Information provided via discussions with staff for the City of Homestead and Florida City.

Section 4
Population and Water Demand Projections

This section presents historical and projected population projections, as well as historical and finished water demand projections from Year 2020 through Year 2030 for Miami Dade Water and Sewer Department's (WASD) water service area. Population data were obtained from the Miami-Dade County Department of Regulatory and Economic Resources (RER), Planning Research and Economic Analysis Section, based on the 2010 Census and derived from the 2015 Transportation Analysis Zone (TAZ) population projections update. Since the 2007 Water Use Permit (WUP), WASD has requested several modifications to the permit to reflect new population data, revised water demand projections and alternative water supply projects to support the projected water demands. The most recent WUP modification was issued on September 21, 2015 with an expiration date of February 9, 2035. This update to the Water Supply Plan reflects updated demand projections based on most recent population data, and water supply projects within WASD's WUP.

4.1 Historical Population

Historical populations served by the WASD system are shown in **Table 4-1** in one-year increments from Year 2015 to Year 2019. The population in WASD's service area grew approximately 4.2% between Year 2015 and year 2019. Table 4-1 also provides a summary of historical population within Miami-Dade County. The WASD system served approximately 87% of the County total population in 2019.

Table 4-1 Historical Population Served by WASD

YEAR	TOTAL MDWASD	TOTAL COUNTY
2015	2,281,851	2,629,878
2016	2,306,905	2,659,364
2017	2,331,959	2,688,851
2018	2,357,013	2,718,337
2019	2,382,067	2,747,824

Source: Miami-Dade County RER, Research and Economic Analysis Section, 2010 Census, 2015 TAZ revised population data

4.2 Population Projections

Population projections for WASD's water service area in five-year increments from Year 2020 to 2030 are shown in **Table 4-2**. Overall, the population served by WASD is expected to increase approximately 9.51% from Year 2020 to Year 2030. The updated WASD population projections are approximately 4.8% lower than the projections in the 2018 Lower East Coast (LEC) Water Supply Plan Update.

Table 4-2 Population Projections to be Served by WASD

Year	Total WASD	Total* County
2020	2,407,121	2,777,310
2025	2,533,548	2,924,743
2030	2,659,975	3,072,175

Sources: * Miami-Dade County RER, Research and Economic Analysis Section, 2010 Census, 2015 TAZ revised population data.

4.3 Historical Water Use

Historic water use figures reflect water provided by the Hialeah-Preston, Hialeah Reverse Osmosis (RO), Alexander-Orr, Everglades, Leisure City, Newton, Elevated Tank, and Naranja WTPs and associated wellfields. These waters use figures provide the basis for forecasting future water demands for WASD's service area.

Table 4-3, provides the historical raw and finished water use for Year 2015 through Year 2019. Information shown in Table 4-3 includes per capital annual average and maximum month water use.

4.4 Water Demand Projections

The water demand projections presented herein are based on a system-wide finished water daily per capita use rate of 137.86 gallons per capita per day (gpcd). The per capita use was determined by taking a 3-year average from 2017 to 2019. Over more than a decade, Miami-Dade County's per capita water consumption and overall drinking water production have decreased significantly. The decline in WASD's per capita has been attributed to various drivers including deceleration of population growth, WASD's water conservation program, permanent year-round landscape irrigation restrictions, landscape ordinances requiring Florida Friendly landscaping, Florida Building Department Code changes requiring high efficiency fixtures and appliances for new construction, evolving trends in housing demographics (multifamily construction versus single family homes), and water use practices. These are further discussed in Section 4.5.1.1. Table 4-4, provides the projected finished water demands for Year 2020 through Year 2030.

4.4.1 Water Supply For Future Development

In 2011, WASD implemented a Water Supply Certification (WSC) Program to monitor the availability of water supply for future development, in accordance with the permitted withdrawal capacities in the County's Water Use permit, to address Policy WS-2C and CIE-5D in the County's Comprehensive Development Master Plan (CDMP) and Section 163.3180(2)(a) of the Florida Statutes. Before development, a Water Supply Certification is issued to ensure that adequate water supply is available by the time a

Certificate of Occupancy is issued for the proposed use. The development activities associated with comprehensive plan amendments within WASD's service area propose a redistribution of population and water demands that are contemplated and addressed in WASD's current Water Use Permit and are monitored through the WSC Program.

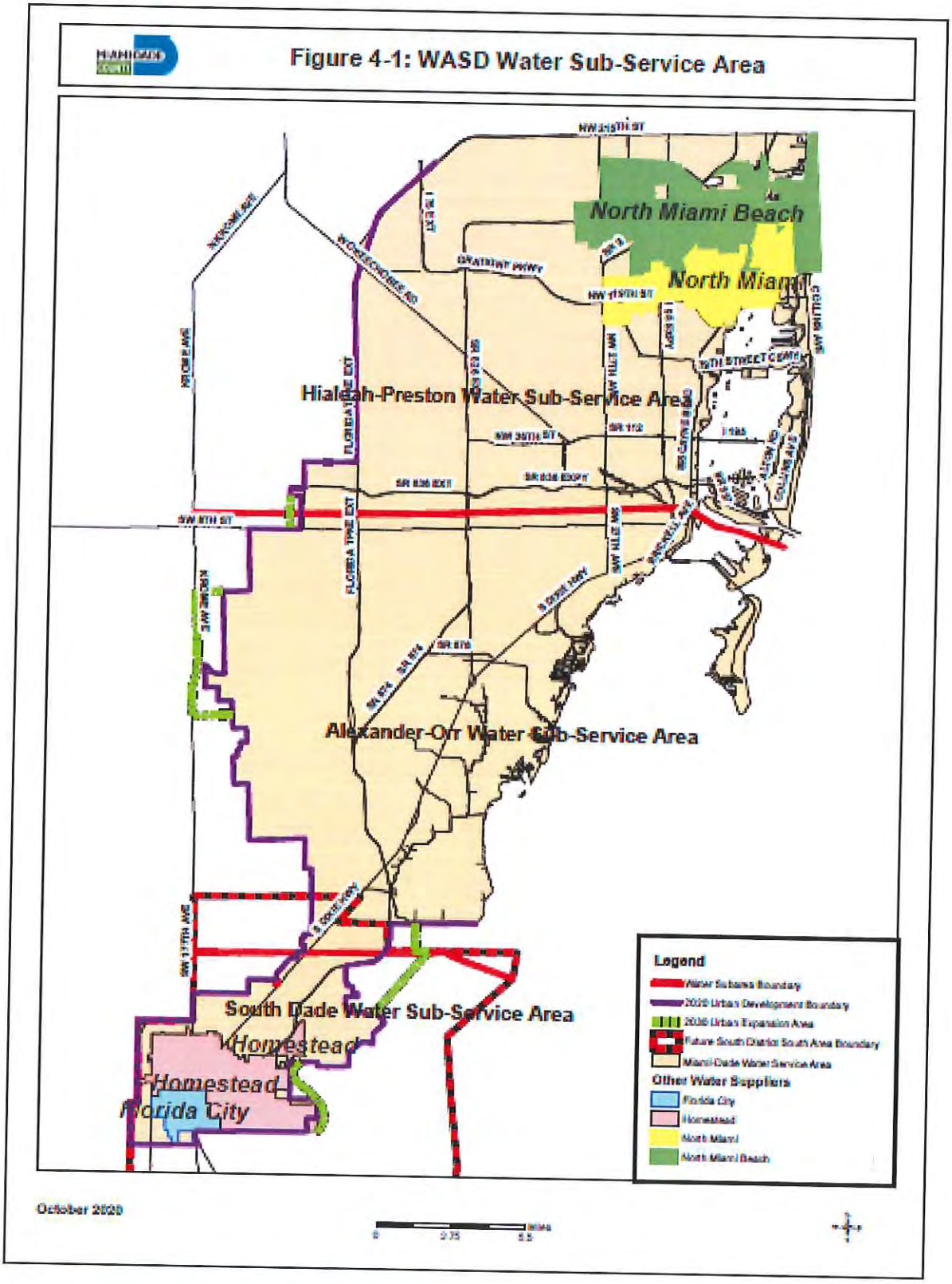


Figure 4-1: WASD Water Sub-Service Area
North Miami Beach
North Miami
Hialeah-Preston Water Sub-Service Area
Alexander-Orr Water Sub-Service Area
South Dade Water Sub-Service Area
Homestead
Florida City
Legend
Other Water Suppliers
Florida City
Homestead
North Miami
North Miami Beach
October 2020

TABLE 4-3 WASD Historical Water Use (2015-2019)

1	2	3	4	5	6	7	8	9	10	11	12	13
FINISHED WATER HISTORICAL USE							RAW WATER HISTORICAL USE					Ratio Raw: Finished (Total Annual Use)
Year	Population Served *	Per Capita Usage (gpcd)	Total Annual Use (MG)	Average Month Use (MG)	Max Month Use (MG)	Ratio Max: Avg. Month	Per Capita Usage (gpcd)	Total Annual Use (MG)	Average Month Use (MG)	Max Month Use (MG)	Ratio Max: Avg. Month	
TOTAL WASD WATER SYSTEM SERVICE AREA **												
2015	2,281,851	135.68	113,007	9,417	9,859.7	1.05	144.69	120,511	10,043	10,526	1.05	1.07
2016	2,306,905	139.42	117,715	9,810	10,143.9	1.03	150.19	126,465	10,539	11,042	1.05	1.07
2017	2,331,959	138.80	118,143	9,845	10,288.3	1.05	149.42	127,182	10,599	11,075	1.00	1.08
2018	2,357,013	139.19	119,750	9,212	10,336.0	1.12	150.71	129,658	10,805	11,163	1.03	1.08
2019	2,382,067	135.60	117,896	9,825	10,191.5	1.04	145.66	126,646	10,554	10,961	1.04	1.07
3-year Avg. (2071-2019)	-	137.86	-	-	-	1.07	148.60	-	-	-	1.02	1.08

* Source of Population Information: Miami-Dade County RER, Research and Economic Analysis Section, 2010 Census, 2015 TAZ revised population data.
**Historical Raw and Finished Water Use as reported to SFWMD.

TABLE 4-4 WASD PROJECTED FINISHED WATER DEMANDS

1	2	3	4	5	6	7	8	9
Year	WASD SERVICE AREA PROJECTIONS							
	Pop.[a]	Finished Water Per Capita[b] (gpcd)	Finished Water Demand (MGD) [c]	Cumulative Water Conservation [d] Credit (MGD)	Projected Demand with Conservation Credit (MGD)	Adjusted Finished Water Per Capita [e] (gpcd)	Homestead (1.3 MGD) & Port of Miami (1 MGD) Demand[f]	Total Finished Water Demand (MGD)
System-Wide								
2020	2,407,121	137.86	331.86	0.26	331.60	137.76	1.3	332.90
2025	2,533,548	137.86	349.29	1.56	347.73	137.25	2.3	350.03
2030	2,659,975	137.86	366.72	2.86	363.86	136.79	2.3	366.16

Footnotes

(a) Population Served represents the 2015 TAZ revised population projections based on 2010 Census Data provided by Miami-Dade County RER, Research and Economic Analysis Section.

(b) The per capita use was determined by taking a 3-year average from 2017 to 2019.

(c) Finished Water Demand was calculated with the 3-year average per capita of 137.86 gpcd.

(d) WASD has been successful in executing its water conservation program since its inception in 2007. Through the end of fiscal year 2019, a cumulative total of 15.80 MGD of water has been saved since implementation of the water conservation program. A systemwide total of 0.26 MGD/year is planned through 2040 for an additional cumulative total of 5.46 MGD.

(e) Adjusted per capita after taking credit in finished water demand projections for reductions in finished water use associated with water conservation.

(f) The demand for Homestead is based on the City's existing 20-year water wholesale agreement with WASD to purchase up to 3 MGD of water to meet the demands of its retail customers. The City purchases an annual average of 1.7 MGD, and a total of 1.3 MGD is planned for future demands. The demand for PortMiami is based on the anticipated expansion of the Port as contemplated in its facilities Master Plan.

4.5 Water Conservation and Reuse

4.5.1 WASD

4.5.1.1 Water Conservation

Miami-Dade Water and Sewer Department has been very successful in executing its water conservation program and continues to implement ways for reducing non-revenue water. The WASD 20-year Water Use Efficiency Goal Based Plan (Plan) was approved by the SFWMD in May 2007. Included in the 20-year Plan is the Water Conservation Best Management Practices (BMP) Implementation Schedule, Costs, and Savings Projections through the year 2026. (See Appendix E). Currently, WASD is implementing the BMPs included in the Plan (See Appendix F-Annual Water Conservation Plan Report). The most popular component of the water conservation program offers residents incentives to reduce indoor water use by providing financial rebates toward the purchase of high efficiency toilets, faucets and showerheads. There are also financial rebates to reduce outdoor water use which are available through landscape irrigation assessment rebates. In the most recent year, WASD issued over 2,300 single-family, multi-family senior and commercial high efficiency toilet rebates, over 900 high efficiency faucet and showerhead rebates; over 120 landscape evaluation rebates and distributed approximately 2,100 high efficiency showerheads to Miami Dade county residents.

The water conservation program also includes an education component conducting outreach to various organizations within the county (i.e. homeowner associations, county agencies, municipalities, schools, colleges, universities and not for profits) to educate residents about the importance of water conservation, services provided by the utility and the high-quality drinking water available to residents. The Water Use Efficiency Plan also includes a water loss reduction component which implements an annual leak detection survey of the county's entire water distribution system. Advanced technology (i.e. implementation of mobile/fixed network systems) is used to detect leaks which are followed up by repairs.

Additionally, Miami-Dade County has enacted water use efficiency-legislation including permanent landscape irrigation restrictions, landscape ordinances requiring Florida Friendly landscaping in new construction, in right of ways, and the installation of high efficiency plumbing fixtures in new construction (see Appendix D) and some reuse within the three wastewater treatment plant sites or in their vicinities. Furthermore, WASD is working on revising the County's year-round permanent landscape irrigation rule to comply with the District's model year round ordinance. The final document is anticipated to be presented to the Miami-Dade County Board of County Commissioners in December 2020.

Water conservation activities are funded annually through the operations and maintenance budget and are therefore not included in capital budgets. WASD's water conservation initiatives comply with SFWMD Water Use Permit No. Re- Issue 13-00017-W, Limiting Condition Nos. 45 and 49 and Exhibit 27. For more information about WASD's Water Conservation Program please go to http://www.miamidade.gov/conservation/home.asp

4.5.1.2 Wastewater Reuse

The County's projected finished water demands are now markedly lower than anticipated when the first 20-year water use permit application was submitted. As such, wastewater reuse to address water supply demands is no longer required, and other alternative water supplies (Floridan aquifer, water conservation, C-51 reservoir, etc.) have been determined to be more viable and shall be considered in the future. WASD is currently implementing a total of 16.49 MGD of reuse at each of the Wastewater Treatment Plants, primarily for in-plant (process water) use. In addition, WASD will be providing up to 15 MGD of reclaimed water from the South District Wastewater Treatment Plant to the FPL facilities at Turkey Point, per Miami-Dade County Resolution No. R-579-20 approved by the BCC on June 16, 2020.

4.5.2 Other Water Suppliers

4.5.2.1 City of North Miami

The City of North Miami has developed a water conservation plan to help reduce the demand for potable water and lower its consumption on a per capita basis. The conservation plan includes the adoption of Florida friendly landscaping methods, the implementation of a water conservation public education program, the implementation of a leak detection program, water loss prevention programs, and the exploration of the utilization of reuse water for irrigation and non-potable water uses.

The City is also implementing an incentive program and encouraging the development of "green buildings". They will also continue to enforce the wellfield protection ordinance which limits the allowable land uses within the wellfield's cone of influence and will continue to monitor water quality levels in the drainage basins to maintain a minimum level of service standards. Currently, all the City's wastewater is treated by WASD

4.5.2.2 City of North Miami Beach

The City of North Miami Beach has seen major successes in ways of alerting and educating residents on water and environmental conservation. In 2005, the City created a Water Conservation Program that applies conservation methods to reduce water demand and to lower the per capita consumption of potable water. The program includes collective efforts to increase the overall water use efficiency and to

limit water losses to 10 percent or less. They have also initiated a water conservation educational and outreach program. Another aspect of the conservation program is the continuation and installation of water efficient landscape, plumbing and irrigation ordinances, as well as a water shortage and emergency ordinance. In addition, they have begun the use of alternative water sources, mainly the Floridan aquifer. Other methods for water conservation taking place at the City include meter replacements and a showerhead exchange program.

Also, the North Miami Beach Water fund established the Foundation for Water and Environmental Education which is a not-for-profit organization with funds and programs managed by its own directors and established to maintain and aid water resource management in the City of North Miami Beach community.

4.5.2.3 City of Homestead

The City of Homestead has developed a water conservation plan to reduce potable water consumption. The plan includes a permanent irrigation ordinance which establishes irrigation restrictions prohibiting landscape irrigation between 9:00 AM and 4:00 PM., a Florida Friendly ordinance that promotes use of drought landscape methods, a high efficiency plumbing fixture ordinance that establishes water conservation standards for plumbing fixtures installed in new construction, and a leak detection program. In addition, the City has a residential and commercial meter replacement program where all meters will be replaced within the next 5 years. The City will adopt Automatic Meter Reading technology which allows the reading of water consumption remotely which will allow accurate and true monthly readings. Also, the City is implementing a rain sensor device ordinance that requires all irrigation systems equipped with automatic controls to have a rain sensor switch which turns off the system when more than 0.5 inches of rain has fallen. A water conservation education program is also taking place.

The City has also implemented a reclaimed water system, where most of the wastewater from the City's sewer service area is treated at the City's Wastewater Treatment Plant (WWTP). The wastewater from the City's WWTP receives treatment (including ultra-violet radiation to eliminate the possible formation of disinfection by-products) and is reused to recharge the surficial aquifer. 100% of the City's WWTP output [approximately 6 MGD (4.730 MGD, average)] is currently recharging the aquifer via two primary and four secondary rapid infiltration trenches.

4.5.2.4 Florida City

Florida City is currently implementing a water main replacement program, where they are abandoning all existing 2, 4 and 6-inch diameter mains and installing new 8 and 12-inch diameter DIP water mains. This program is intended to reduce non-revenue water through the elimination of leaks.

Section 5
Planned Water Supply Facilities

This section details the water supply facilities that are planned in order to meet Miami-Dade Water and Sewer Department's (WASD) water demands through the 10-year horizon (2030). The County's projected finished water demands are now significantly lower than anticipated when the first 20-year water use permit (WUP) application was submitted to South Florida Water Management District (SFWMD) in 2007. The decrease in water demands has been a result of numerous drivers internal and external to WASD. Over more than a decade, Miami-Dade County's per capita water consumption and overall drinking water production have decreased significantly. As such, reuse to address water supply is no longer required or needed. The evolution of water demands can primarily be attributed to the following factors:

- Deceleration of population growth
- WASD's water conservation program yielding reduced per capita water consumption
- Permanent year-round irrigation restrictions
- Landscape ordinances requiring Florida Friendly Landscaping
- Florida Building Code changes requiring higher efficiency fixtures for new construction
- Evolving trends in housing demographics (apartment development versus single family homes), and water use practices
- Increases in water and sewer rates

This section details the existing water supply projects in the current WASD 20-Year WUP that are anticipated to meet demands through the planning period.

5.1 Alternative Water Supply Projects

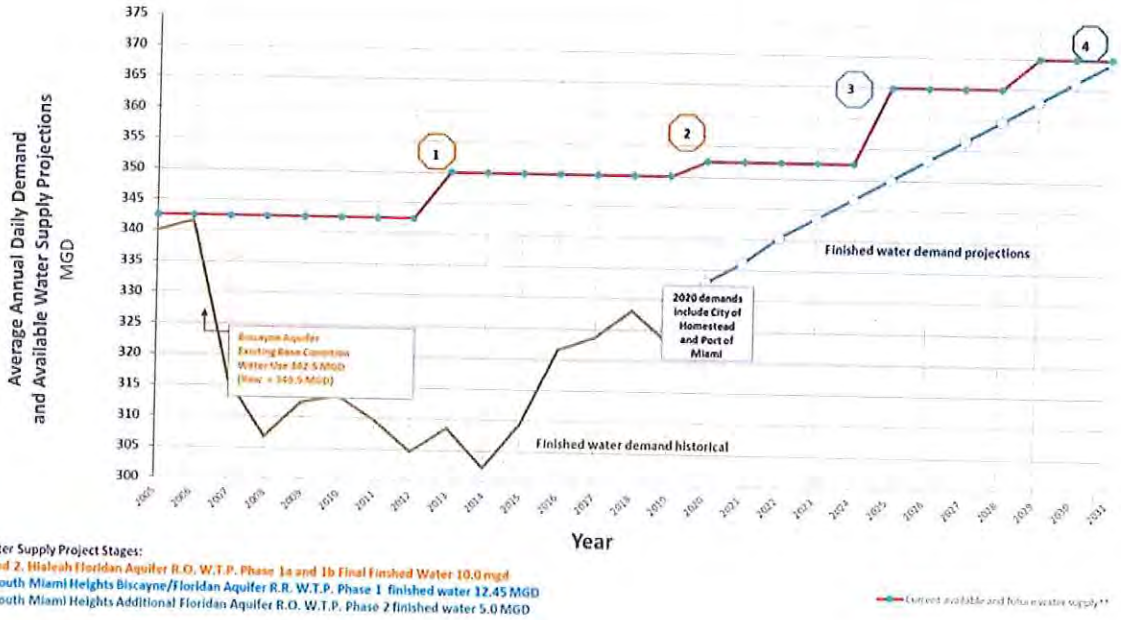
WASD's alternative water supply projects are included in Exhibit 13 of the County's 20-Year WUP and are presented in Table 5-1. The proposed alternative water supply projects and WASD's plan to address future water demands are presented in Figure 5-1.

As indicated in Figure 5-1, water supply projects in WASD's WUP address anticipated demands through the Water Supply Facilities Work Plan 10-year planning horizon (2030). These projects will undergo further refinement as necessary as conditions evolve, and any updates to address longer-term demands will be reflected in future WUP modifications submitted to SFWMD. All future projects consider that current wholesalers will remain on the WASD system through 2040.

Table 5-1: WASD Alternative Water Supply Projects in WASD's WUP, Exhibit 13, Revised December 2019

Completion Date	Annual Average Finished Water Quantity in MGD and Source		
Completed	7.5	Hialeah Floridan Aquifer RO WTP-Phase 1-a, 10 MGD & 6 Floridan Aquifer supply wells	AWS
12/31/2020	2.5	Hialeah Floridan Aquifer RO WTP-Phase 1-b, 4 Floridan Aquifer supply wells	AWS
12/31/2025	12.45	South Miami Heights WTP Phase 1(RO portion)	AWS
12/31/2031	5.0	South Miami Heights WTP Phase 2(RO portion)	AWS
Total	27.45		

Figure 5-1: WASD 2030 Projected Water Demands vs. Planned Water Supply Projects



5.1.1 Hialeah Floridan Aquifer RO WTP (10 MGD)

A new upper Floridan Aquifer Reverse Osmosis (RO) water treatment plant was constructed in 2013, and, is located at 4250 W. 114th Terrace in the City of Hialeah. The WTP was constructed pursuant to a Joint Participation Agreement between the City of Hialeah and the County which was approved by the Board of County Commissioners on July 24, 2007 and called for the design, construction, and operation of a water treatment plant constructed in the annexation area and supplied by the brackish Floridan aquifer to produce initially 10 MGD with the capacity to expand to 17.5 MGD.

Approval from the Florida Department of Health to produce and distribute water was received in November 2013. The WTP utilizes the Floridan Aquifer as the alternative water supply using the RO treatment to remove the salt. The initial operational phase of the Plant is 7.5 MGD, increasing to 10 MGD by the end of 2020 when construction of additional wells is expected to be completed.

5.1.1.1 Hialeah Floridan Aquifer RO WTP Phase 1-a (7.5 MGD)

Phase 1-a of the RO WTP included a 7.5 MGD plant and an initial six (6) Floridan Aquifer supply wells. The Phase 1-a cost was about $95 million, and has been completed

5.1.1.2 Hialeah Floridan Aquifer RO WTP Phase 1-b (2.5 MGD)

Phase 1-b of the RO WTP will consist of the construction of four (4) Floridan Aquifer supply wells for a maximum treatment capacity of 10 MGD. The Phase 1-b cost is estimated at approximately $5 million, and, is anticipated to be completed by the end of 2020.

5.1.2 South Miami Heights WTP and Wellfield (20 MGD)- 17.45 MGD Floridan Aquifer RO and 2.55 MGD Biscayne Aquifer

The South Miami Heights Water Treatment Plant (WTP) is planned to supply water to the South-Dade Subarea in the long-term future. The WTP will be located at 18800 SW 208 Street in Miami. The RO WTP and associated facilities will have a capacity to produce 20 MGD (max day) finished water using a combination of 17.45 MGD from the Floridan Aquifer and 2.55 MGD from the Biscayne Aquifer. A total of five (5) Biscayne Aquifer wells and seven (7) Floridan Aquifer wells are planned to be constructed.

5.1.3 Water Use Permit Modification

Although WASD's current WUP provides the County with sufficient water supplies through 2030, additional water supply projects will be pursued to address longer-term needs for WASD's customers and the environment. WASD shall develop and submit a water use permit modification to SFWMD. The WUP modification is anticipated to include optimization of Biscayne Aquifer (BA) water supplies through improved wellfield operations and the C-51 Reservoir project.

The SFWMD has designated the C-51 Reservoir Phase 1 Project as pilot alternative water supply development project. On March 6, 2020 WASD submitted a letter of intent to the SFWMD indicating its intention to participate in the C-51 Reservoir project. In addition to participation in C-51, WASD intends to optimize wellfield operations to maximize use of wet and dry season non-regional flows throughout Miami-Dade County by leveraging operational flexibility between Miami-Dade WASD's water treatment plants and wellfields.

5.2 Miscellaneous Projects

5.2.1 Water Conservation (19.62 MGD)

This project serves to reduce water use through demand management. It includes water conservation projects currently implemented by WASD. The County's Water Use Efficiency Five-Year Plan was approved by the Board and has been expanded through 2026 with a projected reduction in demand of 19.62 MGD over a 20-year period. Examples of projects include high efficiency fixture rebate programs, free showerhead exchange and distribution programs, free faucet aerators, leak detection tablets and water conservation kits to residents, landscaping irrigation evaluation rebates for single family and large properties and an education and outreach component.

5.3 20-Year Work Plan and Capital Improvement Plan

As indicated in the previous sections, the latest lower population projections based on the 2010 Census and 2015 revised TAZ projections results and historically lower per capita daily finished water consumption have reduced the projected finish water demands, thus deferring the need for alternative water supply projects by several years. The existing Alternative Water Supply projects to address water demands through 2030 include the Hialeah RO and South Miami Heights WTP.

The projects in the 10-Year Work Plan have been included in the County's adopted FY 2019-2025 Budget. A copy of the County's adopted FY 2019-2025 Budget is contained within Appendix B and summarized in Table 5-1 for the next 5 years (2015 – 2020).

5.4 Other Water Suppliers Future Plans

5.4.1 City of North Miami

The City of North Miami's plans for a two-phase expansion of the Winson WTP have been put on hold. The plans entailed a Phase I, to be concluded by 2010, to add an additional 8.5 MGD capacity from a Reverse Osmosis (RO) system. Phase II to add additional membrane treatment to the RO facility, which would create an additional 4.0 MGD capacity. The proposed improvements would total an increase of 12.5 MGD to the capacity of the WTP.

The City also identified that the Floridan aquifer would be the only water resource

alternative for the increase in demand. Therefore, the City planned to construct an additional ten Floridan wells to supply the RO Facility. The City planned to add a raw water transmission main from the wells to the WTP.

On hold is also the third expansion plan for the addition of a 5 MG storage tank, to be located on a vacant parcel owned by the City's new Biscayne Landing development. The City may decide to forgo with the construction of the tank and utilize the parcel for another smaller RO Treatment facility or a reuse facility.

These water supply system improvements planned by the City of North Miami will provide water supply for those portions of unincorporated Miami-Dade County which are currently served by the City of North Miami. The City is currently designing upgrades to the existing facility to maximize its efficiencies.

5.4.2 City of North Miami Beach

The City of North Miami Beach plans to increase the capacity of the its WTP to 35 MGD by 2020 and 38 (MGD) by 2025. These water supply system improvements planned by the City of North Miami Beach will provide water supply for those portions of unincorporated and incorporated Miami-Dade County which are currently served by the City of North Miami Beach.

5.4.3 City of Homestead

The City of Homestead is currently in the process of analyzing the different ways of improving or expanding their systems to increase capacity as the population within its municipal boundary and in parts of unincorporated Miami-Dade County where it provides water increases. The two major alternatives are either upgrading the existing well pumping capacity or installing additional wells. However, the City has not yet agreed on any type of improvements, and therefore no additional information can be provided at this time.

5.4.4 Florida City

Due to the fact that the SFWMD is currently adjusting any further withdrawals from the Biscayne aquifer, the City plans to increase its Water Treatment Plant capacity by installing additional wells and withdrawing water from the Floridan aquifer, which will require membrane filtration treatment and chlorination prior to distribution. The timeline for this expansion is not yet known.

5.5 Intergovernmental Coordination

Miami-Dade Water and Sewer Department participates and coordinates in regional planning and management activities undertaken by State, federal and regional agencies regarding water supply. These include, but are not limited to the SFWD Lower East Coast Water Supply Plan, Everglades National Park, Biscayne National Park, and the Southeast Florida Regional Climate Change Compact. In addition, WASD coordinates with its retail and wholesale municipal customers. Meetings are held with the

local governments to address water supply issues and needs that include Water Supply Plans, and wholesale customer's rates and agreements.

5.6 Conclusion

WASD's Water Supply Facilities Work Plan demonstrates that the Department, through projects identified in its capital improvement program and current Water Use Permit, is able to meet the projected water demands through the 10-year planning horizon (2030).

Section 6
Climate Change and Sea Level Rise Plan

This section details WASD's evaluation and planning for sea level rise and climate change over the planning horizon in this document. The primary concern to WASD water supply is salt water intrusion into the freshwater Biscayne aquifer, the primary source of drinking water in Miami-Dade County. Results of evaluation and data analysis completed to date indicate that within the next twenty years WASD will be able to operate its wellfields and water treatment facilities as designed, as groundwater modeling indicates even with a high level of projected sea level rise WASD's wellfields will not be impacted by salt water intrusion.

6.1 Introduction

Southeast Florida is one of the most vulnerable regions to the impacts of climate change and sea level rise as a result of our flat topography, porous limestone geology, and dense coastal development. Climate change and sea level rise are expected to present significant challenges relating to water resource planning, management and infrastructure for the counties located in south Florida, including Broward, Miami-Dade, Monroe, and Palm Beach Counties. These counties have agreed to partner in regionally-coordinated climate mitigation and adaptation strategies as part of the Southeast Florida Regional Climate Change Compact and have adopted a Regional Climate Action Plan which highlights "Water Supply, Management, and Infrastructure" as a primary focal area (http://southeastfloridaclimatecompact.org).

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 intrusion. 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. Investments in water supply planning and infrastructure that account for these predicted trends will improve the resilience of our communities, provide public health benefits, and reduce the potential for economic losses.

Miami-Dade County along with Broward, Monroe, Palm Beach Counties, local governments and water utilities in the southeast Florida region have formalize the integration water supply and climate change considerations as part of coordinated planning efforts, including updates to local government and water utility 10 year Water Supply Facility Work Plan and enhancements to local government's Comprehensive Plans. Key considerations for communities within the four County

Compact planning area 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. Sea level rise produces varied challenges with the respect to water resources sustainability, water management, and water/wastewater facilities and infrastructure. Impacts include salt water intrusion into coastal wellfields, infiltration of groundwater with chloride levels into wastewater collection systems, impairing normal operations and maintenance as well as challenges for beneficial use of reclaimed water as an alternative water supply. Water management systems are also at risk with systems constrained by rising groundwater and canal gate tailwater elevations, which reduce soil storage and discharge capacity, with increased potential for both inland and coastal flooding.

6.2 Miami-Dade County Sea Level Rise and Climate Change Recent Government Action

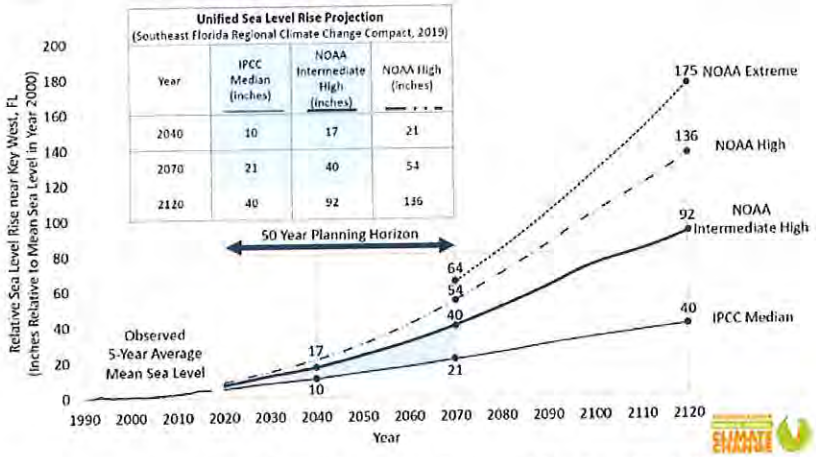
As part of the Miami-Dade County Evaluation and Appraisal Report adopted in 2011, climate change was identified as one of the priorities to address in the County's Comprehensive Development Master Plan (CDMP). Miami-Dade has incorporated climate change considerations and language in several of the Elements of the CDMP update which was approved by the Board of County Commissioners in October 2013.

The Miami-Dade Sea Level Rise Task Force was created by Resolution R-599-13 on July 2, 2013 to review the relevant data and prior studies, assessments, reports, and evaluations of the potential impact of sea level rise on vital public services and facilities, real estate, water and other ecological resources, water front property, and infrastructure (http://www.miamidade.gov/planning/boards-sea-level-rise.asp).

Miami-Dade Board of County Commissioners adopted an ordinance in September of 2019 relating to the rules of procedures of the Board of County Commissioners amending Section 2-1 of the Code of Miami-Dade County, Florida, to require that in all agenda items related to planning, design, and construction of county infrastructure a statement be included that the impact of sea level rise has been considered.

For all planning purposes Miami-Dade County relies upon the Unified Sea Level Rise Projection for Southeast Florida developed by the South Florida Regional Climate Change Compact (Figure 6-1). The projection was updated in 2019 by a panel of scientists to reflect the best available data. The latest science indicates that mean sea levels could be between 10 to 17 inches higher than 2000 levels by 2030. By 2070, average levels are expected to be 21 to 40 inches higher.

Figure 6-1: Southeast Florida Regional Climate Compact SLR Projections



[1] Southeast Florida Regional Climate Change Compact Sea Level Rise Work Group (Compact) October 2015. *Unified Sea Level Rise Projection For Southeast Florida*. A document prepared for the Southeast Florida Regional Climate Change Compact Steering Committee

[2] These changes are all relative to the baseline year 1992.

Greater Miami & the Beaches (GM&B) is a collaboration among Miami-Dade County and the cities of Miami and Miami Beach, created to respond to the global trends major cities face including urbanization, globalization and climate change. GM&B was selected to join the 100 Resilient Cities Program pioneered by the Rockefeller Foundation in 2016. In 2019, GM&B released the Resilient305 Strategy that addresses prioritized resilience challenges, which was developed through extensive intergovernmental and community collaboration (https://resilient305.com/). The resilience strategy is designed to address GM&B's key shocks and stresses, such as hurricanes and infrastructure failure. The strategy includes actions related to water management including water quality, flooding mitigation, and infrastructure hardening.

As a 100 Resilient Cities partner MDC was eligible and selected as one of five global communities to pilot the City Water Resilience Approach to diagnose the strengths and weaknesses of the water system using quantitative and qualitative indicators and to develop an action plan that builds water resilience. WASD led this process that bridged water, wastewater, and stormwater management, both upstream and downstream of our county, and which directly advances water-related actions in the Resilient305 Strategy, particularly Action 54: Employ a One Water Approach. Some key messages we heard from our stakeholders include the importance of better coordination between water stakeholders, the need for catchment-level partnerships and water management projects and practices, and a strong call for sharing water

quality and related data to ensure evidence-based decision-making, and the need for proper valuing of ecosystem services.
https://www.resilienceshift.org/publication/greater-miami-water-resilience-profile-cwra/

6.3 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 region's primary water supply, is a shallow, surficial, unconfined aquifer characterized by limestone karst geology which is highly porous and transmissive. Saltwater intrusion is defined by the South Florida Water Management District (SFWMD) as chloride concentrations exceed drinking water standards of 250 mg/l. The SFWMD has identified utilities with water supply sources near the saltwater interface that could be vulnerable to saltwater intrusion of reduced availability during severe drought conditions (SFWMD LECWSP 2018 Appendix D). MDWASD South Dade wellfields were identified as wellfields near the saltwater interface and that do not have a western wellfield, have not developed alternative water sources, and/or have limited ability during a drought to meet user needs through interconnects with other utilities. MDWASD Miami Springs and Hialeah Preston wellfields were identified as near the saltwater interface but have access to other water sources during drought conditions.

6.3.1 Salt Intrusion Monitoring Network

Saltwater intrusion in Miami-Dade County is monitored through a joint effort of the Miami-Dade Water and Sewer Department (WASD), Miami-Dade Department of Regulatory and Economic Resources (RER), and the U.S. Geological Survey (USGS). A network of small diameter wells have been drilled to the base of the aquifer to serve as monitor wells to identify the location of the saltwater intrusion front. The salt front is identified as the location, at the base of the aquifer, of the 1,000 milligrams/per liter (mg/L) isochlor, or line of equal chloride concentration of 1,000 mg/L). Sampling of the monitor wells is done by the USGS, under a co-operative Joint Funding Agreement (JFA # 19ESFL00000013) contract with Miami-Dade County for wells currently included in the salt front monitoring program. Additional wells are sampled quarterly or yearly basis depending on well location, but every year the sampling schedule includes a county-wide sampling event conducted at the height of the dry season to coincide with the time when inland movement of the saltwater front would be at its peak. The data derived from that sampling is used by the USGS to identify any significant movement of the salt front, and to map the location of the salt front if a significant movement is evident. WASD reports the data to the South Florida Water Management District (SFWMD) quarterly, as part of the

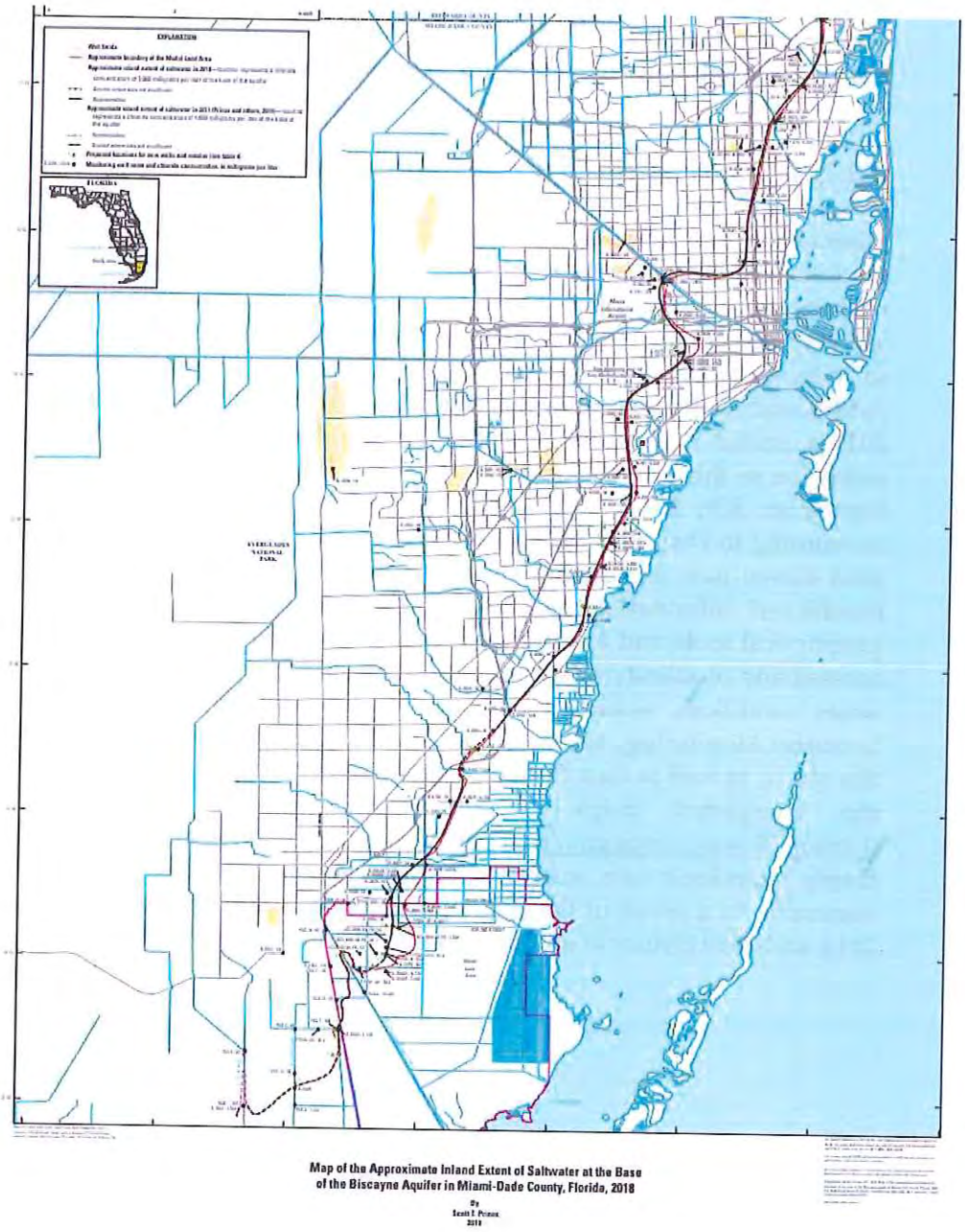
WUP #13-00017-W requirements, and is required as part of Special Permit Condition 37 of the 20-Year WUP (SFWMD, 2015; Appendix H) to submit an annual report summarizing the data collected and recommendations for adjustments to the salt front monitoring network as a result of data analysis.

6.3.2 Salt Intrusion Front Delineation

Miami-Dade WASD entered into a JFA with the USGS in 2007 (JFA #08E0FL208004) to delineate the current extent of saltwater intrusion in the Biscayne aquifer, to characterize how the extent has changed since the last mapping effort, to improve salinity monitoring in the Biscayne aquifer and to identify the sources of the saltwater to better understand the actions required to prevent or mitigate saltwater intrusion. Additionally, a Joint Funding Agreement No. 17ESFL000000108 for fiscal years 2017-2019 executed in April 2017. Through supplemental agreement No. 1 a 2-year extension to this JFA was provided on May 7th, 2019, which extended the JFA to September 30th, 2021. Additionally, 10-year JFA was signed to conduct chloride monitoring in December 2018 (JFA# 19ESFL000000103). As part of this effort, since 2014 eleven new monitoring wells have been installed in areas where there was insufficient information to identify the location of the front, and data from geophysical tools and techniques were incorporated into the analysis. To improve accessibility of salinity monitoring information to the public, the USGS cooperative water conditions website was improved and a new website created. "Saline Intrusion Monitoring, Miami-Dade County, Florida," serves data collected during this study, as well as data from the active salinity monitoring network, and provides the interpreted maps of the inland extent of saltwater intrusion (https://fl.water.usgs.gov/mapper/)). This website allows the USGS to deliver timely hydrologic data, analyses, and decision-support tools concerning saltwater intrusion. As a result of the JFA, updated salt front maps have been published in 2014, and 2019 (Prinos et al, Prinos et all 2014; Prinos, 2019). (Figure 6-3).

Figure 3. https://pubs.usgs.gov/sim/3438/sim3438.pdf

Figure 6-2 Miami-Dade 2018 Salt Front Map



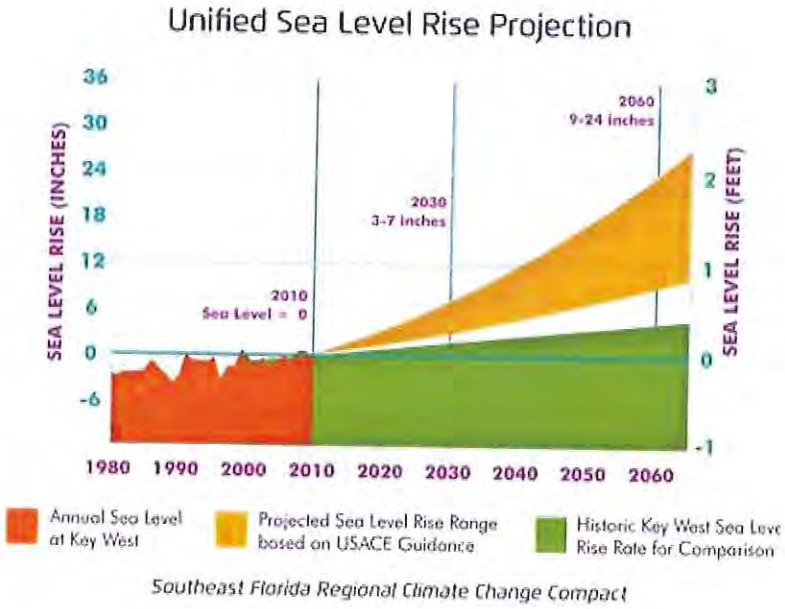
6.4 Urban Miami-Dade County Surface Water/Groundwater Model

Miami-Dade County entered into a Joint Funding Agreement (JFA 08E0FL20817) with the USGS in February 2008 to develop an integrated surface/groundwater numerical flow model, with one of the objectives of the project to evaluate if sea level rise will cause salt water intrusion into coastal wellfields. The numerical model is designed among other uses to evaluate if the current surface-water structure control operational criteria effectively control saltwater intrusion with projected population increase and sea level rise. WASD and the USGS use this integrated surface-water/groundwater model to evaluate how the position of the freshwater/saltwater interface will change with increased well field pumpage, increased sea level, and a combination of increased well field pumpage and increase sea level.

The model was developed and calibrated a coupled surface-water/groundwater model of the urban areas of Miami-Dade County, Florida. The model is designed to simulate surface-water stage and discharge in the managed canal system and dynamic canal leakage to the Biscayne aquifer as well as seepage to the canal from the aquifer. The model was developed using USGS MODFLOW-NWT with the SWR1 Process and the SWI2 Package to simulate the surface-water system and seawater intrusion, respectively (Hughes et. al., 2013). Automated parameter estimation software (PEST) and highly-parameterized inversion techniques were used to calibrate the model to observed surface-water stage, surface-water discharge, net surface-water sub-basin canal discharge, and groundwater level data from 1997 through 2004 by modifying hydraulic conductivity, specific storage coefficients, specific yield, evapotranspiration parameters, canal roughness coefficients (Manning's n values), and canal leakance coefficients (Walsh and Hughes, 2014).

WASD and the USGS used the modified guidance developed by the U.S. Army Corps of Engineers (USACE, 2011) and a planning scenario of 9 to 24 inches additional rise by 2060, consistent with projections presented in the 2014 NCA, and formally adopted by the partner counties in the Southeast Florida Regional Climate Change Compact (Figure 4) for the modeling effort.

Figure 6-3: Unified Southeast Florida Sea Level Rise Projection for Regional Planning Purposes (2014)



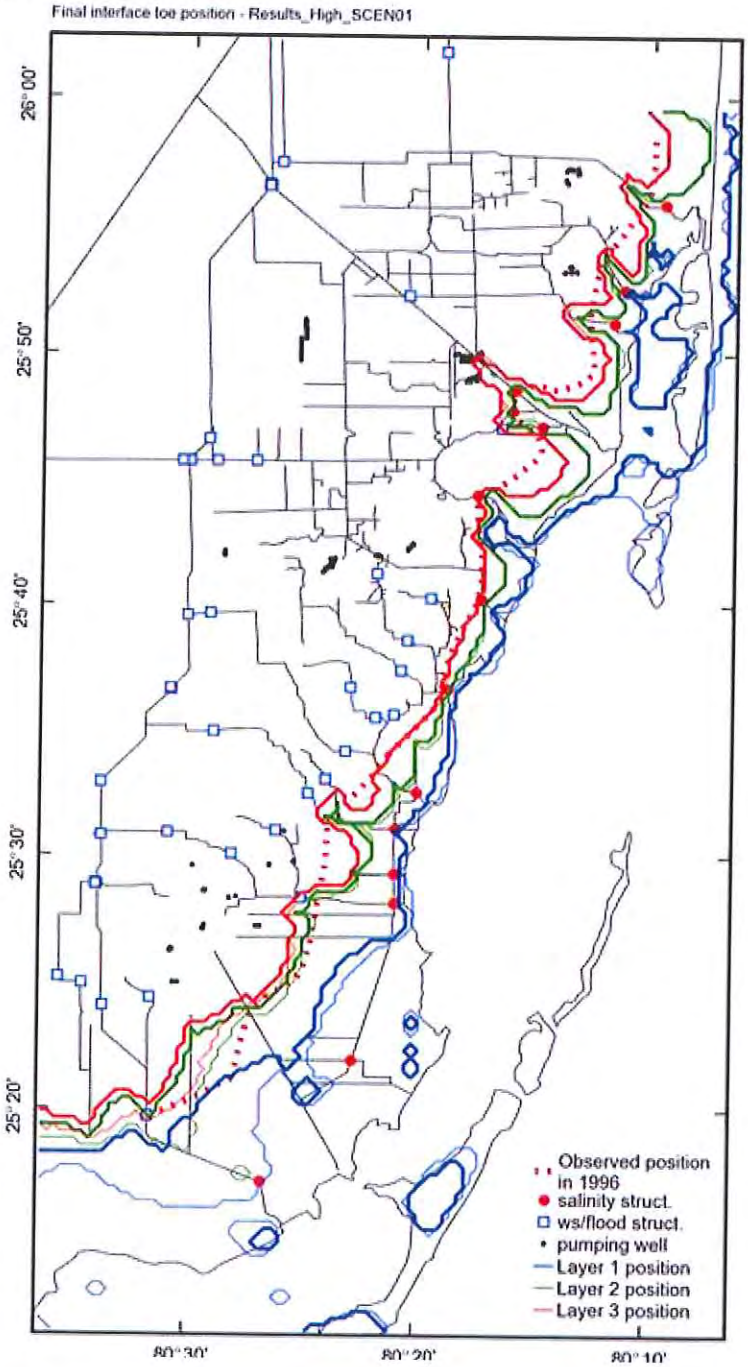
The USGS completed the model and initial scenarios regarding sea level rise, and results were published in 2014 (Hughes et al., 2014; link: https://pubs.usgs.gov/sir/2014/5162/). The model simulation period is from 1/1/1996 to 12/31/2010, with daily surface-water and groundwater timesteps. The model was calibrated using highly-parameterized inversion methods, with an 8-year calibration period (1997-2004) and a 6 year verification period (2005-2010). To represent future conditions, 30-year scenario simulation periods representing conditions from 2011 through 2040 were run. The thirty-year scenario period was chosen as being scientifically defensible at this point in time, with available sea level rise and climate change data available. The results of this work indicated that WASD's wellfields will not be impacted by sea level rise through the 2040 planning horizon.

Section 3.0. of the Applicant's Handbook stated the basic requirements for modeling evaluation period: "the simulation model run shall be conducted using monthly stress periods starting with a minimum of three months of average annual demand and rainfall, followed by twelve months of 1-in-10-year drought conditions, followed by a minimum of six months of average annual demand and rainfall." The model impact period was selected from November 2008 to October 2009, with 2009 being

the driest overall year in the 15-year simulation period. Hence, use of the period between November 2008 to October 2009 for the impact evaluation meets the intent of the requirement of a year of drought conditions preceded (May 2008 to October 2009) and followed by periods of normal rainfall (November 2009 to April 2010).

WASD is in the process developing scenarios of the Urban Miami Dade Model to meet goal of the SFWMD Lower East Coast water Supply Plan Update of sufficient water supply sources and future projects to meet existing and future reasonable-beneficial uses during 1-in-10 year drought conditions through 2040 while sustaining water resources and related natural systems (SFWMD, 2018). WASD has enhanced the USGS model to optimize use of the Biscayne aquifer and WASD well field operations in order to maximize the efficient use of the resource, while minimizing impacts to the natural and regionals systems and the salt water intrusion front. The scenarios being developed include 2014 Unified Southeast Florida sea level rise projection worse case sea-level rate (1.23 ft increase over 30 years). Future modeling projects include updating the Urban Miami-Dade USGS Model with groundwater and climate data up to 2019, and including the 2019 Southeast Florida Climate Compact updated sea level rise projections.

Figure 6-4: Scenario 3 Salt Water Intrusion Results. (Walsh and Hughes, 2014).



6.5 Extreme Weather Events

As extreme events increase in frequency and severity, WASD will 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 and rapid rainfall will cause flooding, increased runoff, impacts to the natural systems and provide less recharge potential. Integrated water resources management strategies will help to mitigate for these impacts, particularly those projects that can serve to provide additional storage of stormwater runoff, long term storage, and redistribution of excess rainfall during dry periods and drought. Regional surface water reservoirs and belowground aquifer storage and recovery systems are potentially viable alternative water supply projects and climate adaptation strategies. Increases in groundwater elevations, in both direct and indirect response to sea level will challenge the function of drainage systems and is expected contribute to exacerbate flooding, for even mild storm events. Conditions will be more severe with extreme rainfall events can increase damage to low lying utility infrastructure and contribute 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.

WASD entered into a JFA in 2014 (JFA 14GGESMC0000110) with the USGS to continue the modeling effort, and will develop additional future scenarios with County Departments, local governments, regional agencies for further climate change and sea level rise assessment. These scenarios will include additional years simulation, changes in recharge as a result of climate change, land use changes, and revised sea level rise projections. Future model scenarios to be developed with the USGS include simulating extreme weather events superimposed on future conditions as simulated in model runs.

6.6 Infrastructure Assessment

Effective water treatment plant operations require proper control of flooding from both stormwater (riverine) and tidal sources. Comprehensive engineering analysis considers both short-term and long-term effects of climate change. Short-term effects, such as current increased sea levels and higher estimates of tidal boundary conditions, will be incorporated into the system design and operations as necessary. Potential longer-term climatic changes are typically addressed incrementally as needed through systems master planning, to provide the appropriate level of protection for the given time period, including:

- Greater levels and rates of sea level rise,
- Higher spring tides (exceptionally high astronomical tides that occur around the new and full moon when the planets align to exert maximum effect on the tides),
- Higher tidal boundary effects and backflow,
- Increased levels of tidal surge and wind and wave effects from tropical storms and hurricanes, and
- Potential changes in design rainfall depths and intensities.

WASD requires that capital improvement projects to include an assessment of climate change and sea level rise. For the past several years, WASD has been working to systematically identify the vulnerabilities of the system to climate change. WASD has been methodically developing an approach to harden projects in preparation for increased flooding and higher storm surges. New design standards are being applied to ensure new projects will be designed to provide continuity of service under future conditions projected throughout the lifetime of the assets. Hazard mitigation grant funds have also been sought and awarded to help protect the largest and most critical sewer pump stations from flooding and wind damage and to improve electrical reliability. The department is continuing to invest in improving the understanding of the vulnerabilities of the system, refining the design standards used, and improving the implementation of these standards across the enterprise.

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APPENDIX A

20-Year Water Use Permit

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
WATER USE INDIVIDUAL PERMIT

APPLICATION NO: 140627-12 **PERMIT NUMBER:** 13-00017-W

DATE ISSUED: February 9, 2015 **EXPIRATION DATE:** February 9, 2035

PERMITTEE: MIAMI-DADE WATER AND SEWER DEPARTMENT
P O BOX 330316
MIAMI, FL 33233-0316

PROJECT NAME: MIAMI-DADE CONSOLIDATED PWS

PROJECT LOCATION: Miami-Dade County, SEE ATTACHED FOR SECTIONS, TOWNSHIPS AND RANGES

PROJECT DESCRIPTION/AUTHORIZING:

The continued use of groundwater from the Upper Floridan aquifer and Biscayne aquifer for Public water supply for the MDWASD Service Area serving 2,642,929 persons in the year 2033 with an average finished water per capita use rate of 137.2 gallons per day per person and a maximum monthly to average monthly pumping ration of 1.05:1 with an annual allocation of 140,915.50 million gallons.

This is to notify you of South Florida Water Management District's (District) agency action concerning Permit Application Number 140627-12, received June 27, 2014. This action is taken pursuant to Chapter 373, Part II, Florida Statutes (F.S.), Rule 40E-1.603 and Chapter 40E-2, Florida Administrative Code (F.A.C). Based on the information provided, District rules have been adhered to and a Water Use Individual Permit is in effect for this project subject to:

1. Not receiving a filed request for an administrative hearing pursuant to Section 120.57 and Section 120.569 (F.S.), or request a judicial review pursuant Section 120.68, F.S.; and
2. The attached 57 permit conditions.
3. The attached 37 exhibits.

By acceptance and utilization of the water authorized under this permit, the Permittee agrees to hold and save the District and its successors harmless from any and all damages, claims or liabilities that may arise by reason of the construction, maintenance or use of activities authorized by this permit. Should you object to the permit, please refer to the attached "Notice of Rights" that addresses the procedures to be followed if you desire a public hearing or other review of the proposed agency action. Should you wish to object to the proposed agency action or file a petition or request, please provide written objections, petitions, requests and/or waivers to the District, attention of Office of the District Clerk, South Florida Water Management District, Post Office Box 24680, West Palm Beach, FL 33416-4680.

CERTIFICATION OF SERVICE

I HEREBY CERTIFY THAT this written notice has been mailed or electronically transmitted to the Permittee (and the persons listed in the attached distribution list) this 10th day of February, 2015, in accordance with Section 120.60(3), F.S. Notice was also electronically posted on this date through a link on the home page of the District's website (my.sfwmd.gov/ePermitting).

BY: JUANITA BOZEMAN
DEPUTY CLERK, SOUTH FLORIDA WATER MANAGEMENT DISTRICT

SPECIAL PERMIT CONDITIONS

1. This permit is issued to:
   MIAMI-DADE WATER AND SEWER DEPARTMENT
   P O BOX 330316
   MIAMI, FL 33233-0316

2. This permit shall expire on February 9, 2035.

3. Use classification is:

   Public Water Supply
   Aquifer Storage And Recovery

4. Source classification is:

   Groundwater from:
   Biscayne Aquifer
   Upper Floridan Aquifer

5. Allocation:

   Total annual allocation is 140,915.50 million gallons (MG). (386.07 MGD)

   Total maximum monthly allocation is 12,330.11 million gallons (MG).

   Allocation from a specific source (aquifer, waterbody, facility, or facility group):

   Maximum annual allocation from Upper Floridan Aquifer shall not exceed 13,348.05 million gallons (MG). (36.60 MGD).

   Maximum annual allocation from Biscayne Aquifer shall not exceed 127,567.50 million gallons (MG). (349.50 MGD).

   Maximum monthly allocation from Upper Floridan Aquifer shall not exceed 1,167.95 million gallons (MG).

   Maximum monthly allocation from Biscayne Aquifer shall not exceed 11,162.16 million gallons (MG).

   These allocations represent the amount of water required to meet the water demands as a result of a rainfall deficit during a drought with the probability of recurring one year in ten. The Permittee shall not exceed these allocations in hydrologic conditions less than a 1-in-10 year drought event. Compliance with the annual allocation is based on the quantity withdrawn over a 12-month time period. Compliance with the maximum monthly allocation is based on the greatest quantity withdrawn in any single month. The annual allocation expressed in GPD or MGD is for

informational purposes only.

If the rainfall deficit is more severe than that expected to recur once every ten years, the withdrawals shall not exceed that amount necessary to continue to meet the reasonable-beneficial demands under such conditions, provided no harm to the water resources occur and:

1. All other conditions of the permit are met; and

2. The withdrawal is otherwise consistent with applicable declared Water Shortage Orders in effect pursuant to Chapter 40E-21, F.A.C.

6. Withdrawal facilities:

Groundwater - Proposed:

1 - 24" X 50' X 2800 GPM Well Cased To 45 Feet
7 - 24" X 1200' X 2430 GPM Wells Cased To 1100 Feet
1 - 24" X 50' X 1400 GPM Well Cased To 45 Feet
3 - 24" X 72' X 1400 GPM Wells Cased To 45 Feet
8 - 17" X 1490' X 1400 GPM Wells Cased To 1080 Feet

Groundwater - Existing:

2 - 24" X 100' X 7500 GPM Wells Cased To 50 Feet
3 - 48" X 88' X 7500 GPM Wells Cased To 33 Feet
5 - 17" X 1490' X 1400 GPM Wells Cased To 1080 Feet
1 - 4" X 74' X 0 GPM Well Cased To 63.5 Feet
1 - 18" X 65' X 1500 GPM Well Cased To 50 Feet
20 - 14" X 115' X 2500 GPM Wells Cased To 80 Feet
4 - 24" X 100' X 4900 GPM Wells Cased To 35 Feet
10 - 48" X 80' X 10420 GPM Wells Cased To 46 Feet
1 - 12" X 40' X 800 GPM Well Cased To 35 Feet
1 - 42" X 68' X 10000 GPM Well Cased To 54 Feet
1 - 6" X 30' X 400 GPM Well Cased To 25 Feet
1 - 16" X 50' X 1600 GPM Well Cased To 40 Feet
1 - 30" X 115' X 4170 GPM Well Cased To 80 Feet
1 - 18" X 66' X 1500 GPM Well Cased To 53 Feet
1 - 14" X 115' X 3800 GPM Well Cased To 80 Feet
1 - 30" X 1250' X 3500 GPM Well Cased To 845 Feet
6 - 42" X 107' X 7000 GPM Wells Cased To 66 Feet
1 - 24" X 70' X 3470 GPM Well Cased To 35 Feet
7 - 16" X 100' X 4170 GPM Wells Cased To 40 Feet
2 - 24" X 70' X 6945 GPM Wells Cased To 35 Feet
1 - 42" X 68' X 8500 GPM Well Cased To 60 Feet
1 - 17" X 1490' X 1400 GPM Well Cased To 1150 Feet

4 - 40" X 100' X 10420 GPM Wells Cased To 57 Feet
1 - 30" X 1210' X 3500 GPM Well Cased To 835 Feet
1 - 42" X 68' X 8500 GPM Well Cased To 54 Feet
1 - 18" X 55' X 1500 GPM Well Cased To 45 Feet
1 - 42" X 107' X 7000 GPM Well Cased To 69 Feet
4 - 24" X 108' X 8300 GPM Wells Cased To 50 Feet
2 - 12" X 40' X 1600 GPM Wells Cased To 35 Feet
4 - 24" X 104' X 6940 GPM Wells Cased To 54 Feet
1 - 12" X 35' X 1200 GPM Well Cased To 30 Feet
1 - 48" X 80' X 10416.67 GPM Well Cased To 46 Feet
1 - 12" X 35' X 800 GPM Well Cased To 30 Feet
1 - 30" X 115' X 2500 GPM Well Cased To 80 Feet
1 - 42" X 68' X 10000 GPM Well Cased To 60 Feet
1 - 18" X 55' X 1500 GPM Well Cased To 42 Feet
6 - 20" X 100' X 4900 GPM Wells Cased To 40 Feet
1 - 16" X 100' X 7500 GPM Well Cased To 40 Feet
1 - 18" X 50' X 500 GPM Well Cased To 40 Feet
1 - 30" X 1200' X 3500 GPM Well Cased To 765 Feet
1 - " X 60' X 0 GPM Well Cased To 55 Feet
1 - 30" X 1300' X 3500 GPM Well Cased To 850 Feet
1 - 30" X 1200' X 3500 GPM Well Cased To 760 Feet

7. The Permittee shall submit all data as required by the implementation schedule for each of the permit conditions to: SFWMD at www.sfwmd.gov/ePermitting, or Regulatory Support, MSC 9611, P.O. Box 24680, West Palm Beach, FL 33416-4680.

8. The Permittee must submit the appropriate application form incorporated by reference in Rule 40E-2.101, F.A.C., to the District prior to the permit expiration date in order to continue the use of water.

9. The Permittee shall secure a well construction permit prior to construction, repair, or abandonment of all wells, as described in Chapter 40E-3, F.A.C.

10. Permittees, who are dependent on other sources of water supply such as reclaimed water or water sale agreements to meet a portion of their demands, shall include the monthly volumes from all other sources in the report to the District, unless the use of those sources is reported to another state agency, in which case the District will obtain the water use information from said agency. The water accounting method and means of calibration shall be stated on each report.

11. Prior to any withdrawals at the project, the Permittee shall provide the results of the calibration testing of the identified water accounting method(s) and equip all existing and proposed withdrawal facilities with approved water use accounting method(s) pursuant to Subsection 4.1.1 of the Applicant's Handbook for Water Use Permit Applications.

12. Every five years from the date of last calibration, the Permittee shall submit re-calibration data for each withdrawal facility.

13. Monthly withdrawals for each withdrawal facility shall be reported to the District semi-annually. The water accounting method and means of calibration shall be stated on each report.

14. The Permittee shall notify the District within 30 days of any change in service area boundary that results in a change in demand that affects its permitted allocation. The allocation shall be modified to effectuate such change.

15. 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 Chapter 40E-3, F.A.C.

16. The Permittee shall maintain an accurate flow meter at the intake of the water treatment plant for the purpose of measuring daily inflow of water.

    Permittee shall maintain a calibrated flow meter(s) at the intake (raw water) and discharge (treated water) points within the Hialeah/Preston, Alexander Orr, and proposed Hialeah RO and South Miami Heights water treatment plants for the purpose of measuring treatment losses and shall submit monthly data semi-annually as required pursuant to Special Condition 13.

17. The Standard Water Conservation Plan described in Subsection 2.3.2.F.1.a of the Applicant's Handbook for Water Use Permit Applications within the South Florida Water Management District and the Staff Report, must be implemented in accordance with the approved implementation schedule described in the following exhibit:

    The Water Conservation Plan is contained in Exhibit 18. The permittee shall submit an annual report covering water conservation activities during the prior calendar year by April 15 of each year describing water conservation activities for the year including expenditures, projects undertaken and estimated water savings.

18. The Permittee shall notify the District within 30 days of entering into an inter-local agreement, contract, or other similar instrument to deliver or receive water outside of its service area or to serve a demand not identified to determine the allocation described in this permit. A copy of such agreement shall be provided to the District. The monthly volume of water delivered and/or received via each inter-local agreement, contract, or other similar instrument shall be submitted to the District at the same reporting frequency as the withdrawals for each withdrawal facility required in this permit.

19. The Permittee shall implement the wellfield operating plan submitted in support of the permit application, as described in the District staff report.

See Exhibit 10

20. The 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. Reports shall be submitted to the District on a yearly basis and are due by April 30th of each year.

    In the event that the annual unaccounted-for distribution system losses, as defined by Section 2.3.2.F.2.c, of the Applicants Handbook for Water Use Permit Applications [AH], exceeds 10 percent, the permittee shall include in the annual report a description of additional actions which will be implemented the following year(s) to reduce the losses to less than ten percent.

21. 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.

22. The Permittee shall maintain an accurate flow meter at the point of discharge from the treatment plant for the purpose of measuring the daily flow of water.

    Permittee shall maintain a calibrated flow meter(s) at the intake (raw water) and discharge (treated water) points within the Hialeah/Preston, Alexander Orr, and proposed Hialeah RO and South Miami Heights water treatment plants for the purpose of measuring treatment losses and shall submit monthly data semi-annually as required pursuant to Special Condition 13.

23. Pursuant to Section 373.236(4), F.S., every ten years from the date of permit issuance, the Permittee shall submit a water use compliance report for review and approval by District Staff to SFWMD at www.sfwmd.gov/ePermitting, or Regulatory Support, MSC 9611, P.O. Box 24680, West Palm Beach, FL 33416-4680.
    (A) 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.

    (B) 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.

3. Summary of the current and previous nine years progress reports for implementation of the Alternative Water Supply Plan and any modifications necessary to continue to meet the Plan requirements and conditions for issuance.

4. Information demonstrating that the conditions for issuance of the permit are being complied with, pursuant to Special Condition 45 and Section 373.236, F.S.

5. Updates or amendments to the County's reuse plan.

24. The Permittee shall provide annual status reports to the District that summarizes the Aquifer Storage and Recovery cycle testing activities. Reports shall be submitted to the District on a yearly basis and are due by April 30th of each year.

25. The Permittee shall submit to the District an updated "Summary of Groundwater (Well) Facilities" table ("Section IV - Sources of Water", Water Use Permit Application Form 1379) within 90 days 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.

26. The permittee shall operate surface water control structure known as the Mid-canal structure and bridge in accordance with the approved operational plan included in Exhibit 22. In addition, whenever this structure is opened for the purpose of raising water in the Wellfield Protection Canal down stream of the structure, the upstream structure that delivers water from the L-30 canal shall be opened in a manner to deliver equal volumes to those passed through the Mid-canal structure and bridge. The permittee shall submit operation and flow data logs regarding both structures to the District semi-annually.

27. The Permittee is authorized to exercise the emergency wells at the Medley Wellfield for a total of two hours per month as needed for bacterial clearance and pump maintenance. Operation of the emergency wells at the Medley Wellfield for more than this amount shall require prior approval from SFWMD. Pumpage data shall be collected and report in accordance with Special Condition 13.

28. No more than 15 MGD shall be withdrawn from the West Biscayne aquifer Wellfield on any given day.

29. No more than 25,550 MGY shall be withdrawn during any 12 month consecutive period from the combined Hialeah, Preston, Medley and Miami Springs Biscayne aquifer wellfields.

30. No more than 7,993 MGY shall be withdrawn during any 12 month consecutive period from the Snapper Creek Wellfield.

31. No more than 39,931 MGY shall be withdrawn during any 12 month consecutive period from the Southwest Biscayne aquifer Wellfield.

32. No more than 67,999 MGY shall be withdrawn during any 12 month consecutive period from the combined West, Southwest Snapper Creek and Alexander Orr Biscayne aquifer wellfields.

33. No more than 1,095 MGY shall be withdrawn during any 12 month consecutive period from the South Miami Heights Wellfield.

34. No more than 1,752 MGY shall be withdrawn during any 12 month consecutive period from the combined Everglades Labor Camp and Newton wellfields.

35. No more than 1,571 MGY shall be withdrawn during any 12 month consecutive period from the combined Elevated Tank, Leisure City and Naranja wellfields.

36. The Permittee shall continue to submit monitoring data in accordance with the approved water level monitoring program for this project. The existing monitoring program is described in Exhibits 30 and 32B.

37. The Permittee shall continue to submit monitoring data in accordance with the approved saline water intrusion monitoring program for this project.
See exhibits 28A and 32B for a list of monitor wells and required sampling schedule.

    The permittee shall submit annual Monitoring Program summary reports. The annual report will summarize the status of the project to update the salt front and install new monitor wells.

38. Within six months of permit issuance, an executed large user water agreement with the City of Hialeah shall be submitted to the District. In the event that the final agreement is for volumes less than those used in the formulation of the allocations in this permit, the allocations shall be reduced through a letter modification.

39. The permittee shall update the District on the status of reuse projects in Exhibit 14 on an annual basis.

40. The permittee will develop alternative water supplies in accordance with the schedules described in Exhibit 13.

    The permittee will provide annual updates of the status of all alternative water supply projects (per

the timeframes contained in Special Condition 44). The status report shall include work completed to date, expenditures and any anticipated changes in the timelines.

41. In the event that a milestone specified in the alternative water supply schedule and plan contained in Exhibit 13 is going to be missed, the permittee shall notify the Executive Director of the District in writing explaining the nature of the delay, actions taken to bring the project back on schedule and an assessment of the impact the delay would have on the rates of withdrawals from the Everglades water bodies and associated canals as defined in SFWMD consumptive use permitting rules. The District will evaluate the situation and take actions as appropriate which could include: a.) granting an extension of time to complete the project (if the delay is minor and doesn't affect the Everglades Waterbodies or otherwise violates permit conditions), b.) take enforcement actions including consent orders and penalties, c.) modify allocations contained in this permit from the Biscayne aquifer including capping withdrawal rates until the alternative water supply project(s) are completed (in cases where the delay would result in violations of permit conditions) or d.) working with the Department of Community Affairs to limit increase demands for water until the alternative water supply project is completed.

42. For rehydration of Biscayne Coastal Wetlands, in consultation with the District, the FDEP and Biscayne Bay National Park, upon completion of the pilot testing program, the parties shall agree on the water quality treatment required and the feasibility, as defined in Section 2.2.4 of the Applicants Handbook for Water Use Permit Applications, of this project on or before April 15, 2015. Extension of this deadline may be issued in writing by the District upon demonstration of good cause such as events beyond the control of the permittee or after consideration of the results/data collected, the District determines that additional testing is necessary. In determining the water quality needed, the parties will consider State and Federal water quality discharge standards, the volume and timing of water to be delivered to Biscayne Bay and the location of delivery. In the event the parties do not reach agreement on the feasibility by April 15, 2015, the Permittee shall begin development of an alternate reuse project from the South District wastewater facility and shall provide the District with a proposal for an alternate project including a conceptual design and schedule for implementation on or before March 15, 2016.

43. The permittee may request temporary authorization from the District to capture and store stormwater via withdrawals from the permitted Biscayne aquifer production wells, for storage within the Floridan aquifer system consistent with their FDEP issued Underground Injection Control permits.The District will consider the availability of stormwater that is not otherwise needed for environmental protection or enhancement and is in no way bound to authorize such requests. All such requests shall be made in writing to the Director of Water Use Regulation.

44. All annual reports required in these Special Conditions shall address activities that occurred during a calendar year and shall be submitted to Water Use Compliance on or before April 15th of the following year.

45. If it is determined that the conditions for permit issuance are no longer met for the 20 year permit duration, the permittee shall obtain a modification of the Permit from the District as necessary to

come into compliance with the conditions for permit issuance. Such conditions for permit issuance include minimum flows and levels, water reservations, and other conditions ensuring the use does not cause water resource harm and is consistent with the objectives of the District, including implementation of the Comprehensive Everglades Restoration Plan.

46. The permittee shall operate the West Wellfield in accordance with the Memorandum of Understanding between the U.S. Department of the Interior, the Governor of the State of Florida, Miami Dade County and the District incorporated in Exhibit 35.

STANDARD PERMIT CONDITIONS

1. All water uses authorized by this permit shall be implemented as conditioned by this permit, including any documents incorporated by reference in a permit condition. The District may revoke this permit, in whole or in part, or take enforcement action, pursuant to Section 373.136 or 373.243, F.S., unless a permit modification has been obtained to address the noncompliance.

   The Permittee shall immediately notify the District in writing of any previously submitted material information that is later discovered to be inaccurate.

2. 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.

3. The Permittee shall notify the District in writing within 30 days of any sale, transfer, or conveyance of ownership or any other loss of permitted legal control of the Project and/or related facilities from which the permitted consumptive use is made. Where Permittee's control of the land subject to the permit was demonstrated through a lease, the Permittee must either submit a new or modified lease showing that it continues to have legal control or documentation showing a transfer in control of the permitted system/project to the new landowner or new lessee. All transfers of ownership are subject to the requirements of Rule 40E-1.6107, F.A.C. Alternatively, the Permittee may surrender the consumptive use permit to the District, thereby relinquishing the right to conduct any activities under the permit.

4. Nothing in this permit should be construed to limit the authority of the District to declare a water shortage and issue orders pursuant to Chapter 373, F.S. In the event of a declared water shortage, the Permittee must adhere to the water shortage restrictions, as specified by the District. The Permittee is advised that during a water shortage, reports shall be submitted as required by District rule or order. The Permittee is advised that during a water shortage, pumpage, water levels, and water quality data shall be collected and submitted as required by District orders issued pursuant to Chapter 40E-21, F.A.C.

5. This permit does not convey to the Permittee any property rights or privileges other than those specified herein, nor relieve the permittee from complying with any applicable local government, state, or federal law, rule, or ordinance.

6. With advance notice to the Permittee, District staff with proper identification shall have permission to enter, inspect, observe, collect samples, and take measurements of permitted facilities to determine compliance with the permit conditions and permitted plans and specifications. The Permittee shall either accompany District staff onto the property or make provision for access onto the property.

7. A. The Permittee may seek modification of any term of an unexpired permit. The Permittee is advised that Section 373.239, F.S., and Rule 40E-2.331, F.A.C., are applicable to permit modifications.

   B. The Permittee shall notify the District in writing 30 days prior to any changes to the project that

could potentially alter the reasonable demand reflected in the permitted allocation. Such changes include, but are not limited to, change in irrigated acreage, crop type, irrigation system, large users agreements, or water treatment method. Permittee will be required to apply for a modification of the permit for any changes in permitted allocation.

8. If any condition of the permit is violated, the permit shall be subject to review and modification, enforcement action, or revocation pursuant to Chapter 373, F.S.

9. The 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:

   A. 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

   B. 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.

10. The 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. Harm to the natural system including damage to habitat for rare or endangered species.

11. The 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 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.)

B. Damage to agriculture, including damage resulting from reduction in soil moisture resulting from consumptive use; or,

C. Land collapse or subsidence caused by reduction in water levels associated with consumptive use.

Application Number:	140627-12
Permit Number:	13-00017-W
Project Name:	MIAMI-DADE CONSOLIDATED PWS
Location:	MIAMI-DADE COUNTY, S-/T53S/R39E S-/T53S/R40E S-/T53S/R41E S-/T54S/R39E S-/T54S/R40E S-/T54S/R41E S-/T54S/R42E S-/T55S/R39E S-/T55S/R40E S-/T56S/R38E S-/T56S/R39E S-/T57S/R38E S-/T57S/R39E S-/T57S/R40E

NOTICE OF RIGHTS

As required by Sections 120.569(1), and 120.60(3), Fla. Stat., the following is notice of the opportunities which may be available for administrative hearing or judicial review when the substantial interests of a party are determined by an agency. 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.

RIGHT TO REQUEST ADMINISTRATIVE HEARING

A person whose substantial interests are or may be affected by the South Florida Water Management District's (SFWMD or District) action has the right to request an administrative hearing on that action pursuant to Sections 120.569 and 120.57, Fla. Stat. Persons seeking a hearing on a SFWMD decision which does or may affect their substantial interests shall file a petition for hearing with the District Clerk within 21 days of receipt of written notice of the decision, unless one of the following shorter time periods apply: 1) within 14 days of the notice of consolidated intent to grant or deny concurrently reviewed applications for environmental resource permits and use of sovereign submerged lands pursuant to Section 373.427, Fla. Stat.; or 2) within 14 days of service of an Administrative Order pursuant to Subsection 373.119(1), Fla. Stat. "Receipt of written notice of agency decision" means receipt of either written notice through mail, electronic mail, or posting that the SFWMD has or intends to take final agency action, or publication of notice that the SFWMD has or intends to take final agency action. Any person who receives written notice of a SFWMD decision and fails to file a written request for hearing within the timeframe described above waives the right to request a hearing on that decision.

FILING INSTRUCTIONS

The Petition must be filed with the Office of the District Clerk of the SFWMD. Filings with the District Clerk may be made by mail, hand-delivery, or e-mail. **Filings by facsimile will not be accepted after October 1, 2014.** A petition for administrative hearing or other document is deemed filed upon receipt during normal business hours by the District Clerk at SFWMD headquarters in West Palm Beach, Florida. Any document received by the office of the District Clerk after 5:00 p.m. shall be filed as of 8:00 a.m. on the next regular business day. Additional filing instructions are as follows:

- Filings by mail must be addressed to the Office of the District Clerk, P.O. Box 24680, West Palm Beach, Florida 33416.
- Filings by hand-delivery must be delivered to the Office of the District Clerk. **Delivery of a petition to the SFWMD's security desk does not constitute filing. To ensure proper filing, it will be necessary to request the SFWMD's security officer to contact the Clerk's office.** An employee of the SFWMD's Clerk's office will receive and file the petition.
- Filings by e-mail must be transmitted to the District Clerk's Office at clerk@sfwmd.gov. The filing date for a document transmitted by electronic mail shall be the date the District Clerk receives the complete document. A party who files a document by e-mail shall (1) represent that the original physically signed document will be retained by that party for the duration of the proceeding and of any subsequent appeal or subsequent proceeding in that cause and that the party shall produce it upon the request of other parties; and (2) be responsible for any delay, disruption, or interruption of the electronic signals and accepts the full risk that the document may not be properly filed.

INITIATION OF AN ADMINISTRATIVE HEARING

Pursuant to Rules 28-106.201 and 28-106.301, Fla. Admin. Code, initiation of an administrative hearing shall be made by written petition to the SFWMD in legible form and on 8 and 1/2 by 11 inch white paper. All petitions shall contain:

1. Identification of the action being contested, including the permit number, application number, SFWMD file number or any other SFWMD identification number, if known.
2. The name, address and telephone number of the petitioner and petitioner's representative, if any.
3. An explanation of how the petitioner's substantial interests will be affected by the agency decision.
4. A statement of when and how the petitioner received notice of the SFWMD's decision.
5. A statement of all disputed issues of material fact. If there are none, the petition must so indicate.
6. A concise statement of the ultimate facts alleged, including the specific facts the petitioner contends warrant reversal or modification of the SFWMD's proposed action.
7. A statement of the specific rules or statutes the petitioner contends require reversal or modification of the SFWMD's proposed action.
8. If disputed issues of material fact exist, the statement must also include an explanation of how the alleged facts relate to the specific rules or statutes.
9. A statement of the relief sought by the petitioner, stating precisely the action the petitioner wishes the SFWMD to take with respect to the SFWMD's proposed action.

A person may file a request for an extension of time for filing a petition. The SFWMD may, for good cause, grant the request. Requests for extension of time must be filed with the SFWMD prior to the deadline for filing a petition for hearing. Such requests for extension shall contain a certificate that the moving party has consulted with all other parties concerning the extension and that the SFWMD and any other parties agree to or oppose the extension. A timely request for extension of time shall toll the running of the time period for filing a petition until the request is acted upon.

If the SFWMD takes action with substantially different impacts on water resources from the notice of intended agency decision, the persons who may be substantially affected shall have an additional point of entry pursuant to Rule 28-106.111, Fla. Admin. Code, unless otherwise provided by law.

MEDIATION

The procedures for pursuing mediation are set forth in Section 120.573, Fla. Stat., and Rules 28-106.111 and 28-106.401-.405, Fla. Admin. Code. The SFWMD is not proposing mediation for this agency action under Section 120.573, Fla. Stat., at this time.

RIGHT TO SEEK JUDICIAL REVIEW

Pursuant to Sections 120.60(3) and 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 District Clerk within 30 days of rendering of the final SFWMD action.

Last Date for Agency Action:
February 12, 2015

WATER USE STAFF REPORT

FINAL APPROVED BY EXECUTIVE DIRECTOR FEBRUARY 9, 2015

Application Number: 140627-12

Permit Number: 13-00017-W

Project Name: MIAMI-DADE CONSOLIDATED PWS

Water Use Permit Status: MODIFICATION/RENEWAL

Location: MIAMI-DADE COUNTY, S-/T53S/R39E
S-/T53S/R40E
S-/T53S/R41E
S-/T54S/R39E
S-/T54S/R40E
S-/T54S/R41E
S-/T54S/R42E
S-/T55S/R39E
S-/T55S/R40E
S-/T56S/R38E
S-/T56S/R39E
S-/T57S/R38E
S-/T57S/R39E
S-/T57S/R40E

Applicant's Name and Address: MIAMI-DADE WATER AND SEWER DEPARTMENT
P O BOX 330316
MIAMI, FL 33233-0316

Water Use Classification: Public Water Supply
Aquifer Storage And Recovery

Sources:

Groundwater from: Biscayne Aquifer
Upper Floridan Aquifer

Authorized Allocation:

Annual Allocation: 140,915.5 Million Gallons (MG)

Maximum Monthly Allocation: 12,330.1 Million Gallons (MG)

Specific Source Limitations:	**Annual(MG)**	**Monthly(MG)**
Biscayne Aquifer	127,567.5	11,162.16
Upper Floridan Aquifer	13,348.05	1,167.95

Existing Withdrawal Facilities - Groundwater

Existing Withdrawal Facilities - Groundwater

Source: Biscayne Aquifer
1 - 18" X 66' X 1500 GPM Well Cased to 53 Feet
1 - 30" X 115' X 2500 GPM Well Cased to 80 Feet
2 - 24" X 70' X 6945 GPM Wells Cased to 35 Feet
1 - 42" X 68' X 8500 GPM Well Cased to 54 Feet
1 - 30" X 115' X 4170 GPM Well Cased to 80 Feet
1 - 14" X 115' X 3800 GPM Well Cased to 80 Feet
1 - 16" X 50' X 1600 GPM Well Cased to 40 Feet
1 - 6" X 30' X 400 GPM Well Cased to 25 Feet
7 - 16" X 100' X 4170 GPM Wells Cased to 40 Feet
1 - 42" X 68' X 8500 GPM Well Cased to 60 Feet
1 - 24" X 70' X 3470 GPM Well Cased to 35 Feet
1 - 16" X 100' X 7500 GPM Well Cased to 40 Feet
6 - 42" X 107' X 7000 GPM Wells Cased to 66 Feet
1 - 18" X 55' X 1500 GPM Well Cased to 42 Feet
1 - 12" X 40' X 800 GPM Well Cased to 35 Feet
4 - 24" X 108' X 8300 GPM Wells Cased to 50 Feet
3 - 48" X 88' X 7500 GPM Wells Cased to 33 Feet
1 - 18" X 50' X 500 GPM Well Cased to 40 Feet
4 - 24" X 104' X 6940 GPM Wells Cased to 54 Feet
1 - 18" X 65' X 1500 GPM Well Cased to 50 Feet
1 - 12" X 35' X 1200 GPM Well Cased to 30 Feet
6 - 20" X 100' X 4900 GPM Wells Cased to 40 Feet
2 - 24" X 100' X 7500 GPM Wells Cased to 50 Feet
4 - 24" X 100' X 4900 GPM Wells Cased to 35 Feet
1 - 48" X 80' X 10416.67 GPM Well Cased to 46 Feet
10 - 48" X 80' X 10420 GPM Wells Cased to 46 Feet
1 - 42" X 68' X 10000 GPM Well Cased to 54 Feet
1 - 18" X 55' X 1500 GPM Well Cased to 45 Feet
1 - 42" X 107' X 7000 GPM Well Cased to 69 Feet
2 - 12" X 40' X 1600 GPM Wells Cased to 35 Feet
20 - 14" X 115' X 2500 GPM Wells Cased to 80 Feet
4 - 40" X 100' X 10420 GPM Wells Cased to 57 Feet
1 - 12" X 35' X 800 GPM Well Cased to 30 Feet
1 - 42" X 68' X 10000 GPM Well Cased to 60 Feet
Source: Upper Floridan Aquifer
5 - 17" X 1490' X 1400 GPM Wells Cased to 1080 Feet
1 - 30" X 1200' X 3500 GPM Well Cased to 765 Feet
1 - 30" X 1210' X 3500 GPM Well Cased to 835 Feet
1 - 30" X 1300' X 3500 GPM Well Cased to 850 Feet
1 - 30" X 1250' X 3500 GPM Well Cased to 845 Feet
1 - 30" X 1200' X 3500 GPM Well Cased to 760 Feet
1 - 17" X 1490' X 1400 GPM Well Cased to 1150 Feet

Proposed Withdrawal Facilities - Groundwater

Proposed Withdrawal Facilities - Groundwater

Source: Biscayne Aquifer
1 - 24" X 50' X 1400 GPM Well Cased to 45 Feet
1 - 24" X 50' X 2800 GPM Well Cased to 45 Feet
3 - 24" X 72' X 1400 GPM Wells Cased to 45 Feet
Source: Upper Floridan Aquifer
7 - 24" X 1200' X 2430 GPM Wells Cased to 1100 Feet
8 - 17" X 1490' X 1400 GPM Wells Cased to 1080 Feet

Rated Capacity Source	Status Code	GPM	MGM	MGY
Biscayne Aquifer	E	518,777	22,710.0	272,669
Upper Floridan Aquifer	E	25,900	1,133.8	13,613
Biscayne Aquifer	P	8,400	367.7	4,415
Upper Floridan Aquifer	P	28,210	1,234.9	14,827
Totals:		**581,287**	**25,446.4**	**305,524**

PURPOSE

The purpose of this application is to renew and modify Water Use Permit 13-00017-W for public water supply for the Miami-Dade Water and Sewer Department (MDWASD) service area serving 2,642,929 persons in the year 2033 with an average finished water per capita use rate of 137.2 gallons per capita per day (gpcd) and a maximum monthly to average monthly pumping ratio of 1.05:1. Withdrawals are from the Biscayne aquifer via 84 existing and 5 proposed withdrawal facilities and from the Upper Floridan aquifer system (FAS) via 6 existing withdrawal facilities and 15 proposed withdrawal facilities. In addition, there are five Aquifer Storage and Recovery (ASR) facilities.

The following modifications to the existing WUP are recommended:

Source Allocation Changes:
Decrease the Biscayne aquifer allocation by 16.36 million gallons per day (MGD), from 133,539 million gallons per year (MGY), or 365.86 MGD to 127,567.5 MGY (349.5 MGD). Because of conservation efforts and updated population projections, MDWASD no longer requires additional water from the Biscayne aquifer beyond the base condition amount. As a result, the West District Water Reclamation Plant (WRP) Canal Recharge projects (Projects 6 and 7 shown on Exhibit 14 from the previous permit issued in 2012) are no longer required to offset proposed Biscayne aquifer withdrawals beyond the established base condition of 349.5 MGD. A chart showing reduction in gpcd is shown on Exhibit 6.

Decrease the Floridan aquifer allocation by 10.03 MGD, from 17,009 MGY (46.6 MGD) to 13,348 MGY (36.57 MGD) through the reduction in proposed pumpage from the Hialeah FAS from 23.33 MGD to 13.30 MGD, due to decreased projected demands..

Reuse Projects:
Revise the reuse requirement (Limiting Condition 39 of the 2012 permit) reducing the

PURPOSE (CONTINUED)

minimum volume of reuse projects (as set forth in Projects 1 through 8 of Exhibit 14 of the 2012 permit) from 170 MGD to 117.5 MGD. This volume meets the minimum requirement of the ocean outfall legislation (See Exhibit 14).

Remove from the permit a requirement to provide 37 MGD of advanced treated reclaimed water to recharge the Alexander Orr water treatment plant (WTP) Wellfields (Projects 5 and 6 from Exhibit 14 of the 2012 permit).

Remove from the permit a requirement to provide seven MGD of reclaimed water from the North District wastewater treatment plant (WWTP) (Project 7 from Exhibit 14 of the 2012 permit).

PROJECT DESCRIPTION

The Miami-Dade Consolidated Public Water Supply (Project) is a currently permitted (13-00017-W) project located in eastern Miami-Dade County (Exhibit 1). MDWASD's service area is depicted on Exhibit 2A. MDWASD is permitted to provide potable water from 15 wellfields (Exhibit 3A) to a projected population of 2,642,929 persons in the year 2033. Withdrawals are from the Biscayne aquifer via 95 existing and 5 proposed withdrawal facilities and from the FAS via 6 existing withdrawal facilities and 15 proposed withdrawal facilities. In addition, there are five existing ASR facilities. Individual wellfield layouts are shown on Exhibits 3B to 3R). Prior to drilling the proposed wells, it will be necessary to obtain well construction permits from the Florida Department of Health in Miami-Dade County.

System Description:

The overall Project is divided into North, Central and South systems with some interconnection between them at the treated water distribution level (Exhibits 2B and 3A).

The North system includes the Hialeah and John E. Preston WTPs, which are supplied by the Hialeah, Preston, Miami Springs (upper and lower) and Northwest wellfields and by the Medley wellfield on an emergency basis. A reverse osmosis (RO) treatment plant, producing approximately 7.5 MGD of treated FAS water from 6 Floridan aquifer wells, began operation in December of 2013 (Phase 1) in the City of Hialeah. The Hialeah FAS system will ultimately produce 10 MGD of treated water upon completion in 2015 (Exhibit 13). See Exhibits 3B through 3G for well locations for the North System.

The Central system includes the Alexander Orr, Jr. WTP, which is supplied by the Alexander Orr, Snapper Creek, Southwest and West Wellfields. There are three existing ASR Floridan aquifer wells at the West Wellfield (WWF) and two at the Southwest wellfield (SWWF). See Exhibits 3H through 3K for well locations for the Central System.

In the previous permit, a total of 37 MGD (above the calculated base condition of 85.9 MGD) was authorized from the SWWF beginning in 2021. These additional withdrawals were to be offset on a 1:1 basis by applying reclaimed water between the SWWF and regional waterbodies. Due to water conservation measures and updated population

PROJECT DESCRIPTION (CONTINUED)

projections showing a lower population growth rate through 2033, MDWASD no longer requires this additional water, beyond the modified base condition of 349.5 MGD, from the Biscayne aquifer. Therefore, the allocation from the Biscayne aquifer is reduced by this quantity and the reuse project is no longer required.

For the previous permit modification, modeling was conducted to show that the base condition allocation for the SWWF could be increased from 85.9 MGD to 110 MGD (an additional 24.1 MGD) by reducing the base condition allocation for the Alexander Orr Wellfield from 62 MGD to 40 MGD without inducing additional seepage from the regional waterbodies. This shift in allocation from Alexander Orr to the SWWF allows the ASR wells to be used on a regular basis storing Biscayne aquifer volumes not exceeding the Biscayne aquifer wellfield limits for the water use permit. Exhibit 10C shows components used to derive the modified Biscayne aquifer base condition for the various wellfields.

The South system currently consists of five wellfields and associated equipment: 1) Everglades Labor Camp, 2) Leisure City, 3) Newton, 4) Elevated Tank, and 5) Naranja. A new South Miami Dade membrane-softening WTP is scheduled to be completed by December 31, 2019. Two new Biscayne aquifer wellfields in South Miami Heights (SMH), at the Former Plant site and Roberta Hunter Park, will provide three MGD of raw water to the new membrane plant. A new 23.3 MGD FAS wellfield and RO treatment plant capable of providing 17.5 MGD of treated water will also be constructed in the SMH area. Phase 1 of the SMH RO treatment plant is scheduled to be completeed at the end of 2019 and will be capabpe of providing 12.45 MGD of treated water. Phase 2 of this treatment plant is scheduled to be completed by the end of 2031 and will provide an additional five MGD of treated water (see Exhibit 13). See Exhibits 3L through 3R for well locations. Leisure City, Elevated Tank, and Naranja WTPs and wellfields will be taken off-line upon operational status of the new South Miami-Dade membrane WTP and the Everglades and Newton facilities will go to standby status.

Permit History:

North Miami-Dade:
The South Florida Water Management District (SFWMD or District) issued the first water use permit for the Hialeah-Preston WTPs (Water Use Permit 13-00018) on February 7, 1975, with an annual allocation of 38.74 billion gallons per year (BGY) (106.14 MGD) from the Miami Springs, Medley, Hialeah and Preston Wellfields. This permit (Water Use Permit 13-00018-W) was reissued on February 12, 1981 for a ten-year period and an annual allocation of 45.62 BGY (124.97 MGD).

The first water use permit for the Northwest Wellfield (Water Use Permit 13-00037-W) was issued on September 4, 1975 for an annual allocation of 18.15 BGY (50 MGD). The Northwest Wellfield water Use Permit 13-00037-W with an annual allocation of 60.23 BGY (165 MGD) was modified and issued on March 12, 1987.

PROJECT DESCRIPTION (CONTINUED)

The Hialeah-Preston and Northwest permits were combined into one master permit (Water Use Permit 13-00037-W) on March 14, 1991. The permit authorized a withdrawal of 60.20 BGY, an average daily withdrawal of 164.93 MGD, and a maximum daily withdrawal of 197.91 MGD. In February 1999, the permit was reissued for an annual allocation of 72,703 million gallons (MG) (72.7 BGY) and a maximum day allocation of 235.04 MGD. The permit included a maximum pumpage from the Northwest Wellfield of 155 MGD, and 70 MGD from the Hialeah, Preston, and Miami Springs Wellfields, and the remainder (but not limited to) 10 MGD from the ASR wells. The permitted wellfields included 45 Biscayne aquifer production wells located in the Hialeah, Preston, Miami Springs and Northwest Wellfields. An application to modify the permit was received on January 8, 2001. The permit expiration date was February 11, 2004.

Central Miami-Dade:

The SFWMD issued the first water use permit for Alexander Orr, Southwest and Snapper Creek wellfields (Water Use Permit 13-00017-W) on February 7, 1975, with an annual allocation of 30.66 BGY (84 MGD). On September 4, 1975, the annual allocation was increased to 34.31 BGY (94 MGD). The permit was renewed on December 13, 1979, with an annual allocation of 47.45 BGY (130 MGD) and included the allocations and service areas previously associated with Water Use Permits 13-00028-W, (Florida Water & Utilities), 13-00058-W (General Water Works), and 13-00067-W (South Miami Heights). On April 10, 1986, the permit was renewed with an annual allocation of 60.408 BGY (165.5 MGD), and a maximum day allocation of 198.2 MG. The permit was renewed again on November 10, 1993, with an annual allocation of 66.231 BGY (181.45 MGD) from the Alexander Orr, Southwest, Snapper Creek and WWF. In May 1995, the SFWMD issued Water Use Permit 13-00017-W for the Alexander-Orr WTP with an annual allocation of 74,136 MG (203.11 MGD), and a maximum day allocation of 241.60 MGD, of which 23.96 MGD are allocated to ASR. The permit expiration date was May 11, 2004, and an application to renew and modify the permit was received on the expiration date.

South Miami-Dade:

Water Use Permit 13-00040-W was initially issued to Rex Utilities, Inc. on March 18, 1976, with an annual allocation of 4.15 BGY (11.4 MGD) and a maximum day of 14.8 MGD. Subsequently, MDWASD acquired the facilities that are now known as the South Miami-Dade Water Supply System. The original permit was modified and renewed on July 8, 1982, with an allocation of 3.76 BGY (10.61 MGD) and a maximum day of 15.9 MGD for the six wellfields. The permit expired on July 8, 1992 and was reissued to MDWASD on July 14, 1994, with an annual allocation of 3.873 BGY (10.61 MGD) and a maximum day of 15.92 MGD. On July 11, 1998, the permit was renewed again with an annual allocation of 3.902 BGY (10.69 MGD) and a maximum day of 13.58 MGD. On March 13, 2003, the SFWMD re-issued permit number 1300040-W with an annual allocation of 3.997 BG (10.95 MGD), and a maximum daily allocation of 13.4 MGD and authorization to install 4 new wellfields to supply water to a new membrane softening WTP. The permit expiration date was March 13, 2008.

PROJECT DESCRIPTION (CONTINUED)

Consent Agreement:
On May 10, 2006, Miami-Dade County and the SFWMD entered into an Interim Consumptive Use Authorization and Agreement. The agreement authorized withdrawals of up to 349.76 MGD for a duration of 18 months, required completion of a list of tasks to respond to an outstanding Request for Additional Information necessary to issue a 20 year permit, granted 18 months to complete the tasks, and required Miami-Dade County to develop a plan to use alternative sources to meet all future demands over 347 MGD.

Consolidated Permit:
On November 15, 2007, Water Use Permit 13-00017-W was renewed and consolidated all facilities and demands of Water Use Permits 13-00017-W, 13-00037-W and 13-00040-W into one permit. It was issued with a duration of 20 years, an annual allocation of 152,741 MGY (418.47 MGD) and a maximum monthly allocation of 13,364 million gallons per month (MGM). Along with the existing wellfields and the proposed South Dade wellfield, a new FAS wellfield and RO plant were proposed in Hialeah. The Biscayne aquifer base condition was established at 347 MGD, pursuant to Section 3.2.1E of the Applicant's Handbook (AH) for Water Use Permit Applications Within the SFWMD. Additional groundwater modeling conducted during the permit review showed that an additional 5.0 MGD (1.5 MGD at Snapper Creek, 1.5 MGD at Southwest, 0.5 MGD at Newton, and 1.5 MGD at Everglades wellfields) would not cause a net increase in volume or cause a change in timing of surface and groundwater from Everglades water bodies. Groundwater and canal recharge projects were required to offset proposed increased Biscayne aquifer withdrawals beyond the calculated Base Condition limit of 347 MGD.

On November 1, 2010, the consolidated permit (13-00017-W) was modified (to remove proposed FAS blending wells and re-start the existing ASR wells) and renewed for a 20 year duration, with an annual allocation of 149,106 MGY (408.51 MGD) and a maximum monthly allocation of 13,047 MGM to provide potable water to a projected population of 2,787,451 persons in the year 2030.

On July 16, 2012, the permit was modified to add FAS facilities and allocation, modify the calculated base condition from 347 MGD to 349.5 MGD, reduce the total allocation from the Biscayne aquifer and modify the source limits from the Alexander Orr and Southwest wellfields. There were no changes to the demand projections or permit duration.

PROJECTED WATER USE DEMANDS

The Permittee estimates a 2033 population of 2,642,929 persons with a finished water per capita use rate of 137.2 (gpcd). The per capita use rate was calculated from a three year average for 2011 through 2013 (see Exhibit 7). The raw water per capita (146 gpcd) is higher due to treatment losses. The maximum monthly peaking ratio (1.05:1) was calculated by dividing the peak raw water monthly rate by the average raw water monthly rate for the three year time period of 2011 through 2013.

PROJECTED WATER USE DEMANDS (CONTINUED)

Staff recommends an annual allocation of 140,916 MG (386.07 MGD) through the year 2033. Staff further recommends a maximum month allocation of 12,330 MG based on a maximum month to average month ratio of 1.05:1. These total allocation values are lower than shown in the previous permit due to effective water conservation programs and revised population projections. See Exhibit 8A for projected demand tables and Exhibit 9 for a step chart of raw supply and finished demand.

IMPACT EVALUATION

FAS - Hialeah Wellfield:

Impacts due to the operation of the proposed Hialeah RO Wellfield were evaluated prior to the issuance of the 2010 permit. The City of Hialeah's consultant (Schlumberger Water Services) ran the East Coast Floridan Aquifer System SEAWAT model developed for the SFWMD. The model has 14 layers representing the surficial aquifer system to the Boulder Zone and includes all or part of 7 counties. The Applicant created a local scale model in the vicinity of the Hialeah RO wellfield based on the regional model. The local model has 106 rows, 112 columns and grid spacing between 75 and 2,400 feet. The 14 model layers were maintained, however the depths of some layers were adjusted based on local field data (see Exhibit 26A). The open interval of the Hialeah RO wells is within layers 3, 4 and 5 of the model. The model was calibrated to the results of a five day aquifer performance test of well R01 Hialeah with three monitor wells. Hydraulic conductivity was 90 feet per day, storativity was 5.25 x 10-7 and the ratio of horizontal to vertical hydraulic conductivity was set to 0.1 in the model.

The Hialeah wellfield includes 14 wells (including 12 primary production wells and two backup wells) with a total pumping capacity of 23.33 MGD. Pumpage in the model was distributed among all 14 wells. Predictive simulations were run for 30 years with pumpage rates varying from 13.33 MGD to 23.33 MGD. The maximum drawdown when pumping 13.33 MGD is predicted to be 65 feet. The maximum drawdown when pumping at 23.33 MGD is predicted to be 107 feet. See Exhibit 26B and 26C for drawdown maps.

FAS - South Miami Heights:

MDWASD is proposing to use the FAS as an alternative water supply source to meet the expected demands for the planned SMH wellfield. The location of the wellfield is shown on Exhibit 3L, and the well construction details are shown on Exhibit 5. MDWASD is proposing a maximum monthly withdrawal rate of 23.3 MGD raw Floridan aquifer water, which will result in 17.5 MGD of treated water, based on 75 percent treatment efficiency. The SMH FAS Wellfield consists of 8 wells with a withdrawal rate of 3.0 MGD each for a design withdrawal capacity of 24 MGD.

To assess the impacts from the proposed withdrawals from the SMH FAS wellfield, the City developed an uncalibrated MODFLOW model consistent with Section 1.7.5.2 of the AH. A report detailing the model development and results are contained in the permit file. That report describes modeling and results for an 18 MGD SMH RO

IMPACT EVALUATION (CONTINUED)

Wellfield. Additional modeling was performed subsequent to this report with a withdrawal rate of 24 MGD from 8 wells for the SMH FAS Wellfield. Individual and cumulative drawdown maps are shown on Exhibits 26D and 26E.

The closest wellfields to SMH have existing drawdowns based on the modeled results of 44.09 feet for Florida Power and Light (FPL), and 12.18 feet for Florida Keys Aqueduct Authority (FKAA), Water Use Permit 13-00005-W. Exhibit 26F shows existing legal users in the area and Exhibit 26E shows the cumulative drawdowns for existing legal users. SMH lies just outside the one foot drawdown contour of FPL and FKAA.

Results of the model run simulating SMH only with a continuous withdrawal for 90 days at 24 MGD were analyzed for the 1 foot drawdown contour. This simulation represents the cone of depression in the Upper Floridan aquifer due to pumping of only the SMH wellfield. The MDWASD ASR facility at the SWWF lies just inside the 1 foot contour, while the MDWASD WWF ASR facility, FPL and FKAA lie outside the 1 foot drawdown contour. Drawdowns were 0.58 foot at the West wellfield (WWF) ASR, 1.28 feet for SWWF ASR, 0.54 foot at FPL, and 0.21 foot at FKAA.

Results were analyzed for the continuous withdrawal for 90 days of SMH at 24 MGD and existing legal users at their permitted allocation. Drawdowns were 0.63 foot at the WWF, 1.36 feet at the SWWF, 44.63 feet at FPL, and 12.39 feet at FKAA. Exhibit 26E shows the cumulative drawdown due to pumping at SMH and existing legal users.

The WWF and SWWF ASR facilities are designed to inject freshwater for later retrieval as part of ASR operations. In order to assess possible impact to the operation of these facilities as a result of SMH withdrawals on the ASR operation, MODPATH, a particle tracking post-processing package for MODFLOW (Pollack, 1994) was run. Particles were added directly to the south of the SWWF ASR well model cells. Simulation 5 was run for 30 years first in MODFLOW, and then MODPATH was run in order to assess particle movement. The MODPATH model run was analyzed to assess the impact of SMH and the existing legal users on the SWWF ASR system. After a run of 30 years, particles traveled 365 feet from their original position. Because the residence time of fresh water injected into the ASR wells will typically be around 6 months, the travel distance of the fresh water bubble should be substantially less than that calculated for 30 years and should not have a significant impact on the ability of the ASR wells to recover the fresh water bubble.

Biscayne Aquifer:

For the 2010 permit issuance, modeling was performed to assess impacts from the existing and proposed withdrawals on the Biscayne aquifer. The Applicant used the SFWMD Lower East Coast subRegional (LECsR) MODFLOW model, modified to meet the requirements for permit applications. The model is documented in a draft SFWMD publication dated March 2006. The model cells are 704 feet by 704 feet and

IMPACT EVALUATION (CONTINUED)

the model domain extends from the St. Lucie Canal and River in Martin County south to Biscayne Bay in Miami-Dade County. Additionally, it extends from the western boundaries of Martin, Palm Beach, Broward and Miami-Dade counties to the Atlantic Ocean. The model has daily time steps and simulates 14 years from January 1986 to September 1999.

For the 2010 permit, the model was calibrated for the time period July 1988 to March 1990. This 21 month period included three months of average rainfall conditions followed by 15 months of 1-in-10 year drought conditions and then three months of average conditions. This time period was also used for the predictive runs. The C-100, C-102, C-103, C-1, C-1 N, C-1W and L-31 canals were calibrated to flow data between water control structures. Monitor wells at each wellfield were used to check local calibration and at least three wells at each wellfield had model water levels that were within one foot of actual water levels for the 1-in-10 year drought period. Permitted users within the 0.1 foot cone of influence of each wellfield were included in the cumulative model runs submitted by the applicant. These 2010 predictive model scenarios are listed in Exhibit 23.

Effects of Shifting Base Condition Allocation from Alexander Orr to Southwest Wellfield:

Base Condition water use was established for each Biscayne aquifer wellfield, consistent with Section 3.2.1E of the AH, in the permit issued in 2007. In 2010 the permit was modified allowing the withdrawal of up to 388 MGD of groundwater from the Biscayne aquifer. This quantity of water was granted based (in part) on an evaluation of the impact of MDWASD's groundwater withdrawals on Regional Waterbodies under its Base Condition Water Use and its requested allocation. As defined by Section 3.2.1.E of the AH, Base Condition Water Use is the maximum quantity of water withdrawn during a consecutive 12-month period between 2001 and 2006. The amount of seepage from Regional Waterbodies (primarily SFWMD Canals and Everglades National Park) induced by MDWASD's groundwater pumpage under Base Conditions was evaluated with the LECsR groundwater model developed by the SFWMD. This model was also used to evaluate the impacts associated with MDWASD's projected water demands. As many of MDWASD's wells did not have flow meters, the Base Condition groundwater pumpage rates for several wellfields were estimated. Exhibit 10C shows the Base Condition groundwater pumpage rates for MDWASD's Biscayne aquifer wellfields established in 2007, as well as the Modified Base Condition resulting from subsequent modeling and a shift of base condition from this permit to the City of North Miami Beach (Water Use Permit 13-00060-W).

In compliance with Limiting Condition 17 of the 2007 permit, MDWASD began installing flow meters on all of its wells and recalibrating wells with existing flow meters. It was discovered that the actual capacity of the Alexander Orr Wellfield was on the order of 35 MGD, which is approximately 27 MGD less than that assumed for the Base Condition (62 MGD).

IMPACT EVALUATION (CONTINUED)

Limiting Condition No. 31 limited annual withdrawals from the SWWF to 85.9 MGD. However, the capacity of the SWWF is considerably higher (approximately 161 MGD). MDWASD requested to shift 20 to 30 MGD of groundwater pumpage from the Alexander Orr Wellfield to the SWWF to maximize its production capabilities at the Alexander Orr WTP.

The LECsR model was used by the Applicant's consultant to evaluate the impacts on Regional Waterbodies resulting from the proposed shift in Base Condition allocation. A technical report documenting the modeling effort and the results is contained in the permit file. The modeling compared withdrawals from the Alexander Orr and SWWF as established in the previous permit and the proposed shift in allocation from Alexander Orr wellfield to the SWWF. Several potential scenarios were modeled. For each scenario, seepage rates from all potential Regional Waterbodies were calculated using the USGS MULTIBUD program. Regional Waterbodies used in this analysis are shown on Exhibit 25E.

According to the LECsR model simulations, MDWASD's proposed shift of pumpage from the Alexander Orr Wellfield to the SWWF would result in approximately one to three MGD of additional seepage from the upper reaches of the C-2 and C-1W Canals (MULTIBUD Zones A and D) to the Biscayne aquifer, relative to the seepage that occurs under Base Conditions. Approximately 4 to 10 MGD more groundwater would discharge from the Biscayne aquifer to the lower portion of the C-2 Canal (MULTIBUD Zone B), relative to Base Conditions. In the C-1 Canal (MULTIBUD Zone E), the net additional seepage, relative to Base Conditions, is similar under all scenarios evaluated. The additional seepage that occurs in the C-100C Canal (MULTIBUD Zone L), L-31N Canal (MULTIBUD Zone M), and the C-4 Canal (MULTIBUD Zone N) is less than 0.3 MGD for all scenarios. Overall, the total simulated change in seepage, relative to Base Conditions, is a 2 to 6 MGD decrease in the seepage from the canal system to the Biscayne aquifer, relative to Base Conditions. Exhibit 25F shows the difference in net seepage on a monthly basis for the modeling scenarios. The modeling results indicate that the proposed pumping would not cause an increase in canal seepage to the Biscayne aquifer, and the implementation of any scenario would not cause additional indirect withdrawals from Regional Waterbodies.

WATER RESOURCE IMPACT EVALUATION

Water Resource Availability

Biscayne Aquifer

There are two major aquifer systems in Miami-Dade County, as discussed in the United States Geological Survey (USGS) Water Resource Investigations Report 90-4108. Overlying the FAS in Miami-Dade County is a 550- to 800-feet thick sequence consisting of sediments having relatively low permeability, referred to as the intermediate confining unit. Overlying the intermediate confining unit is the surficial aquifer system, the source of freshwater supplies for Miami-Dade County and for

most of southeast Florida. The surficial aquifer system base is -180 to -220 feet National Geodetic Vertical Datum (NGVD) and includes the Biscayne aquifer and the gray limestone aquifer. The base of the Biscayne aquifer is 80 to 100 feet below land surface (bls) at all the Miami-Dade public water supply wellfields except the Hialeah/Preston, Miami Springs and Medley wellfields, where the aquifer base is 130 to 150 feet bls.

According to USGS aquifer performance tests in the area, the transmissivity of the Biscayne aquifer is approximately 500,000 square feet per day (ft2/d) at most of the Miami-Dade wellfields. At the Northwest and West wellfields, the transmissivity is 1 million ft2/d and at Alexander Orr and Snapper Creek the transmissivity is 750,000 ft2/d.

Land surface elevations in Miami-Dade County average 5 to 10 feet NGVD, with coastal dune remnants reaching 15 to 20 feet NGVD. The approximate dry season depths to water at the wellfields are as follows:

Northwest: 6' (-1' NGVD)
Preston: 14' (-5' NGVD)
Miami Springs: 7' (-1' NGVD)
West: 3' (3' NGVD)
Southwest: 13' (-4 NGVD)
Snapper Creek: 8' (-3' NGVD)
Alexander Orr: 13.5' (-5.5' NGVD)
Naranja: 4' (2' NGVD)
Newton: 4.5' (1.5' NGVD)
Everglades: 3' (2' NGVD)
Leisure City: 4' (2' NGVD)
Elevated Tank: 6' (3' NGVD)
South Miami Heights: 6' (2' NGVD) predicted

The water levels are based on monitor well data for the north wellfields and from results of modeling data in 2030 at the Southwest, Alexander Orr and South system wellfields. In the dry season, approximately 86 feet of the Biscayne aquifer would remain saturated.

Sources of recharge to the surficial aquifer system in Miami-Dade County are: (1) infiltration of rainfall or irrigation water; (2) infiltration of surface water and groundwater imported from the water-conservation areas/Everglades National Park; (3) infiltration of urban runoff by way of drains, wells, or ponds; and (4) groundwater inflow from southwestern Broward County. Recharge by rainfall is greatest during the wet season, from June to November, and recharge by canal seepage is greatest during the dry season, from December to May. Water level data is collected from an extensive USGS monitor network (see Exhibits 29A, 29B and 30). These data indicate that groundwater flows from western Miami-Dade County towards the coast and fluctuates

approximately two feet from wet to dry season.

The Preston, Medley, and Miami Springs wellfields are adjacent to the C-6 canal upstream of the S-26 structure, which is operated to maintain a headwater elevation of 2.5 feet NGVD. The Alexander Orr and Snapper Creek wellfields are adjacent to the C-2 canal upstream of the S-22 structure, which is operated to maintain a headwater elevation of 2.9 feet NGVD. The two SMH proposed wellfields are in the vicinity of the C-1W and C-1N canals upstream of the S-21 structure, which is operated to maintain a headwater elevation of 2.0 feet NGVD in the dry season and 2.4 feet NGVD in the wet season. Monitor wells have been installed to observe the impact of new or increased pumpage near these regional canals. See Exhibits 33A and 33B for location maps and Exhibit 33C for a table of well information.

Based on historic data for existing wellfields and model results for proposed withdrawals, the potential for harm to occur to the water resource availability of the Biscayne aquifer as a result of withdrawal of the recommended allocation is considered minimal.

Upper Floridan Aquifer

The deeper aquifer system in Miami-Dade County is commonly known as the FAS and it is present in all of Florida and parts of adjacent states. USGS Water Resource Investigation (WRI 94-4010) is a study of the FAS in southeastern Florida. In Miami-Dade County, the top of the FAS occurs at about -950 to -1,000 feet NGVD. The FAS is divided into three general hydrogeologic units: (1) the Upper Floridan aquifer, which contains brackish groundwater, (2) the Middle confining unit, which contains saline groundwater, and (3) the Lower Floridan aquifer, which contains groundwater closely resembling seawater. The Upper Floridan aquifer, where Miami-Dade's ASR and RO wells are completed, is generally 500 to 600 feet thick, and its transmissivity has been measured to be as high as 31,000 ft2/d. Transmissivities for the ASR wells at the SWWF were measured ranging from 9,451 to 22,873 ft2/day. Transmissivities for the ASR wells at the WWF ranged from 10,293 to 19,650 ft2/day.

Groundwater movement in the upper Floridan aquifer is generally southward to the Gulf of Mexico and the Atlantic Ocean from recharge areas in central Florida. In southern Florida, the FAS is a confined aquifer with potentiometric head elevations of 30 to 50 feet NGVD in Miami-Dade County. There are no current water level maps of the upper Floridan aquifer available to determine actual water levels at the permittee's facilities. Special Conditions 36 and 37 require water level and chloride monitoring of one standby well at each of the upper Floridan aquifer wellfields in this permit. See Exhibit 32A and 32B for a map and table of FAS wells monitored by MDWASD. Modeling was conducted for impact assessment purposes for the previous permit. Model results predicted maximum drawdowns of 65 feet at the Hialeah RO wellfield when pumping 13.33 MGD (see Exhibit 26B). Model results for the SMH RO Wellfield predict drawdowns of 40 to 50 feet in the vicinity of the wellfield at a maximum

withdrawal rate of 24 MGD for 90 days and no recharge (Exhibits 26D and 26E).

Water levels in the upper Floridan aquifer will remain approximately 970 feet above the top of the aquifer at the location of maximum drawdown. Based on model results, the potential for harm to occur to the water resource availability of the aquifer as a result of the withdrawal of the recommended allocation is considered minimal.

Existing Legal Users

Biscayne Aquifer

An existing legal user is a water use that is authorized under an SFWMD water use permit or is existing and exempt from permit requirements (domestic uses). A map of existing public water supply permits in Miami-Dade County is shown in Exhibit 4A. Monitor data indicate that the existing withdrawals result in a maximum depth to water of 12 to 14 feet bls at the center of the Preston, Alexander Orr and Southwest wellfields. The other wellfields have depths to water of three to seven feet bls.

Modeling performed for the previous permit demonstrated that the proposed withdrawals from the various Biscayne aquifer wellfields would not cause harm to existing legal users. No increase in withdrawals from any of the Biscayne aquifer wellfields is proposed, and the Snapper Creek Wellfield allocation is reduced by 27.9 MGD (from 199.19 MGD to171.3 MGD [Exhibit 10A]).

Based on observation of historic data and the predicted impact based on model results, the withdrawals from the Biscayne aquifer are not anticipated to result in the inability of an existing legal user to withdraw water, change the quality of the water to the extent that it can no longer be used for its authorized purpose, or prevent an existing legal user from meeting its permitted demands without exceeding the permitted allocation.

Upper Floridan Aquifer

Hialeah RO wellfield:
The existing legal users of the upper Floridan aquifer in Miami-Dade County and southern Broward County are mapped on Exhibit 4B and listed on Exhibit 4C.

The nearest permitted user to the Hialeah Floridan aquifer wells is the City of Miramar, whose closest well is approximately three miles from the northernmost Hialeah RO wellfield well (see Exhibit 4B for location). Model results predict the proposed withdrawals will result in an additional decline in water level of less than 20 feet at the nearest Miramar well, which would result in water levels at or above land surface and approximately 1,000 remaining feet of available drawdown. Solute transport model results predicted an increase in the concentration of total dissolved solids (TDS) of 135 milligrams per liter (mg/L) after 20 years of pumping at a distance of 2 miles from the wellfield. The increase in TDS is considered by staff to be minimal.

WATER RESOURCE IMPACT EVALUATION (CONTINUED)

SMH RO wellfield:
The nearest existing legal users to the SMH Wellfield are the FKAA (Water Use Permit 13-0005-W) and FPL Turkey Point Power Plant. Results of the model run simulating SMH only with a continuous withdrawal for 90 days at 24 MGD were analyzed within the 1 foot drawdown contour. This simulation represents the cone of depression in the upper Floridan aquifer due to pumping of only the SMH wellfield. The MDWASD ASR facility at the SWWF lies just inside the 1 foot drawdown contour, while the MDWASD WWF ASR facility, FPL and FKAA lie outside the 1 foot drawdown contour. Exhibit 26D shows the extent of the drawdown due to pumping at SMH. Drawdown is predicted to be 0.58 foot for the WWF ASR site, 1.28 feet for SWWF ASR site, 0.54 foot for FPL, and 0.21 foot for FKAA.

In addition, results were analyzed for the continuous withdrawal for 90 days of SMH at 24 MGD and existing legal users at their permitted allocation. Drawdowns were predicted of 0.63 foot at WWF, 1.36 feet at SWWF, 44.63 feet at FPL, and at 12.39 feet at FKAA. Exhibit 26E shows the cumulative drawdown due to pumping at SMH and existing legal users.

The predicted impact on existing users, based on model results, is considered by staff to be minimal. Therefore, the proposed use of the upper Floridan aquifer is not anticipated to result in the inability of an existing legal user to withdraw water, change the quality of the water to the extent that it can no longer be used for its authorized purpose, or prevent an existing legal user from meeting its permitted demands without exceeding the permitted allocation.

Existing Off Site Land Uses

Biscayne Aquifer

Land uses that are dependent upon water being on or near land surface and that existed prior to this application are protected from harm. The surrounding land uses at each of the wellfields are as follows:

North System Wellfields:
Preston - residential north, east and west, industrial/commercial south
Miami Springs Upper - in residential neighborhood with schools and parks
Miami Springs Lower - on golf course with residential on all sides
Northwest - rock mining to north, south and east, undeveloped to west

Central System Wellfields:
Alexander Orr - residential to east and west, commercial to south, WTP to north
Snapper Creek - residential to east, west and south, commercial to north
Southwest - residential on all sides, commercial to south, rural residential/agricultural to north
West - agricultural to east, south and west, undeveloped to north

South System Wellfields:

Everglades Labor Camp - residential to east and south, agricultural to north and west
Newton - residential on all sides
Former Plant - residential on all sides and commercial to south
Roberta Hunter Park - residential on all sides

All wellfields will remain at current withdrawal rates. No problems have been reported due to historic pumping from these facilities.

Model results in the area of the proposed SMH wellfields predict less than 0.1 foot of drawdown at the nearest lakes to the east and west, respectively. There are no impacts on adjacent lakes from withdrawals at the Newton wells, which will increase by 0.5 MGD. Withdrawals at the Everglades Labor Camp wells increase by 1.5 MGD from 0.7 MGD, which results in drawdowns of about 0.1 foot at the edge of the adjacent farms.

Pursuant to 3.6.2 of the AH, the use is not expected to result in significant reduction in water levels on the property of an existing offsite land use to the extent that the designed function of a water body and related surface water management improvements are damaged (not including aesthetic values), damage to agriculture, including damage resulting from reduction in soil moisture resulting from water use, or land collapse or subsidence caused by reduction in water levels associated with water use.

Upper Floridan Aquifer

Impacts on ASR Wells
Land uses that are dependent upon water being on or near land surface and that existed prior to this application are protected from harm. The WWF and SWWF ASR facilities inject fresh Biscayne aquifer water for later retrieval as part of ASR operations. The cone of influence for the Hialeah RO wellfield does not extend to the West and Southwest ASR wells, however the proposed SMH FAS wellfield cone does (Exhibit 26E). In order to assess possible impact as a result of the SMH FAS withdrawals on the ASR operation, MODPATH, a particle tracking post-processing package for MODFLOW (Pollack, 1994) was run. Particles were added directly to the south of the SWWF ASR well model cells. Simulation 5 was run for 30 years first in MODFLOW, and then MODPATH was run in order to assess particle movement. The MODPATH model run was analyzed to assess the impact of SMH and the existing legal users on the SWWF ASR system. After a run of 30 years, particles traveled 365 feet from their original position.

Pursuant to 3.6.2 of the AH, the use is not expected to result in significant reduction in water levels on the property of an existing offsite land use to the extent that the designed function of a water body and related surface water management improvements are damaged (not including aesthetic values), damage to agriculture, including damage resulting from reduction in soil moisture resulting from water use, or

land collapse or subsidence caused by reduction in water levels associated with water use.

Migration of Saline Water

Biscayne Aquifer

Inland movement of sea water in Miami-Dade County began in the 1920's and 1930's when canals were constructed that lowered groundwater levels. In the 1940's salinity control structures were installed in the canals as far seaward as possible, which prevented unimpeded inland saltwater flow. In the 1960's other structures were installed along the canals and water levels were stepped down, which lowered water levels at the final "step" before discharging to tide. This resulted in some inland movement of saltwater. Beginning in 1976, additional water was routed to the county, raising water levels along the coast and slowing or reversing inland movement of the saltwater front. In addition, withdrawals have been reduced at coastal wellfields when western wellfields became operational.

The SFWMD operates numerous salinity control structures in Miami-Dade County. The water control levels were discussed in the Water Resource Availability section above. Additional protection for the central wellfields is provided by the construction of a water control structure located on the Ludlum Canal, south of S.W. 88th Street and east of the Alexander Orr wellfield and U.S. Highway 1, completed in May 2004, to further reduce the potential for saltwater intrusion.

Miami-Dade County has a five year cooperative agreement with the USGS to collect water level data from 117 monitoring wells, chloride data from 66 saltwater interface monitoring stations and induction logs from 33 of the wells as part of a saline water intrusion monitor network. Additionally, a total of 36 water level monitoring stations, and one saltwater intrusion monitoring well not funded by MDWASD are sampled by the USGS (See Exhibit 28B). Since 2007, 12 new saline intrusion monitor wells have been installed in the county. Water levels are monitored continuously at some stations,and monthly, every two months, quarterly, semi-annually, or annually for some others. Chloride sampling is done monthly, quarterly, or annually depending on location and induction logs are collected annually for select wells. Current monitoring facilities are listed in Exhibit 28A and are mapped on Exhibits 27A through D.

Of the 48 monitor wells sampled in Miami-Dade County, 16 are east of the 1,000 mg/l isochlor line defined in 2008, to monitor saltwater movement as opposed to being early warning wells. The saline water interface in the Biscayne aquifer, as delineated in 2008 and 2011, can be seen on Exhibit 27A through 27C. All 10 wells east of the saltwater front from the Broward County line to the C-2 Canal have been showing an increasing trend in chloride concentration, which indicates a regional cause for the movement rather than localized well withdrawals. The Permittee's nearest wellfields to the 2011 saltwater front are Miami Springs Lower (1.75 miles) and Hialeah (2.1 miles) in the north system and Alexander Orr (3.1 miles) in the central system. These wellfields are a significant distance from the saltwater front compared to the slow rate

of movement and no increases in allocation are authorized from any of the Biscayne aquifer wellfields. In addition, continued monitoring is required in this permit pursuant to Special Condition 37.

For the proposed SMH and Former Plant Wellfields, modeled drawdowns from the three MGD scenario were plotted and analyzed to determine the potential for inducing saline water intrusion. There are regional canals surrounding the wellfield that are maintained at levels to reduce the potential for saline intrusion. The model results indicate that the cone of depression does not extend to these canals (Exhibit 25D). Therefore, the proposed withdrawals will not cause further net inflow of water from the saline source toward the withdrawal points.

Pursuant to Section 3.4 of the AH, the existing and proposed use will not cause saline water intrusion because the use is not expected to cause further net inflow of groundwater from the saline water source toward the withdrawal point.

Upper Floridan Aquifer

Water in the upper Floridan aquifer in southeastern Florida is brackish with chloride and dissolved-solids concentrations generally greater than 1,000 mg/L. Salinity in the Upper Floridan aquifer usually increases with depth. The Lower Floridan aquifer contains water with a salinity similar to that of seawater. Because of the relative lack of development of the FAS in southeastern Florida, the quality of groundwater in the aquifer system is considered to have remained virtually constant during the period 1940 to 1990. USGS WRI 94-4010 mapped the base of the brackish water zone at approximately -1,800 feet bls. The Floridan aquifer wells at the Hialeah and SMH Wellfields are designed to be approximately 1,200 to 1,300 feet bls. Chloride concentrations at the Hialeah RO site are currently about 1,780 mg/l. Chloride concentrations at the proposed SMH wellfield are unknown but are assumed to be similar to the Hialeah RO Wellfield. Increases in salinity will result in an increase the treatment losses and additional withdrawals may become necessary to meet finished water demands. Special Condition 37 requires that the applicant sample for chloride concentration at the production wells to monitor for increases in concentration which could indicate upconing and affect the RO treatment efficiencies (see Exhibits 32A and 32B).

Pursuant to Section 3.4.1 of the AH, the proposed use from the upper Floridan aquifer may cause limited increases in salinity but not to the extent of interfering with presently existing legal users, otherwise harming the resource, or rendering the resource no longer usable by the Permittee.

Wetland Environments

Biscayne Aquifer

This water use modification includes only a reduction in pumpage from the Biscayne aquifer. Therefore, the wetland evaluation completed in 2007 that was conducted for

WATER RESOURCE IMPACT EVALUATION (CONTINUED)

the previous water use permit processed under Application 040511-5, which was also utilized for the previous water use permits processed under Applications 091228-14 and 110511-6, for which the authorized allocations were relatively the same for each permit, has again been utilized for this permit modification with a few minor additions as noted below.

Wetlands were identified within the area of influence of 4 of the 12 Biscayne aquifer wellfields: WWF, SWWF, Snapper Creek wellfield, and Northwest wellfield. These wetlands primarily consist of Category 2 (seasonally inundated) wetlands; however, the WWF and the Northwest wellfield also include Category 3 (temporarily flooded or saturated) which are the most susceptible to harm resulting from hydrologic changes.

To assess Biscayne aquifer withdrawal impacts on groundwater levels within the wellfields, water levels monitoring data was utilized. In addition, calibrated modeling results were also utilized where monitoring data was not available within the area of wetlands. It should be noted that although the hydrology of the wetlands is supported by the surficial aquifer system, the Biscayne aquifer is highly transmissive in the region of these wellfields.

West Wellfield:
For the WWF the modeling predicts that a maximum of 0.5-foot of drawdown could potentially occur underneath approximately 5 acres of Category 3 wetlands located within the area of influence of that wellfield (Exhibit 24A), which is limited to withdrawals of 15 MGD. In 2009, an additional water level monitor well (G-3898) with a continuous water level recorder, was installed to monitor surface water and groundwater levels within the vicinity of the Category 3 wetlands. A review of historical aerial photographs, field surveys and review of pumpage and monitor well data was conducted, which resulted in a determination that no wetland harm had previously occurred from the historic withdrawals from the Biscayne aquifer in the WWF, and no increases are authorized in this permit modification. In addition, it should be noted that withdrawals from the West wellfield are not anticipated to harm wetlands within Everglades National Park (ENP) as the boundaries of ENP are located outside of the area of influence of the modeled water use. Specifically, a "four party" agreement which includes ENP, the District, the State of Florida, and Miami-Dade County was created to provide reasonable assurance that withdrawals from the WWF will not cause harm to the hydrologic resources of ENP (see Exhibit 35A through I). The agreement requires Miami-Dade County to reduce or stop pumpage from the WWF at any time, if ENP determines that harm due to the withdrawals from WWF has occurred, as measured by an existing comprehensive monitoring network within the area.

Southwest and Snapper Creek Wellfields:
For the Southwest and Snapper Creek wellfields, a groundwater monitor well (G-3897) was installed in the southwest portion of the SWWF in 2008, within the vicinity of wetlands, as required by the previous permit processed under Application 040511-

WATER RESOURCE IMPACT EVALUATION (CONTINUED)

5. Under the previous permit processed under Application 110511-6, modeling was conducted to evaluate additional drawdowns within the Southwest wellfield that would result from shifting pumpage from the Alexander Orr wellfield to the Southwest wellfield. The modeling predicted a maximum of 0.2-foot of additional drawdown (beyond that depicted in the previous permit authorized under Application 091228-14) could potentially occur underneath the wetlands (Exhibit 25C).

Northwest Wellfield:
For the Northwest wellfield the modeling predicts that a maximum of 0.5-foot of drawdown could potentially occur underneath approximately 1,000 acres of Category 3 wetlands located within the wellfield area of influence (Exhibit 24A). The 0.5 foot drawdown contour extends approximately 2 miles out from the withdrawal facilities to the edge of the proposed Comprehensive Everglades Restoration Plan (CERP) Dade-Broward Levee/Pennsuco project component. As a result, a groundwater monitor well (G-3818) is located within the wetlands, along with other monitor wells within the vicinity, as depicted on Exhibit 29E. Wetland impacts associated with historical withdrawals in the Northwest wellfield were previously mitigated in 1999 for withdrawals up to 155 MGD. In addition to the mitigation, in 2001 the MDWASD installed two monitor wells in the Pennsuco wetlands, and a water control structure for the Northwest Wellfield Protection Canal, known as the Mid-canal structure and bridge (MCSB), in 2003, in the locations depicted on Exhibit 21. Specifically, the MCSB structure was necessary to prevent drainage of the Pennsuco wetlands, which provided the water needed to maintain water levels in the Northwest Wellfield Protection Canal. Pursuant to Special Condition 26 of the previous permit, the MCSB structure is to be opened simultaneously with the upstream structure located on the L-30 Canal to prevent drainage of the Pennsuco wetland, in accordance with the operation letter included as Exhibit 22.

In order to provide continued reasonable assurance that the wellfield withdrawals will not result in harm to wetlands located within the wellfields area of influence, the Permittee will continue the current water levels network monitoring program in accordance with Exhibits 29A through 29E and 30, and Special Condition 36.

Based upon the above-referenced evaluations and the application of the narrative standard that the hydrologic alteration of the water use shall not adversely impact the values of wetland functions so as to cause harm to the abundance, diversity and habitat of fish, wildlife and listed species, the potential for harm to occur to wetlands as a result of the authorized withdrawal of the recommended allocation is considered minimal.

Upper Floridan Aquifer

The wetlands are separated from the Upper Floridan aquifer well drawdowns by 600 feet of low permeability material. Therefore, the upper Floridan aquifer well withdrawals do not impact the wetlands.

WATER RESOURCE IMPACT EVALUATION (CONTINUED)

Sources of Pollution

Biscayne Aquifer

Hialeah/Preston/Miami Springs area:
Groundwater from the Biscayne aquifer in the vicinity of the Hialeah/Preston/Miami Springs Wellfields is polluted with low levels of volatile organic compounds (VOCs). The wellfields were shut down in 1982 as a consequence. The United States Environmental Protection Agency (USEPA) primary remedial action to clean up the aquifer was to use the wellfields to remove contaminants and provide a water treatment system that uses air stripping. As a consequence, MDWASD constructed a treatment train comprised of 64, 14-foot diameter air stripping towers along with 2 low-lift pumping stations with 9 turbine pumps and piping. Total system design capacity varies from 152 MGD to 256 MGD, depending on the level of contaminants. The USEPA paid for 41 percent of the total project costs. Use of the air stripping towers, initiated in 1992, allowed the Hialeah/Preston/Miami Springs wellfields to begin operation again. These wellfields, along with associated treatment of the groundwater by air stripping, continue to remove VOCs from the Biscayne aquifer in this area.

Northwest Wellfield area:
Groundwater in the Biscayne aquifer beneath the 58th Street Landfill and the Resource Recovery Landfill, which are located approximately 3 miles to the east of the Northwest Wellfield , has been contaminated by leachate generated from these landfills. Due in part to concerns about the potential migration of leachate from these landfills, MDWASD and SFWMD created the Northwest Wellfield Protection Canal Modification system to create and maintain a groundwater divide between the Northwest Wellfield and the landfills (Exhibits 21 and 22). Since completion of the Protection Canal in 1991, groundwater and surface water monitoring performed by Miami-Dade County Regulatory and Economic Resources (RER) have indicated that a groundwater divide has been maintained between the Northwest Wellfield and the contaminant plume. Restrictions on urban development set forth in the Comprehensive Development Master Plan also serve to keep urbanized industrial and commercial activities east of the Turnpike Extension and away from this wellfield. Furthermore, Chapter 24 of the Miami-Dade County Code (MDCC) contains a provision empowering REP to implement emergency water conservation restrictions when such measures are needed to reduce the pumpage of that wellfield and prevent migration of groundwater contamination.

RER's various wellfield protection elements serve to significantly reduce the risk of manmade groundwater contamination being transported to unpolluted portions of the Biscayne aquifer because of wellfield pumpage. Pertinent activities and provisions include the following:
- Surveillance and regulation of operations generating hazardous waste under the provisions of the Miami-Dade County Environmental Protection Ordinance (Chapter 24 of the MDCC)
- Assessments and cleanups of sites with groundwater contamination are enforced

WATER RESOURCE IMPACT EVALUATION (CONTINUED)

under the provisions of Chapter 24 MDCC, with expedited action when the site is within a wellfield protection area.
- Qualified companies are contracted with Miami-Dade County and are available when emergency cleanups are considered necessary.
- Ongoing groundwater quality monitoring is conducted using a network of monitoring wells sited for wellfield and groundwater protection (see Exhibit 30 for a table of monitor wells sampled, Exhibit 31 for sampling frequency and constituents sampled and Exhibit 29A through E for monitor locations)

The recommended allocations are consistent with Miami-Dade County wellfield protection areas and programs. Pursuant to Section 3.5 of the AH, the use is not expected to result in altering the rate or direction of movement of pollutants, if present, to cause significant degradation of surface or groundwater quality through the induced movement of pollutants into a water resource that is not polluted.

Upper Floridan Aquifer

There are no known sources of pollution reported within the Upper Floridan aquifer. Potential pollution sources located near surface are separated from the Upper Floridan Aquifer well drawdowns by 600 feet of low permeability material. Therefore, the Upper Floridan Aquifer well withdrawals are not anticipated to impact the movement of pollutants.

FACILITY OPERATION

All primary wells within each wellfield are rotated for equal use. Each wellfield or group of wellfields has limitations on annual withdrawal rates as conditioned herein. MDWASD has operational flexibility to run the wells at varying daily rates as long as the annual average limits are not exceeded. The only wellfield with daily limitations is the West wellfield, which cannot exceed 15 MGD. In addition, the Medley wells can only be operated 2 hours per month unless authorized for emergency use. Withdrawals from the Medley wells are counted towards the annual limits for the Hialeah/Preston/Miami Springs wellfield group. The maximum monthly withdrawal rate is applied to the total pumpage from all wellfields. A summary of the operation plan in 5 year increments for the Biscayne and Floridan aquifers is shown in Exhibits 10A and 10B. The operational plan for the ASR wells is shown in Exhibit 10B. Injection of up to 25 MGD of Biscayne aquifer water into the ASR wells (15 MGD at the West Wellfield and 10 MGD at the SWWF) would occur annually from June through October. Recovery of water from the ASR wells would occur annually from December through April. The permittee intends to recover almost 100 percent of the volume of injected water with withdrawals that will continue until background Floridan aquifer water quality is encountered.

ADDITIONAL INFORMATION

Regional Issues

Minimum Flows and Levels

ADDITIONAL INFORMATION (CONTINUED)

As part of the conditions for permit issuance in Chapter 373, Florida Statutes (FS), including SFWMD implementing rules, a consumptive use permit applicant must provide reasonable assurances regarding protection of Lower East Coast Everglades and MFL Water Bodies, including the Biscayne aquifer, ENP and the Water Conservation Areas (Everglades/MFL Waterbodies).

Biscayne Aquifer MFL and Prevention Strategy:
The MFLs for the Biscayne aquifer, identifying the point at which further withdrawals would cause significant harm, are set forth in Rule 40E-8.23, Florida Administrative Code (FAC). The Biscayne aquifer is in prevention as the MFL is not expected to be exceeded over the next 20 years providing the Prevention Strategy as identified in Rule 40E-8.421(4), FAC is maintained.

The Permittee has provided reasonable assurances that the proposed allocations will not cause the coastal canal stages to drop below their minimums as no increase in withdrawals from the Biscayne aquifer are proposed. The Permittee has provided reasonable assurances that the proposed allocations are consistent with the saltwater intrusion prevention criteria in 40E-2, F.A.C. and they will be maintaining an adequate saltwater monitoring network. The permit is conditioned to require the applicant to implement alternative water supply development projects. The applicant is also working with the USGS to conduct saltwater intrusion modeling. Based on these findings, the applicant has demonstrated that the proposed use is consistent with the prevention strategy.

Everglades MFL and Recovery Strategy:
The MFLs for Everglades Waterbodies, identifying the point at which further withdrawals would cause significant harm, are set forth in Rule 40E-8.221(3), F.A.C. The Everglades MFL Waterbodies are in recovery as the MFL is not met under current system conditions. The Everglades MFL Recovery Strategy is identified in Rule 40E-8.421(1) and (2), FAC.

The primary component of the MFL recovery strategy is implementation of the Everglades restoration projects, including CERP. The Everglades MFL recovery strategy also includes limitations on impacts to the MFL Waterbodies due to consumptive use permit withdrawals in Section 3.9.1 of the AH.

Section 3.9.1 of the AH requires the permit applicant to demonstrate the impact of the proposed withdrawal will be corrected through implementation of the recovery strategy, including Everglades restoration under CERP, and that the level of impacts from the proposed allocation would not exceed those authorized under the permits under review for renewal. A pumpage value higher than 347 MGD was used in the analysis to develop the recovery strategy and the Everglades water body impacts above 343.7 MGD are being offset by the Permittee. As a result, the MFL recovery plan requirements are met.

ADDITIONAL INFORMATION (CONTINUED)

Regional Water Availability

Allocation restrictions in the Lower East Coast Service Areas 1, 2 and 3, (Section 3.2.1.E of the AH) ensures that continuing and increasing consumptive use withdrawals in identified portions of Miami-Dade, Broward, and Palm Beach Counties are consistent with Everglades restoration and MFL recovery plans, including CERP. Several technical evaluations were conducted to provide reasonable assurances pursuant to Regional Water Availability Rule requirements. These evaluations, along with staff findings and recommendations under these rules, are outlined below:

Pursuant to Section 3.2.1.E of the AH, the requested allocation cannot cause a net increase in the volume or cause a change in timing on a monthly basis of the surface and groundwater withdrawn from the Lower East Coast Everglades Waterbodies over base condition water use withdrawals from such Waterbodies. For public water supplies, the base condition water use is that withdrawn over any consecutive 12 month period during the 5 years preceding April 1, 2006.

Pumpage records for the five years preceding April 1, 2006, were used to establish a base condition water use from the Biscayne aquifer, consistent with Section 3.2.1.E of the AH. It was determined that Miami-Dade County's historic Biscayne aquifer base condition water use was 352.8 MGD. Subsequent modeling performed to maximize wellfield limits and an adjustment for a transfer in base condition allocation to the City of North Miami Beach results in a Modified Base Condition of 349.5 MGD (Exhibit 10C).

Exhibit 10C lists how the historic base condition of 352.8 MGD is broken down by wellfield as well as the adjustments for the City of North Miami Beach and the modeling adjustments which result in an adjusted base condition of 349.5 MGD. Miami-Dade County will meet the remainder of the projected increase in raw water demands (36.5 MGD) from the Floridan aquifer.

In summary, Staff determined that the Alternative Water Supply (AWS) Plan submitted by MDWASD (Exhibit 13) and the reduction in Biscayne aquifer allocation to 349.5 MGD (the modified base condition) provides reasonable assurances that the proposed permit does not cause a net increase in the volume or change in timing on a monthly basis of surface and groundwater withdrawn from the Lower East Coast Everglades over that which occurred under the base condition water use.

CERP Projects:
There are several CERP projects within Miami-Dade County: Biscayne Bay Coastal Wetlands, Broward County Water Preserve Area Water Conservation Area (WCA) 3A/3B Seepage Management, C-111 Spreader Canal, and ENP Seepage Management Project (see Exhibit 34).

The goal of the Biscayne Bay Coastal Wetlands project is to restore coastal wetlands

ADDITIONAL INFORMATION (CONTINUED)

and provide more natural overland freshwater discharges to Biscayne Bay. The project consists of constructing and operating a series of pumps, culverts canal improvements and ditch infilling. The northernmost flow-way will be located near the Deering Estate, the southernmost flow-way will be located in the Cutler wetlands near the C-1 Canal, while a series of culverts and pump stations will be installed between the C-102 and C-103 Canals to re-establish sheet flow to the east of the L-31E Canal. The Cutler location is immediately north of the Miami-Dade South Wastewater Treatment Plant (SDWWTP). In the Florida Department of Environmental Protection (FDEP) Consent Order for the SDWWTP, Miami-Dade County committed to be the local sponsor for the South Miami-Dade Reuse project which will benefit the Biscayne Bay Coastal Wetlands Project by providing new water in the form of reuse to the project. MDWASD plans on providing approximately 89 MGD of wastewater to be reclaimed for this project (see Special Condition 42).

The WCA 3A/3B Seepage Management Project objective is to reduce the rate of seepage from Water Conservation Areas 3A and 3B by increasing groundwater levels by one foot in the seepage management area using water captured from storm events. Withdrawals from the Northwest wellfield were included in the analysis of the project design and no increases from the wellfield are included in this permit renewal.

The ENP Seepage Management Project includes four components: L31N (L-30) Seepage Management Pilot Project, Dade-Broward Levee, Bird Drive Recharge Area and S-356 Structure Relocation. The purpose of the L31N (L30) Seepage Management Pilot Project is to investigate technologies to manage seepage along the L-30 and L-31N canals while providing adequate wet season flows to the WWF and Biscayne Bay. The Dade/Broward Levee component includes building a new Dade/Broward levee and canal to reduce seepage losses to the east from WCA-3B and the Pennsuco wetlands. The Bird Drive Recharge Area's purpose is to recharge groundwater and reduce seepage from ENP by increasing water table elevations east of Krome Avenue.

The C-111 Spreader Canal Western Project's goal is to improve the quantity, timing, and distribution of water delivered to Florida Bay via Taylor Slough, and improve hydroperiods and hydropatterns within the Southern Glades and Model Lands. The future C-111 Spreader Canal Eastern Project is intended to increase sheetflow within the Southern Glades and Model Lands as a means of more naturally delivering water to Florida Bay. There are no MDWASD withdrawals in the vicinity of the C-111 Spreader Canal projects.

Based on best available information, it is reasonable to assume that negative impacts to CERP projects will not occur as a result of this renewal. Pursuant to Special Condition 45, if the use of water becomes inconsistent with implementation of CERP or causes harm to a CERP project, the permit shall be modified.

ADDITIONAL INFORMATION (CONTINUED)

Monitoring Plan:
The Permittee currently has a water level and water quality monitoring program conducted by the USGS and Miami-Dade RER, respectively. The water level data are used to monitor impacts of withdrawals on wetlands, existing users and the regional canal system. The water quality monitoring program determines water quality within the wellfields and identifies groundwater contaminants. The USGS also collects chloride data from a series of wells along the coast to monitor for saline water intrusion. Six existing and one proposed FAS wells are sampled monthly for chlorides and have continuous recorders for potentiometric heads. Pursuant to Special Conditions 36 and 37, MDWASD submits annual monitoring program summary reports. The annual report summarizes hydrologic and water quality conditions ascertained from the monitoring data collected. The report includes review and analysis of the data collected and recommendations regarding the monitoring network.

Water Reservations

Nearshore Central Biscayne Bay Water Reservation:
The Project is located within the portion of Miami-Dade County which covers the water reservation area for Biscayne Bay as identified in Rules 40E-10.021 and 40E10.061, FAC. The Project is withdrawing groundwater which, in accordance with Section 3.11.3 of the AH, is not considered a withdrawal of reserved water.

Project Site Issues

Legal Control and Land Use

The Permittee maintains legal control and/or has legal access to all facilities in its service area.

Existing and Proposed Service Area and Interconnects:
MDWASD supplies treated water on a volume basis to most of the municipally owned water utilities of Miami-Dade County, with the exceptions of Florida City and North Miami Beach and a portion of the water requirements of the City of North Miami. A map showing the MDWASD Service Areas is presented as Exhibit 2B. Exhibit 11 lists the Miami-Dade wholesale customers and water delivered for the years 2008 through 2014. For those municipalities that distribute the MDWASD water themselves, all have a large user agreement for the duration of this permit except the City of Hialeah. The City of Hialeah has provided a letter of intent to sign an agreement and will be required to complete the agreement within six months of permit issuance, pursuant to Special Condition 38.

The Hialeah-Preston and Alexander Orr, Jr. WTPs are connected via their distribution systems (Exhibit 2B). There is no direct, metered interconnect between the two systems, however, it is estimated that approximately 40 MGD of finished water can be transferred between the systems. The 5 existing WTPs of the South Miami-Dade Service Area currently share a 48-inch interconnection with the Alexander Orr Jr.

ADDITIONAL INFORMATION (CONTINUED)

WTP. The two proposed wellfields are to be added to the South Miami-Dade Service Area. An interconnection to the Alexander Orr Jr. WTP system is planned for the future South Miami-Dade Membrane and RO Plants. There are also emergency interconnects to adjacent utilities in the cities of North Miami, North Miami Beach and Homestead (Exhibits 12A through C).

Facilities:
Hialeah-Preston WTP: The John E. Preston WTP-Hialeah WTP has a combined rated capacity of 225 MGD. The total installed capacity for Hialeah-Preston WTPs is 235 MGD. The Hialeah and John E. Preston WTPs treatment process includes primarily lime softening, disinfection, and filtration.

Hialeah RO WTP: Phase 1 of the Hialeah RO Plant was completed in December, 2013. Of the 10 MGD produced, 5 MGD is routed to the MDWASD transmission line through a 36-inch line along NW 170 Street, and enters the MDWASD transmission pipelines via connection at 179th Street and NW 87th Ave. Five MGD is routed to the City of Hialeah transmission system, and routed through a 30-inch line from NW 166th Street, down south along NW 97th Ave, and will enter into the City of Hialeah system at NW 154th Street and NW 97th Ave. The design build-out of the Hialeah RO plant is for a capacity to treat 13.3 MGD of raw water to produce 10 MGD of finished water (Exhibit 10B).

Alexander Orr: The Alexander Orr, Jr. WTP has a rated capacity of 214.74 MGD and a total installed capacity of 256 MGD. The WTP utilizes lime softening with activated sodium silicate, recarbonation, chlorination, ammoniation, and filtration.

South Miami-Dade: The existing five wellfields in the South Miami-Dade area have a treatment facility that disinfects the raw water by chlorination. The Leisure City facility has a design flow of 6.48 MGD. The DERM-rated capacity for the Newton Water Plant, the Elevated Tank facility, the Everglades Labor Camp Water Plant, and the Naranja Water Plant are 2.01 MGD, 1.44 MGD, 0.96 MGD, and 1.38 MGD respectively. The future South Miami-Dade membrane and RO WTP initial design is with a capacity to treat 26.33 MGD of raw water (23.33 MGD FAS and 3 MGD Biscayne aquifer) and produce 19.5 MGD of finished water. The proposed South Miami Heights RO treatment plant will have a design finished water capacity of 17.5 MGD (23.3 MGD raw) by January 2020.

Water Conservation Plan

The elements of the water conservation plan are documented in Exhibit 18.

As part of the Interim Consumptive Use Agreement, the Permittee was required to develop a 20-year water conservation plan that included water reduction goals, actions and funding requirements to achieve the goals and milestone dates for implementation of the actions. The Permittee used the new goal-based Conserve

ADDITIONAL INFORMATION (CONTINUED)

Florida program developed by the FDEP in conjunction with the states five water management districts. The County's plan was developed for the region served by MDWASD as well as the 15 water utilities that receive wholesale water from MDWASD. Details of the actions, costs and timelines can be found in Exhibit 19A through E. The estimated reduction in demands over the life of the plan is shown in Exhibit 20 and the allocations have been adjusted to include the effects of the conservation program. Special Condition 17 requires implementation of the plan along with annual reporting of progress and 10-year audits to determine if water use adjustments are necessary.

Water Use Accounting

The Permittee uses flow meters to account for their water use. Pursuant to Special Condition 11, the Permittee shall equip any new facilities with a SFWMD approved water use acounting system before use. Pursuant to Special Condition 12, the Permittee shall recalibrate each water use accounting system every five years from the last calibration date for the duration of the water use permit and submit a record of the calibration to the SFWMD. The Permittee is advised to review Exhibit 36 for the next calibration due dates.

Permit Reporting Requirements

This water use permit has numerous reporting requirements listed as Special Conditions. The Permittee is advised to read the Special Conditions and understand the data submital requirements and frequencies to the SFWMD.

Potential Use of Reclaimed Water

Alternative Water Supplies:
The proposed permit requires the implementation of approximately 145 MGD of alternative water supplies during the next 10 years. These sources include the Floridan aquifer water to be treated with RO to produce 27.5 MGD of finished water (Exhibit 13), and reuse of at least 117.5 MGD of highly treated wastewater to reduce ocean discharges and offset Everglades impacts and for other beneficial uses. In addition, approximately 16.45 MGD of reclaimed water is currently being reused for industrial and irrigation projects (Exhibit 14).

In addition, this permit allows, under extreme wet conditions, the Permittee to request to store excess stormwater within the Floridan aquifer ASR wells. Excess stormwater is that deemed not required to achieve the restoration benefits to the Everglades Waterbodies pursuant to the CERP and the Acceler8 program. Available stormwater will be identified pursuant to Section 3.2.1.E.(5)(e) of the AH.

Use of Reclaimed Water:
Staff evaluated whether the Permittee's proposed use of water is consistent with the public interest and is reasonable-beneficial. In determining consistency with the public

ADDITIONAL INFORMATION (CONTINUED)

interest, Staff recognized the need to promote the availability of sufficient water for existing uses, future reasonable-beneficial public water supply uses, and natural systems.

The Permittee's withdrawal and use of water for public water supply impacts water supplies in the Greater Everglades, the Biscayne aquifer, and Biscayne Bay, through interception of seepage and surface water discharges. Once the water is distributed and used by the customer, it is treated and disposed of via deep well injection or ocean outfall. During the 12 month period ending in November 2014, the average daily rate of disposal for water used by MDWASD was 315 MGD (145 MGD disposed via deep well and 170 MGD disposal via ocean outfall), which nearly equals the volume of raw fresh water withdrawn from the Biscayne aquifer. By 2033, the wastewater flow is estimated to be 355 MGD.

The use of water from the Biscayne aquifer only once (especially withdrawn from sources recharged by the Everglades system) is considered inefficient under the reasonable-beneficial use test and inconsistent with the public interest, under Section 373.223, FS. In addition, the State Water Resource Implementation Rule (Rule 62-40, FAC) and District consumptive use rules require that reclaimed water be used when technically, environmentally and economically feasible.

To resolve this issue and other permit requirements, working with MDWASD, a series of alternative sources have been identified to meet the County's future needs, while increasing the use of reclaimed water. Alternative sources include the development of Floridan wells, implementation of a strong conservation program developed using the Conserve Florida Guide (a joint initiative of FDEP, the water managment districts, and others), and the high level treatment and disinfection of wastewater for reuse including aquifer recharge. Design of the West WRP is ongoing, while on hold for the Central and North plants pending evaluation of reuse options for the ocean outfall legislation (see discussion below).

Additional filtration and high level disinfection requirements for wastewater treatment has been required at the South District WTP recently imposed by the FDEP and USEPA and will result in a significant increase in the amount of reclaimed water that will be made available for reuse (for some applications, additional treatment may be required). Additionally. Chapter 2008-232, Laws of Florida, requires sixty percent of water previously discharged out the existing North and Central WWTP ocean outfalls (117.5 MGD) to be beneficially reused by 2025.

Typically, reclaimed water is treated to levels sufficient for irrigation of public access areas such as golf courses and other landscaped areas pursuant to Part III of Chapter 62-610, FAC. See Exhibit 15 for a map of public access reuse lines. For some applications of reclaimed water proposed by the permittee it will be necessary to treat wastewater to levels beyond the public access irrigation level of treatment. Each level

ADDITIONAL INFORMATION (CONTINUED)

of treatment will be determined based on the requirements of the USEPA, FDEP and any applicable County requirements.

In order to meet the reasonable-beneficial use and public interest tests, the Permittee is proposing to implement at least 117.5 MGD of reuse projects by the end of the year 2025 that return fresh water to the hydrologic cycle in a manner that provides for beneficial use. See Exhibit 14 for a list of the reuse projects. These projects include the potential use of reclaimed water to recharge the FAS and the use of up to 90 MGD of highly treated reclaimed water for cooling for the FPL nuclear and gas powered plants at Turkey Point beginning in 2022. This 117.5 MGD meets the minimum requirement of the ocean outfall legislation. In addition, 16.45 MGD of existing reuse projects serve industrial and irrigation users (See Exhibit 14).

In addition, pursuant to Special Condition 42, requires MDWASD, in consultation with the District, the FDEP, and Biscayne Bay National Park, to come to an agreement on a rehydration project for the Biscayne Bay Coastal Wetlands project on or before April 15, 2015. In the event the parties do not reach agreement on the feasibility by April 15, 2015, the Permittee shall begin development of an alternate reuse project from the South District WWTP and shall provide the District with a proposal for an alternate project including a conceptual design and schedule for implementation on or before March 15, 2016.

Based on the above, the Permit includes detailed Special Conditions (Special condition 39) requiring completion of feasibility pilot tests and implementation of projects for the purpose of assuring that the County's use of water is reasonable-beneficial and in the public interest. If any of the identified reuse projects are determined to be infeasible, the Permittee shall timely propose and implement SFWMD approved alternatives that return freshwater to the system for meeting future reasonable-beneficial uses that are consistent with the public interest.

In addition, Section 2.2.4.A of the AH requires utilities that control WTPs that have determined the use of reclaimed water is feasible in accordance with Section 403.064, FS, to provide the SFWMD with: a) the reuse feasibility study, b) the schedule for implementation of reuse, c) documentation of the amounts of uncommitted reclaimed water, and d) information regarding any local ordinances concerning the use of reclaimed water. This information, which is to be updated annually, is used by the District to assist in the implementation of the utility's reuse plan by directing other water users to the utility's reclaimed supplies. Per Special Condition 39, the Permittee shall provide annual updates regarding the County's reuse feasibility plan implementation.

Furthermore, staff recommends that Miami-Dade County continue to pursue grants, loans and other publicly funded sources of money to assist with local implementation of reclaimed water projects considered in the public interest. Such money sources may include the SFWMD's Alternative Water Supply Funding Program, other state funding

ADDITIONAL INFORMATION (CONTINUED)

appropriations and CERP federal cooperative funding. However, failure to secure funding from any or all such external sources does not relieve the County of responsibility for compliance with all permit conditions.

Permit Duration

Pursuant to Section 1.5.2, AH, the Biscayne aquifer is a source of limited availability to the extent that withdrawals result in induced seepage from the Central and Southern Florida Project. The adjusted base condition water use (349.5 MGD), reflects the demand of the population existing at the time of permit renewal and thus may be authorized for 20 years. As a result, the permit duration for such increase may be up to 20 years.

The Floridan aquifer is not a source of limited availability and therefore the permit duration may be up to 20 years for this source, pursuant to Section 1.5.2, AH.

Staff recommends a water use permit duration of 20 years as conditioned herein.

ENVIRONMENTAL RESOURCE PERMIT STATUS:

Not Applicable

RIGHT OF WAY PERMIT STATUS:

Not Applicable

RECOMMENDATIONS

Project Name: MIAMI-DADE CONSOLIDATED PWS

Application Number: 140627-12

Permit Number: 13-00017-W

RECOMMENDATION

Authorizing: The continued use of groundwater from the Upper Floridan aquifer and Biscayne aquifer for Public water supply for the MDWASD Service Area serving 2,642,929 persons in the year 2033 with an average finished water per capita use rate of 137.2 gallons per day per person and a maximum monthly to average monthly pumping ration of 1.05:1 with an annual allocation of 140,915.50 million gallons.

STAFF EVALUATION

REVIEWER:

Trisha Stone, NRM

John A. Lockwood, P.G., WU

SUPERVISOR:

Barbara J. Conmy, NRM

Jonathan E. Shaw, P.G., WU

CONSULTING HYDROGEOLOGIST:

Simon Sunderland, P.G. **Date:** February 3, 2015

WATER USE BUREAU CHIEF:

Maria C. Clemente, P.E. **Date:** 2/4/15

SPECIAL PERMIT CONDITIONS

1. This permit is issued to:
   MIAMI-DADE WATER AND SEWER DEPARTMENT
   P O BOX 330316
   MIAMI, FL 33233-0316

2. This permit shall expire on February 9, 2035.

3. Use classification is:

   Public Water Supply
   Aquifer Storage And Recovery

4. Source classification is:

   Groundwater from:
   Biscayne Aquifer
   Upper Floridan Aquifer

5. Allocation:

   Total annual allocation is 140,915.50 million gallons (MG). (386.07 MGD)

   Total maximum monthly allocation is 12,330.11 million gallons (MG).

   Allocation from a specific source (aquifer, waterbody, facility, or facility group):

   Maximum annual allocation from Upper Floridan Aquifer shall not exceed 13,348.05 million gallons (MG). (36.60 MGD).

   Maximum annual allocation from Biscayne Aquifer shall not exceed 127,567.50 million gallons (MG). (349.50 MGD).

   Maximum monthly allocation from Upper Floridan Aquifer shall not exceed 1,167.95 million gallons (MG).

   Maximum monthly allocation from Biscayne Aquifer shall not exceed 11,162.16 million gallons (MG).

   These allocations represent the amount of water required to meet the water demands as a result of a rainfall deficit during a drought with the probability of recurring one year in ten. The Permittee shall not exceed these allocations in hydrologic conditions less than a 1-in-10 year drought event. Compliance with the annual allocation is based on the quantity withdrawn over a 12-month time period. Compliance with the maximum

monthly allocation is based on the greatest quantity withdrawn in any single month. The annual allocation expressed in GPD or MGD is for informational purposes only.

If the rainfall deficit is more severe than that expected to recur once every ten years, the withdrawals shall not exceed that amount necessary to continue to meet the reasonable-beneficial demands under such conditions, provided no harm to the water resources occur and:

1. All other conditions of the permit are met; and

2. The withdrawal is otherwise consistent with applicable declared Water Shortage Orders in effect pursuant to Chapter 40E-21, F.A.C.

6. Withdrawal facilities:

Groundwater - Proposed:

1 - 24" X 50' X 2800 GPM Well Cased To 45 Feet
7 - 24" X 1200' X 2430 GPM Wells Cased To 1100 Feet
1 - 24" X 50' X 1400 GPM Well Cased To 45 Feet
3 - 24" X 72' X 1400 GPM Wells Cased To 45 Feet
8 - 17" X 1490' X 1400 GPM Wells Cased To 1080 Feet

Groundwater - Existing:

2 - 24" X 100' X 7500 GPM Wells Cased To 50 Feet
3 - 48" X 88' X 7500 GPM Wells Cased To 33 Feet
5 - 17" X 1490' X 1400 GPM Wells Cased To 1080 Feet
1 - 4" X 74' X 0 GPM Well Cased To 63.5 Feet
1 - 18" X 65' X 1500 GPM Well Cased To 50 Feet
20 - 14" X 115' X 2500 GPM Wells Cased To 80 Feet
4 - 24" X 100' X 4900 GPM Wells Cased To 35 Feet
10 - 48" X 80' X 10420 GPM Wells Cased To 46 Feet
1 - 12" X 40' X 800 GPM Well Cased To 35 Feet
1 - 42" X 68' X 10000 GPM Well Cased To 54 Feet
1 - 6" X 30' X 400 GPM Well Cased To 25 Feet
1 - 16" X 50' X 1600 GPM Well Cased To 40 Feet
1 - 30" X 115' X 4170 GPM Well Cased To 80 Feet
1 - 18" X 66' X 1500 GPM Well Cased To 53 Feet
1 - 14" X 115' X 3800 GPM Well Cased To 80 Feet
1 - 30" X 1250' X 3500 GPM Well Cased To 845 Feet
6 - 42" X 107' X 7000 GPM Wells Cased To 66 Feet
1 - 24" X 70' X 3470 GPM Well Cased To 35 Feet
7 - 16" X 100' X 4170 GPM Wells Cased To 40 Feet

SPECIAL PERMIT CONDITIONS

2 - 24" X 70' X 6945 GPM Wells Cased To 35 Feet
1 - 42" X 68' X 8500 GPM Well Cased To 60 Feet
1 - 17" X 1490' X 1400 GPM Well Cased To 1150 Feet
4 - 40" X 100' X 10420 GPM Wells Cased To 57 Feet
1 - 30" X 1210' X 3500 GPM Well Cased To 835 Feet
1 - 42" X 68' X 8500 GPM Well Cased To 54 Feet
1 - 18" X 55' X 1500 GPM Well Cased To 45 Feet
1 - 42" X 107' X 7000 GPM Well Cased To 69 Feet
4 - 24" X 108' X 8300 GPM Wells Cased To 50 Feet
2 - 12" X 40' X 1600 GPM Wells Cased To 35 Feet
4 - 24" X 104' X 6940 GPM Wells Cased To 54 Feet
1 - 12" X 35' X 1200 GPM Well Cased To 30 Feet
1 - 48" X 80' X 10416.67 GPM Well Cased To 46 Feet
1 - 12" X 35' X 800 GPM Well Cased To 30 Feet
1 - 30" X 115' X 2500 GPM Well Cased To 80 Feet
1 - 42" X 68' X 10000 GPM Well Cased To 60 Feet
1 - 18" X 55' X 1500 GPM Well Cased To 42 Feet
6 - 20" X 100' X 4900 GPM Wells Cased To 40 Feet
1 - 16" X 100' X 7500 GPM Well Cased To 40 Feet
1 - 18" X 50' X 500 GPM Well Cased To 40 Feet
1 - 30" X 1200' X 3500 GPM Well Cased To 765 Feet
1 - " X 60' X 0 GPM Well Cased To 55 Feet
1 - 30" X 1300' X 3500 GPM Well Cased To 850 Feet
1 - 30" X 1200' X 3500 GPM Well Cased To 760 Feet

7. The Permittee shall submit all data as required by the implementation schedule for each of the permit conditions to: SFWMD at www.sfwmd.gov/ePermitting, or Regulatory Support, MSC 9611, P.O. Box 24680, West Palm Beach, FL 33416-4680.

8. The Permittee must submit the appropriate application form incorporated by reference in Rule 40E-2.101, F.A.C., to the District prior to the permit expiration date in order to continue the use of water.

9. The Permittee shall secure a well construction permit prior to construction, repair, or abandonment of all wells, as described in Chapter 40E-3, F.A.C.

10. Permittees, who are dependent on other sources of water supply such as reclaimed water or water sale agreements to meet a portion of their demands, shall include the monthly volumes from all other sources in the report to the District, unless the use of those sources is reported to another state agency, in which case the District will obtain the water use information from said agency. The water accounting method and means of calibration shall be stated on each report.

SPECIAL PERMIT CONDITIONS

11. Prior to any withdrawals at the project, the Permittee shall provide the results of the calibration testing of the identified water accounting method(s) and equip all existing and proposed withdrawal facilities with approved water use accounting method(s) pursuant to Subsection 4.1.1 of the Applicant's Handbook for Water Use Permit Applications.

12. Every five years from the date of last calibration, the Permittee shall submit re-calibration data for each withdrawal facility.

13. Monthly withdrawals for each withdrawal facility shall be reported to the District semi-annually. The water accounting method and means of calibration shall be stated on each report.

14. The Permittee shall notify the District within 30 days of any change in service area boundary that results in a change in demand that affects its permitted allocation. The allocation shall be modified to effectuate such change.

15. 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 Chapter 40E-3, F.A.C.

16. The Permittee shall maintain an accurate flow meter at the intake of the water treatment plant for the purpose of measuring daily inflow of water.

    Permittee shall maintain a calibrated flow meter(s) at the intake (raw water) and discharge (treated water) points within the Hialeah/Preston, Alexander Orr, and proposed Hialeah RO and South Miami Heights water treatment plants for the purpose of measuring treatment losses and shall submit monthly data semi-annually as required pursuant to Special Condition 13.

17. The Standard Water Conservation Plan described in Subsection 2.3.2.F.1.a of the Applicant's Handbook for Water Use Permit Applications within the South Florida Water Management District and the Staff Report, must be implemented in accordance with the approved implementation schedule described in the following exhibit:

    The Water Conservation Plan is contained in Exhibit 18. The permittee shall submit an annual report covering water conservation activities during the prior calendar year by April 15 of each year describing water conservation activities for the year including expenditures, projects undertaken and estimated water savings.

18. The Permittee shall notify the District within 30 days of entering into an inter-local

agreement, contract, or other similar instrument to deliver or receive water outside of its service area or to serve a demand not identified to determine the allocation described in this permit. A copy of such agreement shall be provided to the District. The monthly volume of water delivered and/or received via each inter-local agreement, contract, or other similar instrument shall be submitted to the District at the same reporting frequency as the withdrawals for each withdrawal facility required in this permit.

19. The Permittee shall implement the wellfield operating plan submitted in support of the permit application, as described in the District staff report.
See Exhibit 10

20. The 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. Reports shall be submitted to the District on a yearly basis and are due by April 30th of each year.

    In the event that the annual unaccounted-for distribution system losses, as defined by Section 2.3.2.F.2.c, of the Applicants Handbook for Water Use Permit Applications [AH], exceeds 10 percent, the permittee shall include in the annual report a description of additional actions which will be implemented the following year(s) to reduce the losses to less than ten percent.

21. 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.

22. The Permittee shall maintain an accurate flow meter at the point of discharge from the treatment plant for the purpose of measuring the daily flow of water.

    Permittee shall maintain a calibrated flow meter(s) at the intake (raw water) and discharge (treated water) points within the Hialeah/Preston, Alexander Orr, and proposed Hialeah RO and South Miami Heights water treatment plants for the purpose of measuring treatment losses and shall submit monthly data semi-annually as required pursuant to Special Condition 13.

23. Pursuant to Section 373.236(4), F.S., every ten years from the date of permit issuance, the Permittee shall submit a water use compliance report for review and approval by District Staff to SFWMD at www.sfwmd.gov/ePermitting, or Regulatory Support, MSC

9611, P.O. Box 24680, West Palm Beach, FL 33416-4680.
(A) 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.

(B) 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.

3. Summary of the current and previous nine years progress reports for implementation of the Alternative Water Supply Plan and any modifications necessary to continue to meet the Plan requirements and conditions for issuance.

4. Information demonstrating that the conditions for issuance of the permit are being complied with, pursuant to Special Condition 45 and Section 373.236, F.S.

5. Updates or amendments to the County's reuse plan.

24. The Permittee shall provide annual status reports to the District that summarizes the Aquifer Storage and Recovery cycle testing activities. Reports shall be submitted to the District on a yearly basis and are due by April 30th of each year.

25. The Permittee shall submit to the District an updated "Summary of Groundwater (Well) Facilities" table ("Section IV - Sources of Water", Water Use Permit Application Form 1379) within 90 days 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.

26. The permittee shall operate surface water control structure known as the Mid-canal structure and bridge in accordance with the approved operational plan included in Exhibit 22. In addition, whenever this structure is opened for the purpose of raising water in the Wellfield Protection Canal down stream of the structure, the upstream structure that delivers water from the L-30 canal shall be opened in a manner to

deliver equal volumes to those passed through the Mid-canal structure and bridge. The permittee shall submit operation and flow data logs regarding both structures to the District semi-annually.

27. The Permittee is authorized to exercise the emergency wells at the Medley Wellfield for a total of two hours per month as needed for bacterial clearance and pump maintenance. Operation of the emergency wells at the Medley Wellfield for more than this amount shall require prior approval from SFWMD. Pumpage data shall be collected and report in accordance with Special Condition 13.

28. No more than 15 MGD shall be withdrawn from the West Biscayne aquifer Wellfield on any given day.

29. No more than 25,550 MGY shall be withdrawn during any 12 month consecutive period from the combined Hialeah, Preston, Medley and Miami Springs Biscayne aquifer wellfields.

30. No more than 7,993 MGY shall be withdrawn during any 12 month consecutive period from the Snapper Creek Wellfield.

31. No more than 39,931 MGY shall be withdrawn during any 12 month consecutive period from the Southwest Biscayne aquifer Wellfield.

32. No more than 67,999 MGY shall be withdrawn during any 12 month consecutive period from the combined West, Southwest Snapper Creek and Alexander Orr Biscayne aquifer wellfields.

33. No more than 1,095 MGY shall be withdrawn during any 12 month consecutive period from the South Miami Heights Wellfield.

34. No more than 1,752 MGY shall be withdrawn during any 12 month consecutive period from the combined Everglades Labor Camp and Newton wellfields.

35. No more than 1,571 MGY shall be withdrawn during any 12 month consecutive period from the combined Elevated Tank, Leisure City and Naranja wellfields.

36. The Permittee shall continue to submit monitoring data in accordance with the approved water level monitoring program for this project. The existing monitoring program is described in Exhibits 30 and 32B.

37. The Permittee shall continue to submit monitoring data in accordance with the

approved saline water intrusion monitoring program for this project.
See exhibits 28A and 32B for a list of monitor wells and required sampling schedule.

The permittee shall submit annual Monitoring Program summary reports. The annual report will summarize the status of the project to update the salt front and install new monitor wells.

38. Within six months of permit issuance, an executed large user water agreement with the City of Hialeah shall be submitted to the District. In the event that the final agreement is for volumes less than those used in the formulation of the allocations in this permit, the allocations shall be reduced through a letter modification.

39. The permittee shall update the District on the status of reuse projects in Exhibit 14 on an annual basis.

40. The permittee will develop alternative water supplies in accordance with the schedules described in Exhibit 13.

The permittee will provide annual updates of the status of all alternative water supply projects (per the timeframes contained in Special Condition 44). The status report shall include work completed to date, expenditures and any anticipated changes in the timelines.

41. In the event that a milestone specified in the alternative water supply schedule and plan contained in Exhibit 13 is going to be missed, the permittee shall notify the Executive Director of the District in writing explaining the nature of the delay, actions taken to bring the project back on schedule and an assessment of the impact the delay would have on the rates of withdrawals from the Everglades water bodies and associated canals as defined in SFWMD consumptive use permitting rules. The District will evaluate the situation and take actions as appropriate which could include: a.) granting an extension of time to complete, the project (if the delay is minor and doesn't affect the Everglades Waterbodies or otherwise violates permit conditions), b.) take enforcement actions including consent orders and penalties, c.) modify allocations contained in this permit from the Biscayne aquifer including capping withdrawal rates until the alternative water supply project(s) are completed (in cases where the delay would result in violations of permit conditions) or d.) working with the Department of Community Affairs to limit increase demands for water until the alternative water supply project is completed.

42. For rehydration of Biscayne Coastal Wetlands, in consultation with the District, the FDEP and Biscayne Bay National Park, upon completion of the pilot testing program, the parties shall agree on the water quality treatment required and the feasibility, as

defined in Section 2.2.4 of the Applicants Handbook for Water Use Permit Applications, of this project on or before April 15, 2015. Extension of this deadline may be issued in writing by the District upon demonstration of good cause such as events beyond the control of the permittee or after consideration of the results/data collected, the District determines that additional testing is necessary. In determining the water quality needed, the parties will consider State and Federal water quality discharge standards, the volume and timing of water to be delivered to Biscayne Bay and the location of delivery. In the event the parties do not reach agreement on the feasibility by April 15, 2015, the Permittee shall begin development of an alternate reuse project from the South District wastewater facility and shall provide the District with a proposal for an alternate project including a conceptual design and schedule for implementation on or before March 15, 2016.

43. The permittee may request temporary authorization from the District to capture and store stormwater via withdrawals from the permitted Biscayne aquifer production wells, for storage within the Floridan aquifer system consistent with their FDEP issued Underground Injection Control permits.The District will consider the availability of stormwater that is not otherwise needed for environmental protection or enhancement and is in no way bound to authorize such requests. All such requests shall be made in writing to the Director of Water Use Regulation.

44. All annual reports required in these Special Conditions shall address activities that occurred during a calendar year and shall be submitted to Water Use Compliance on or before April 15th of the following year.

45. If it is determined that the conditions for permit issuance are no longer met for the 20 year permit duration, the permittee shall obtain a modification of the Permit from the District as necessary to come into compliance with the conditions for permit issuance. Such conditions for permit issuance include minimum flows and levels, water reservations, and other conditions ensuring the use does not cause water resource harm and is consistent with the objectives of the District, including implementation of the Comprehensive Everglades Restoration Plan.

46. The permittee shall operate the West Wellfield in accordance with the Memorandum of Understanding between the U.S. Department of the Interior, the Governor of the State of Florida, Miami Dade County and the District incorporated in Exhibit 35.

STANDARD PERMIT CONDITIONS

1. All water uses authorized by this permit shall be implemented as conditioned by this permit, including any documents incorporated by reference in a permit condition. The District may revoke this permit, in whole or in part, or take enforcement action, pursuant to Section 373.136 or 373.243, F.S., unless a permit modification has been obtained to address the noncompliance.

   The Permittee shall immediately notify the District in writing of any previously submitted material information that is later discovered to be inaccurate.

2. 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.

3. The Permittee shall notify the District in writing within 30 days of any sale, transfer, or conveyance of ownership or any other loss of permitted legal control of the Project and/or related facilities from which the permitted consumptive use is made. Where Permittee's control of the land subject to the permit was demonstrated through a lease, the Permittee must either submit a new or modified lease showing that it continues to have legal control or documentation showing a transfer in control of the permitted system/project to the new landowner or new lessee. All transfers of ownership are subject to the requirements of Rule 40E-1.6107, F.A.C. Alternatively, the Permittee may surrender the consumptive use permit to the District, thereby relinquishing the right to conduct any activities under the permit.

4. Nothing in this permit should be construed to limit the authority of the District to declare a water shortage and issue orders pursuant to Chapter 373, F.S. In the event of a declared water shortage, the Permittee must adhere to the water shortage restrictions, as specified by the District. The Permittee is advised that during a water shortage, reports shall be submitted as required by District rule or order. The Permittee is advised that during a water shortage, pumpage, water levels, and water quality data shall be collected and submitted as required by District orders issued pursuant to Chapter 40E-21, F.A.C.

5. This permit does not convey to the Permittee any property rights or privileges other than those specified herein, nor relieve the permittee from complying with any applicable local government, state, or federal law, rule, or ordinance.

6. With advance notice to the Permittee, District staff with proper identification shall have permission to enter, inspect, observe, collect samples, and take measurements of permitted facilities to determine compliance with the permit conditions and permitted plans and specifications. The Permittee shall either accompany District staff onto the property or make provision for access onto the property.

7. A. The Permittee may seek modification of any term of an unexpired permit. The Permittee is advised that Section 373.239, F.S., and Rule 40E-2.331, F.A.C., are applicable to permit modifications.

   B. The Permittee shall notify the District in writing 30 days prior to any changes to the project that could potentially alter the reasonable demand reflected in the permitted allocation. Such changes include, but are not limited to, change in irrigated acreage, crop type, irrigation system, large users agreements, or water treatment method. Permittee will be required to apply for a modification of the permit for any changes in permitted allocation.

8. If any condition of the permit is violated, the permit shall be subject to review and modification, enforcement action, or revocation pursuant to Chapter 373, F.S.

9. The 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:

   A. 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

   B. 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.

10. The 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

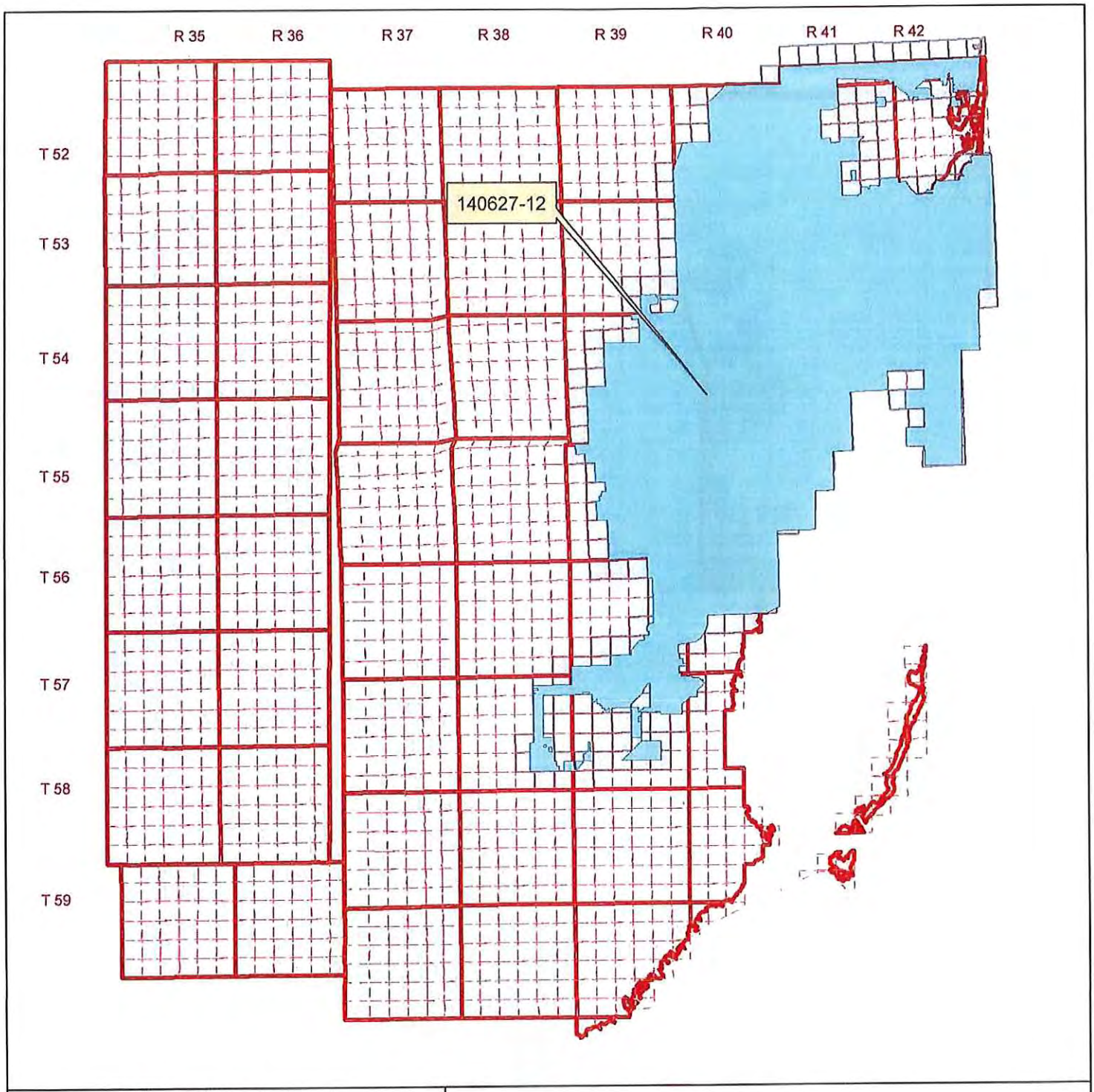
E. Harm to the natural system including damage to habitat for rare or endangered species.

11. The 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 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.)

    B. Damage to agriculture, including damage resulting from reduction in soil moisture resulting from consumptive use; or,

    C. Land collapse or subsidence caused by reduction in water levels associated with consumptive use.



MIAMI-DADE COUNTY, FLORIDA

N

Application No: 140627-12

Map Date: 2015-01-16

Permit No: 13-00017-W

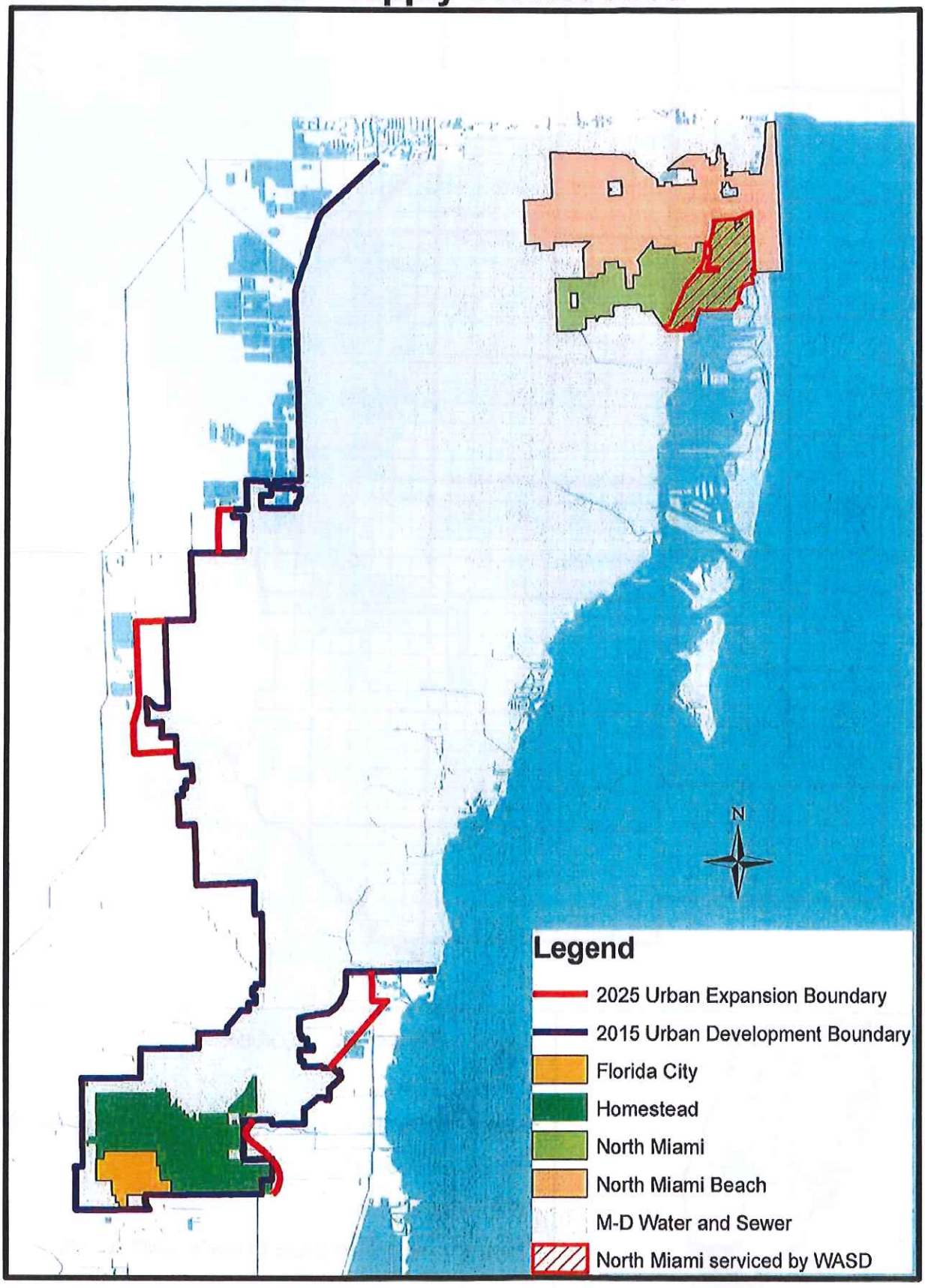
Sec - / Twp 53 / Rge 39

Project Name: MIAMI-DADE CONSOLIDATED PWS

0 5 10 Miles

Exhibit No: 1

Miami-Dade County Water and Sewer Department
Water Supply Service Area



MIAMI-DADE COUNTY

0 2.5 5 10 15 20 Miles

Exhibit 2A

Miami-Dade Water and Sewer Department
Water Transmission System

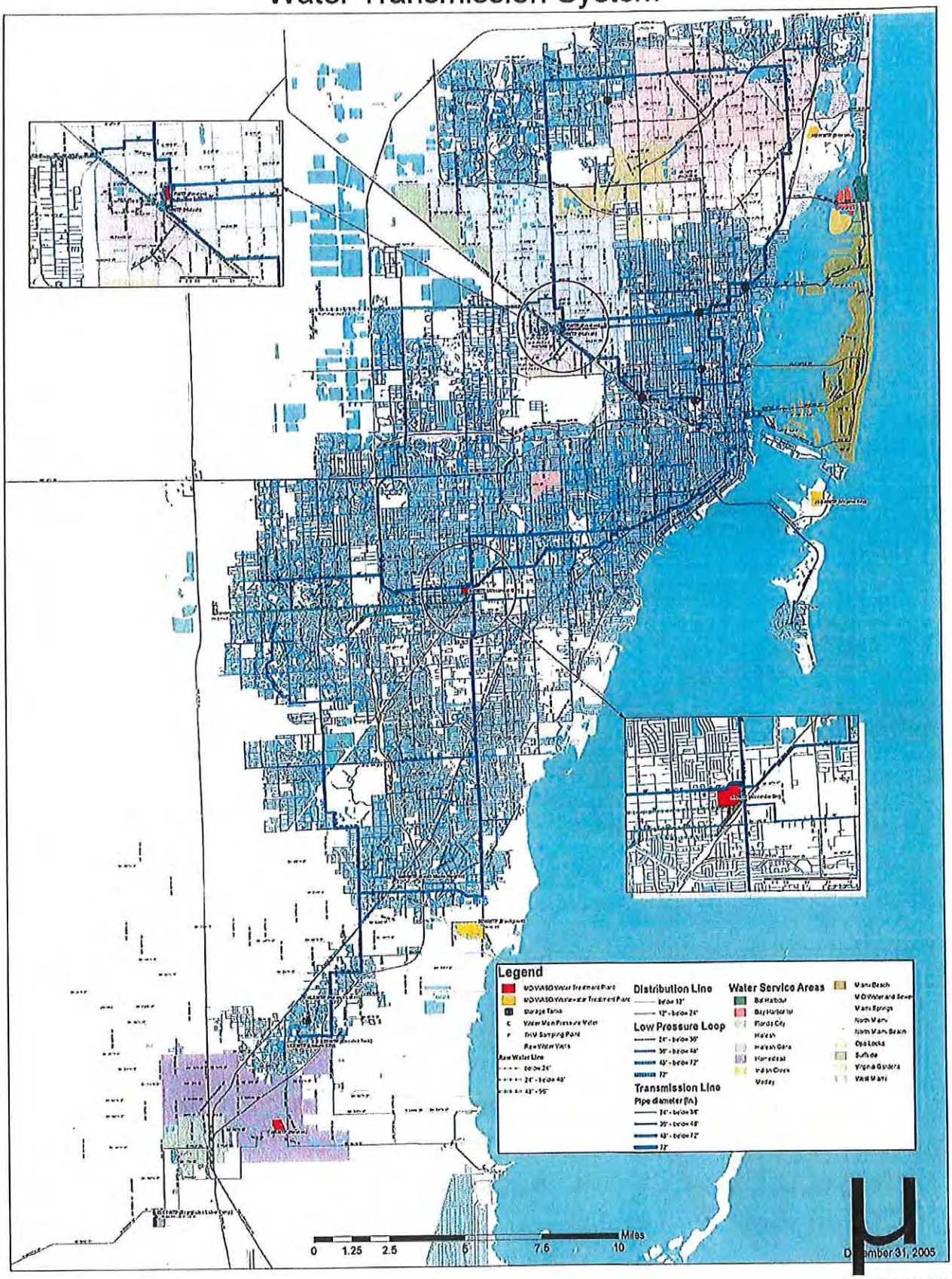
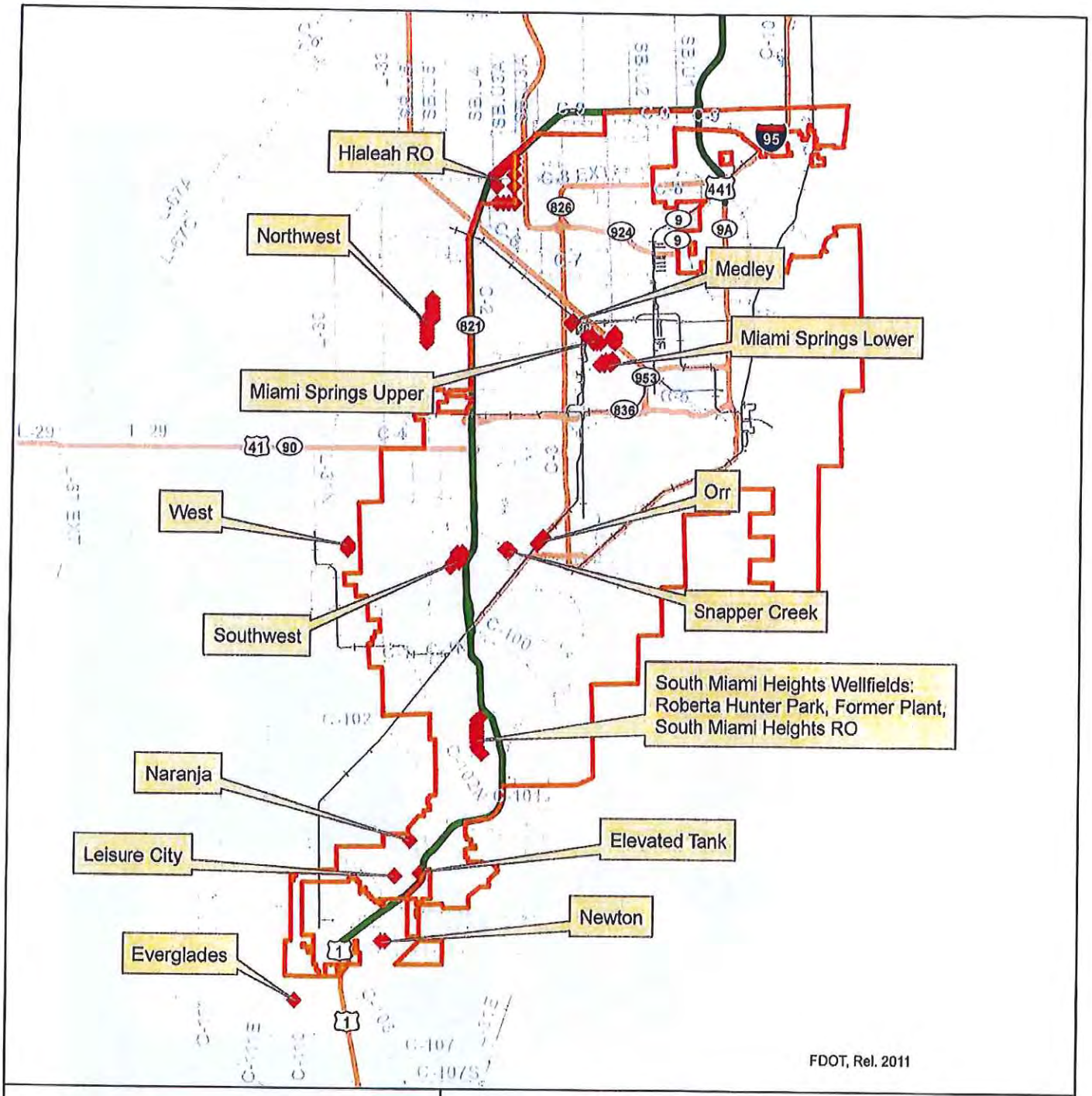
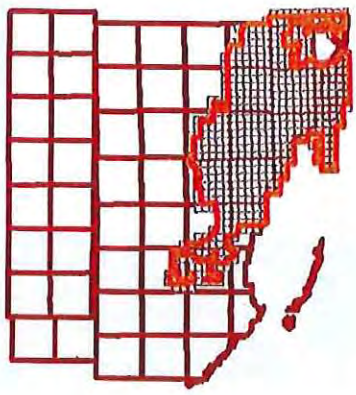


EXHIBIT 2B





MIAMI-DADE COUNTY, FLORIDA

Application

WELL

N

Map Date: 2012-06-13

Application Number: 140627-12

Permit Number: 13-00017-W

Sec - / Twp 53 / Rge 39

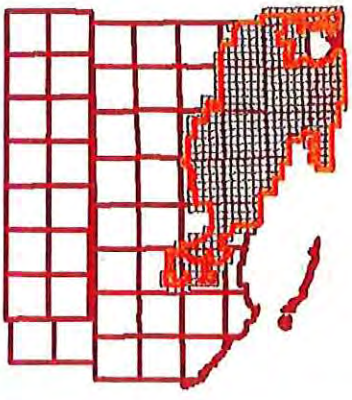
Project Name: MIAMI-DADE CONSOLIDATED P W S

WELLFIELD LOCATIONS

0 37,000 74,000

Feet

Exhibit No: 3A



MIAMI-DADE COUNTY, FLORIDA

N

Application

WELL

Map Date: 2012-04-06

Application Number: 140627-12

Permit Number: 13-00017-W

Sec - / Twp 53 / Rge 39

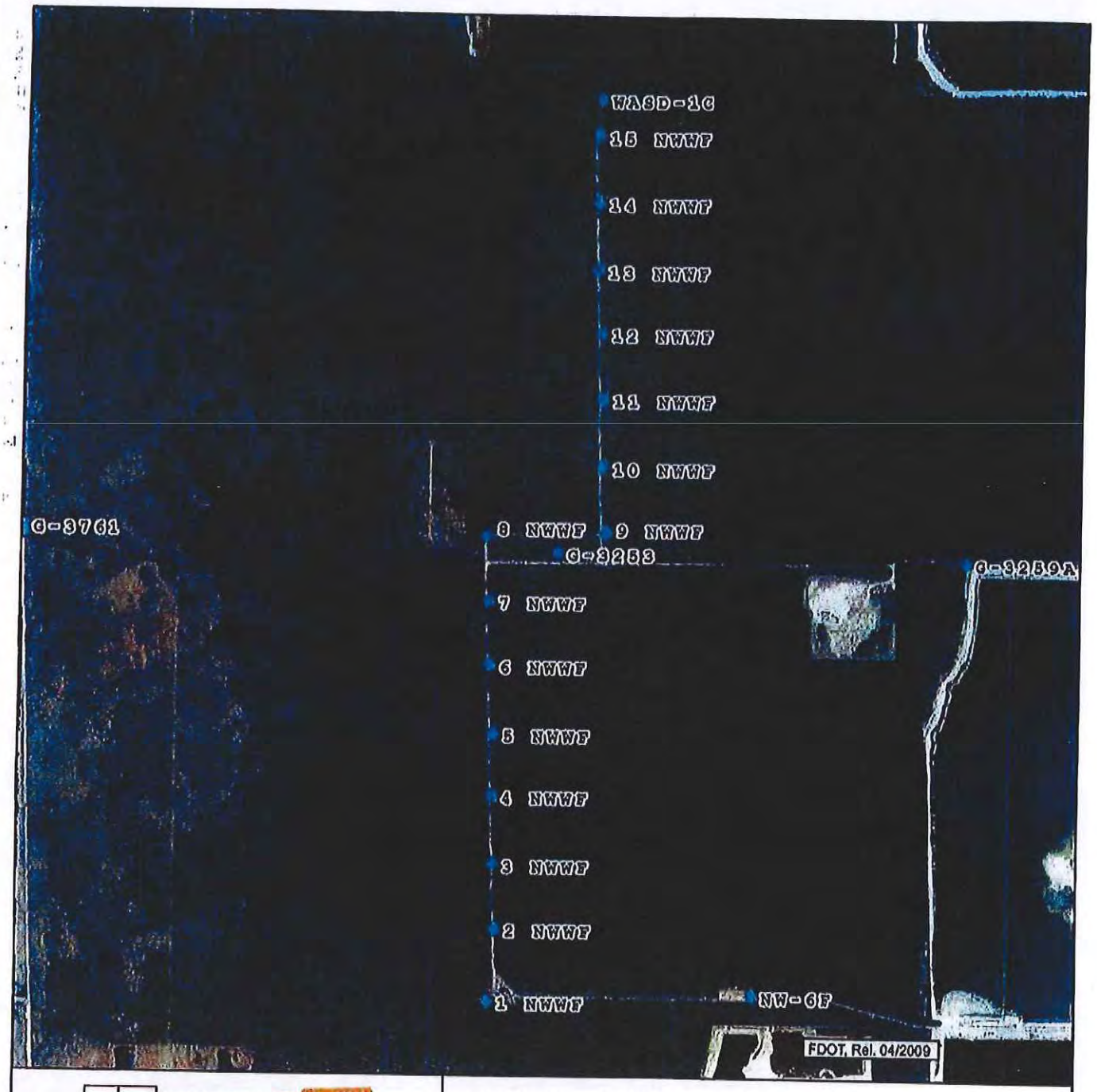
Project Name: MIAMI-DADE CONSOLIDATED P W S

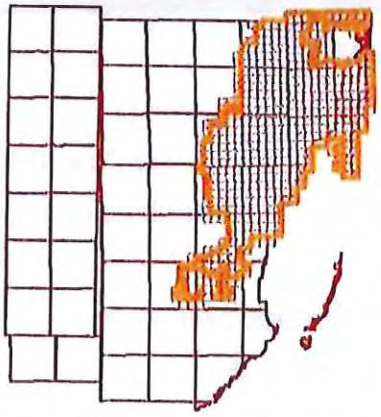
HIALEAH RO WELLFIELD

0 0.2 0.4

Miles

Exhibit No: 3B





MIAMI-DADE COUNTY, FLORIDA

Legend

Application ◆ Pumps

◆ Wells

N

Map Date: 10/11/2010

Application Number: 140627-12

Permit Number: 13-00017-W

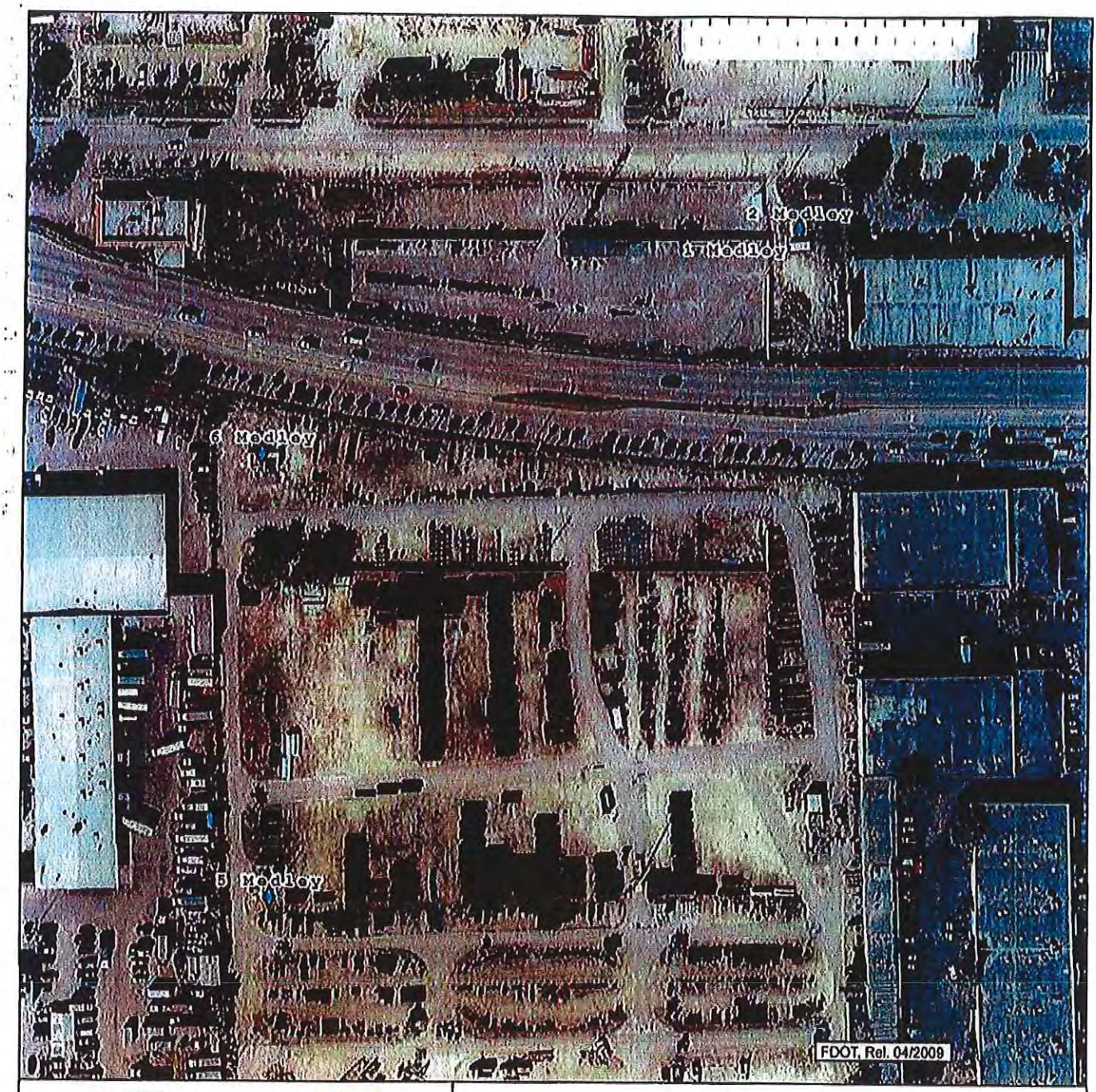
Project Name: MIAMI-DADE CONSOLIDATED P W S

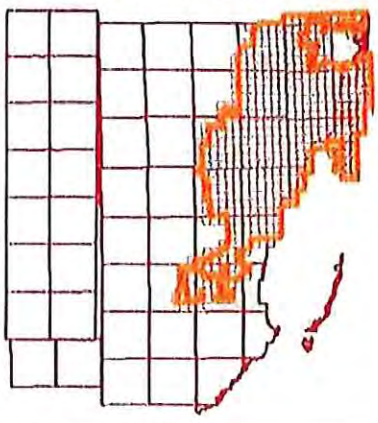
NORTHWEST WELLFIELD

0 0.125 0.25

Miles

Exhibit : 3C





MIAMI-DADE COUNTY, FLORIDA

Legend

Application ◆ Pumps

◊ Wells

N

Map Date: 10/11/2010

Application Number: 140627-12

Permit Number: 13-00017-W

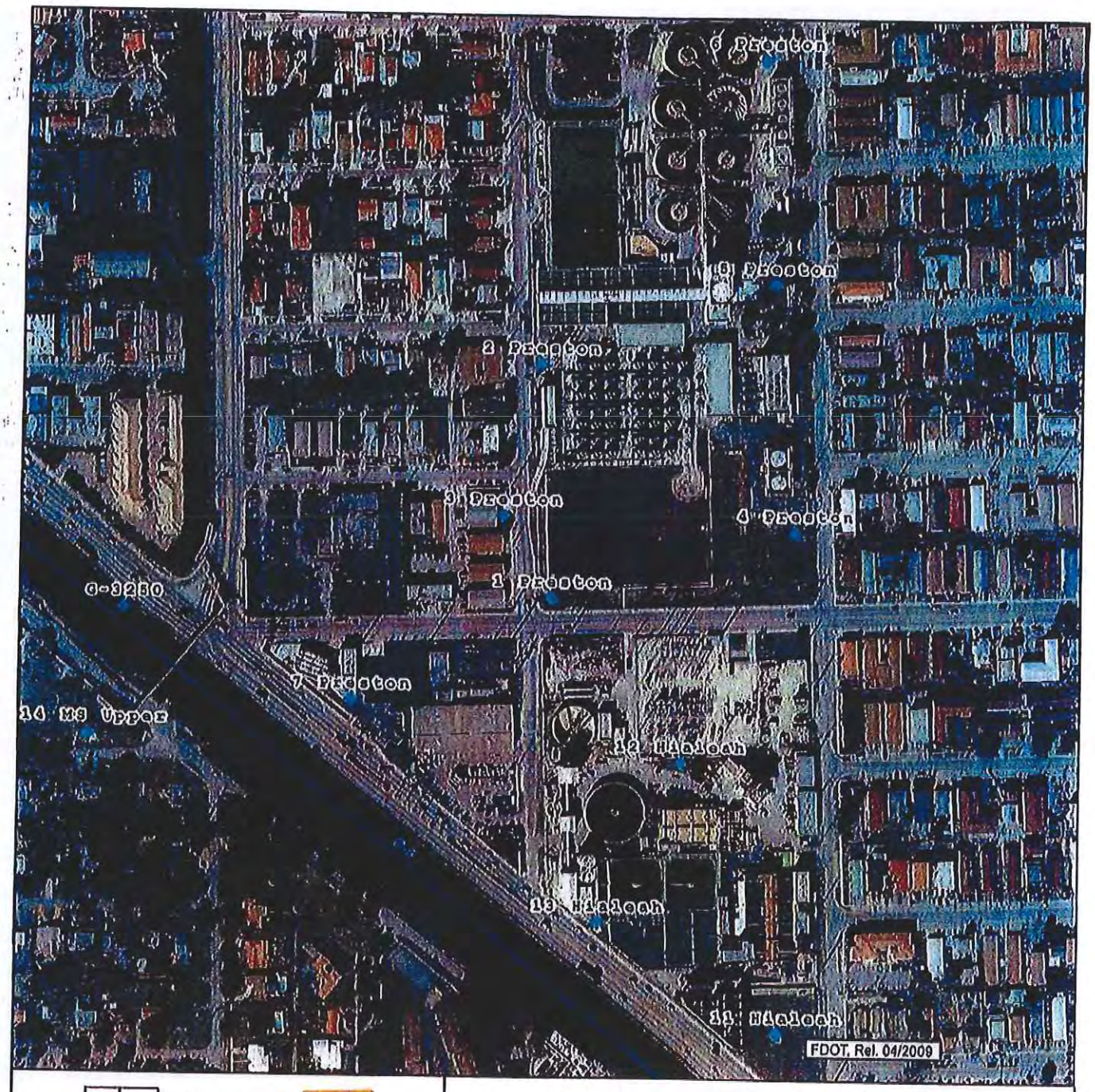
Project Name: MIAMI-DADE CONSOLIDATED P W S

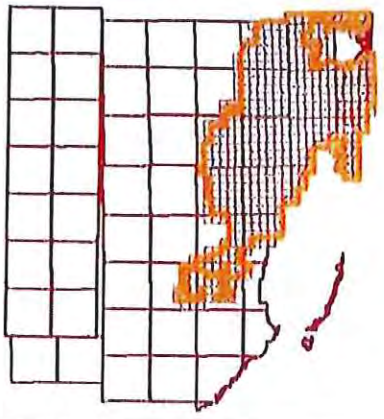
MEDLEY WELLFIELD

0 0.01 0.02

Miles

Exhibit : 3D





MIAMI-DADE COUNTY, FLORIDA

Legend
Application ◆ Pumps
◆ Wells

N

Map Date: 10/11/2010

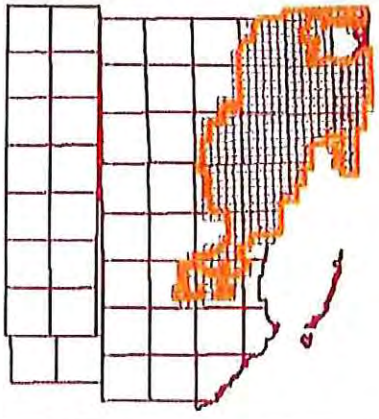
Application Number: 140627-12

Permit Number: 13-00017-W

Project Name: MIAMI-DADE CONSOLIDATED P W S
HIALEAH AND PRESTON WELLFIELDS

0 0.02 0.04
Miles

Exhibit : 3E



MIAMI-DADE COUNTY, FLORIDA

Legend

Application ◆ Pumps

◆ Wells

N

Map Date: 10/11/2010

Application Number: 140627-12

Permit Number: 13-00017-W

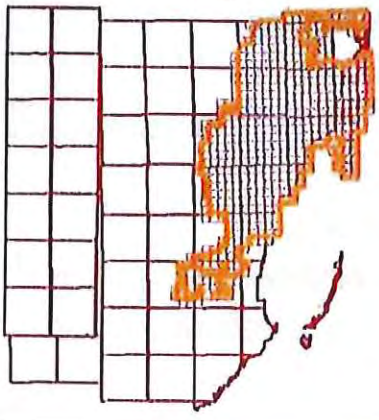
Project Name: MIAMI-DADE CONSOLIDATED P W S

MIAMI SPRINGS UPPER WELLFIELD

0 0.05 0.1

Miles

Exhibit : 3F



MIAMI-DADE COUNTY, FLORIDA

N

Legend

Application ◆ Pumps

◆ Wells

Map Date: 10/11/2010

Application Number: 140627-12

Permit Number: 13-00017-W

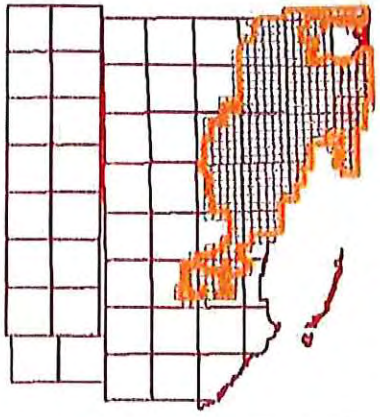
Project Name: MIAMI-DADE CONSOLIDATED P W S

MIAMI SPRINGS LOWER WELLFIELD

0 0.04 0.08

Miles

Exhibit : 3G



MIAMI-DADE COUNTY, FLORIDA

Legend

Application ◆ Pumps

◆ Wells

Application Number: 140627-12

Permit Number: 13-00017-W

Project Name: MIAMI-DADE CONSOLIDATED P W S

WEST WELLFIELD

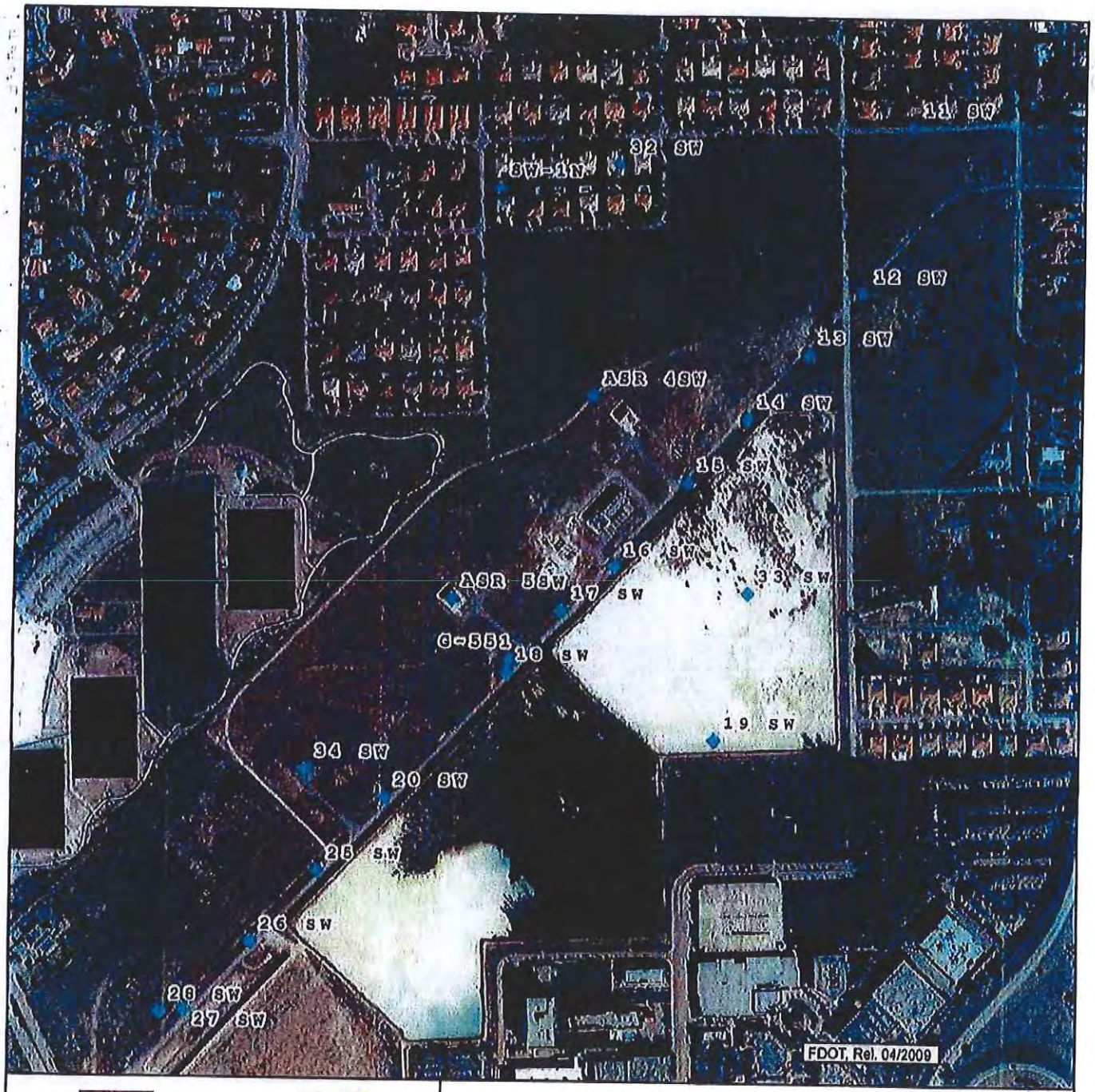
N

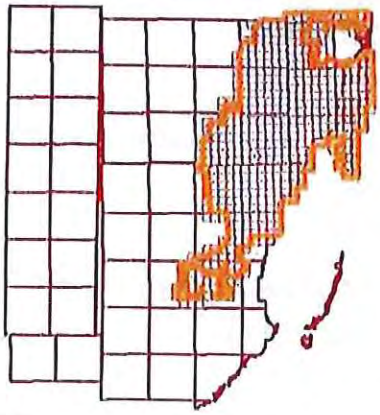
Map Date: 10/11/2010

0 0.015 0.03

Miles

Exhibit : 3H





MIAMI-DADE COUNTY, FLORIDA

N

Legend

Application ◆ Pumps

◆ Wells

Map Date: 10/11/2010

Application Number: 140627-12

Permit Number: 13-00017-W

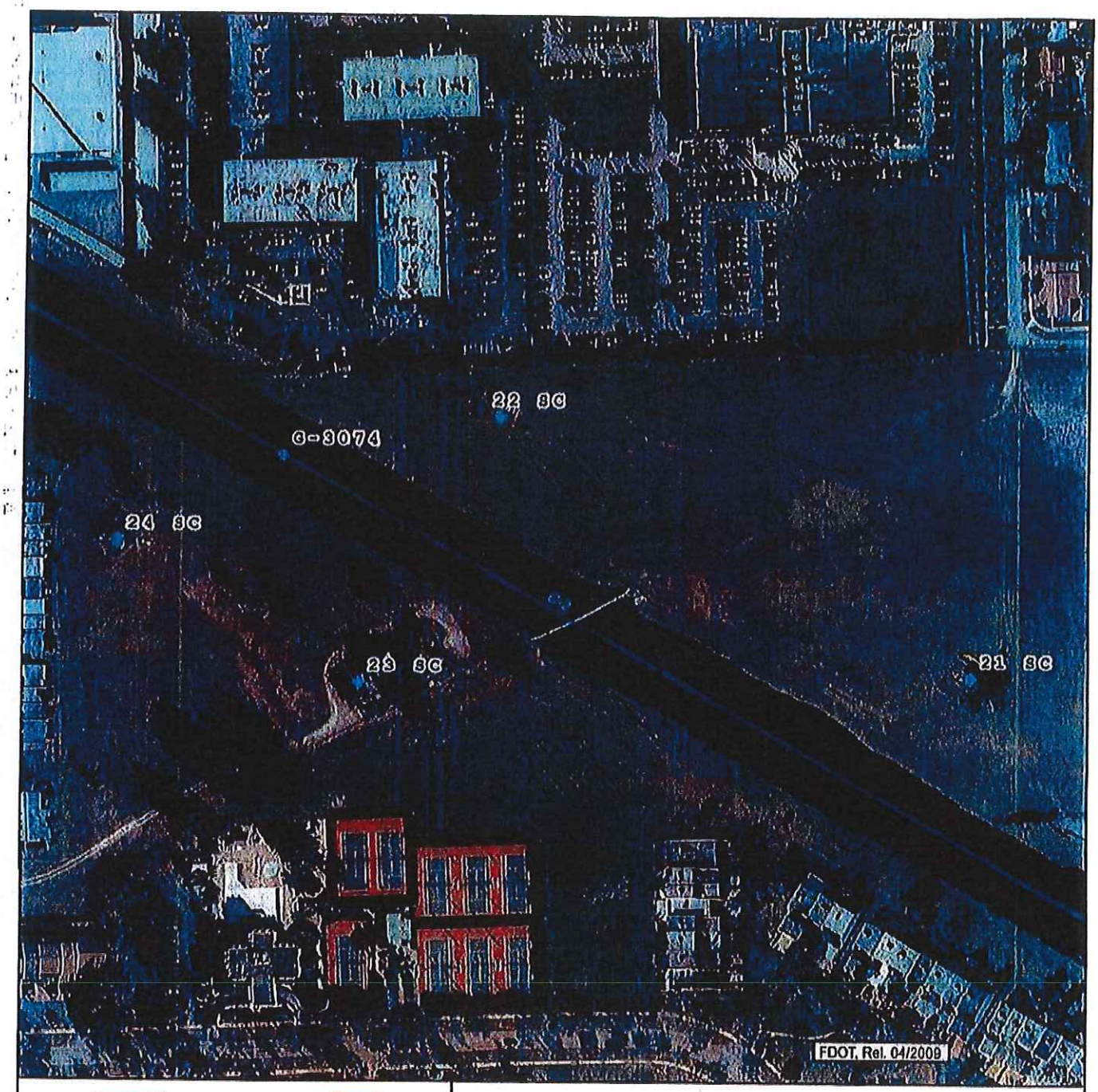
Project Name: MIAMI-DADE CONSOLIDATED P W S

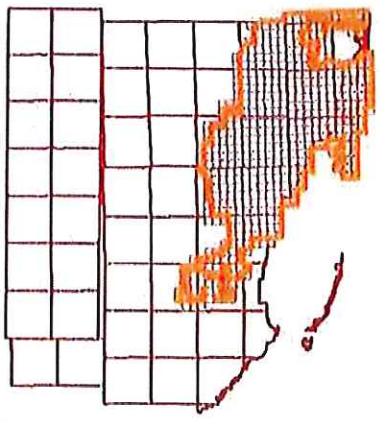
SOUTHWEST WELLFIELD

0 0.04 0.08

Miles

Exhibit : 3I





MIAMI-DADE COUNTY, FLORIDA

Legend

Application ◆ Pumps

◆ Wells

Application Number:140627-12

Permit Number: 13-00017-W

Project Name: MIAMI-DADE CONSOLIDATED P W S

SNAPPER CREEK WELLFIELD

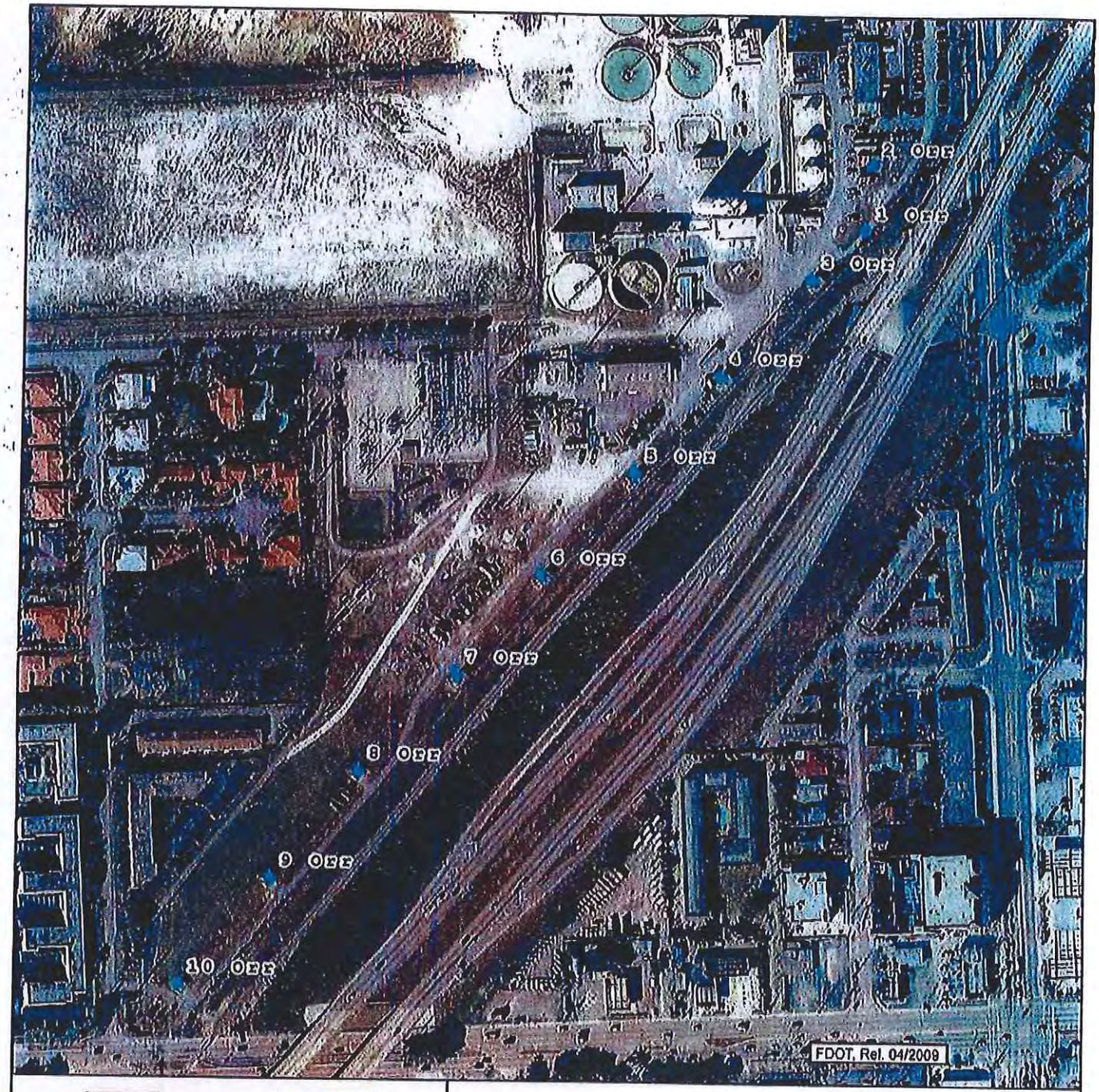
N

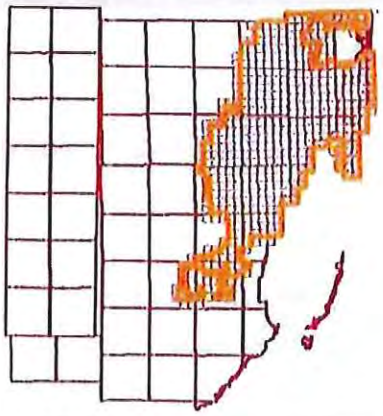
Map Date: 10/11/2010

0 0.015 0.03

Miles

Exhibit : 3J





MIAMI-DADE COUNTY, FLORIDA

Legend

Application ◆ Pumps

◆ Wells

Map Date: 10/11/2010

Application Number: 140627-12

Permit Number: 13-00017-W

Project Name: MIAMI-DADE CONSOLIDATED P W S

ALEXANDER ORR WELLFIELD

0 0.02 0.04

Miles

N

Exhibit : 3K

MIAMI-DADE COUNTY, FLORIDA

Application

WELL

N

Map Date: 2012-06-13

Application Number: 140627-12

Permit Number: 13-00017-W

Sec - / Twp 53 / Rge 39

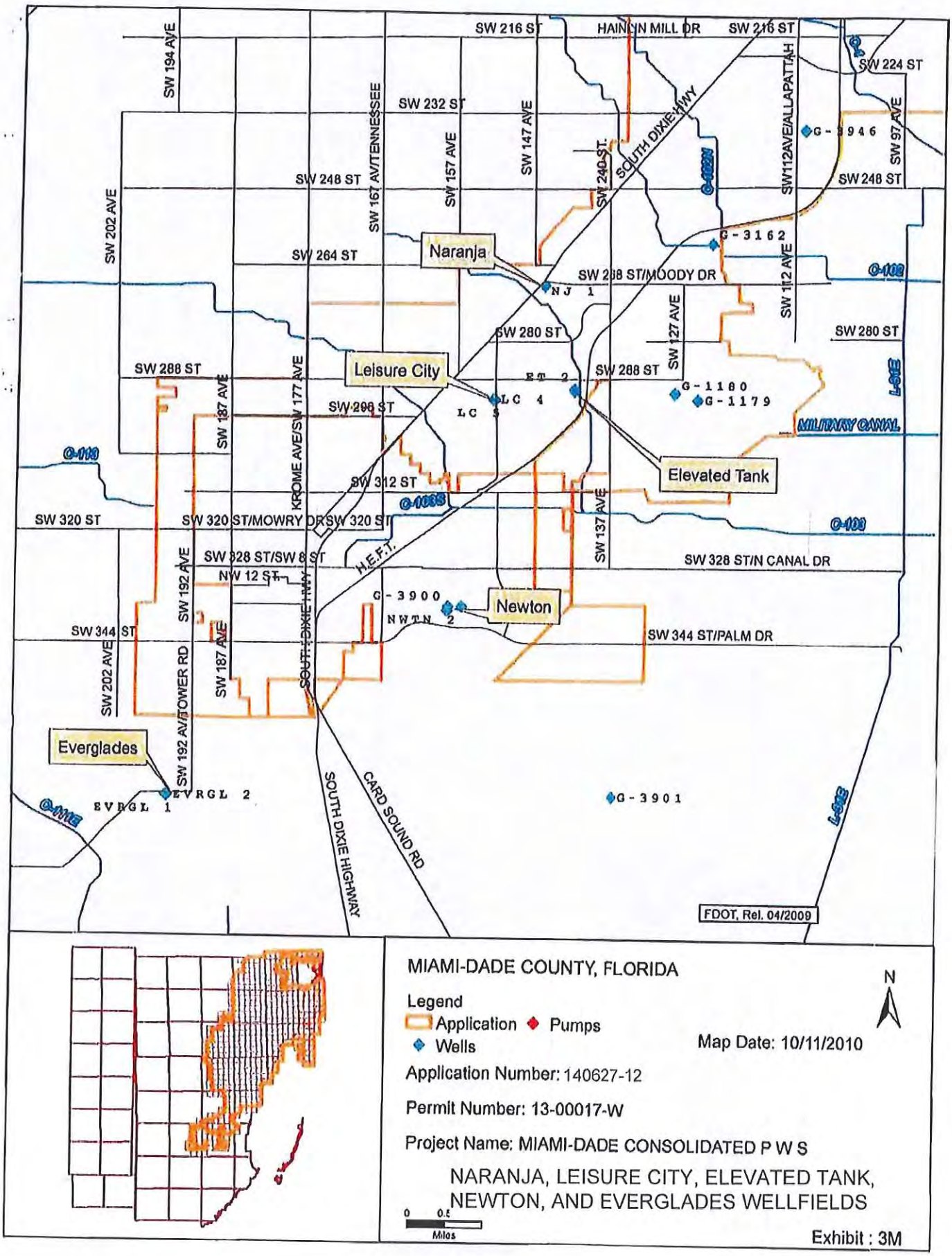
Project Name: MIAMI-DADE CONSOLIDATED P W S

SOUTH MIAMI HEIGHTS WELLFIELDS

0 1,550 3,100

Feet

Exhibit No: 3L



MIAMI-DADE COUNTY, FLORIDA

Legend

Application ◆ Pumps

◆ Wells

N

Map Date: 10/11/2010

Application Number: 140627-12

Permit Number: 13-00017-W

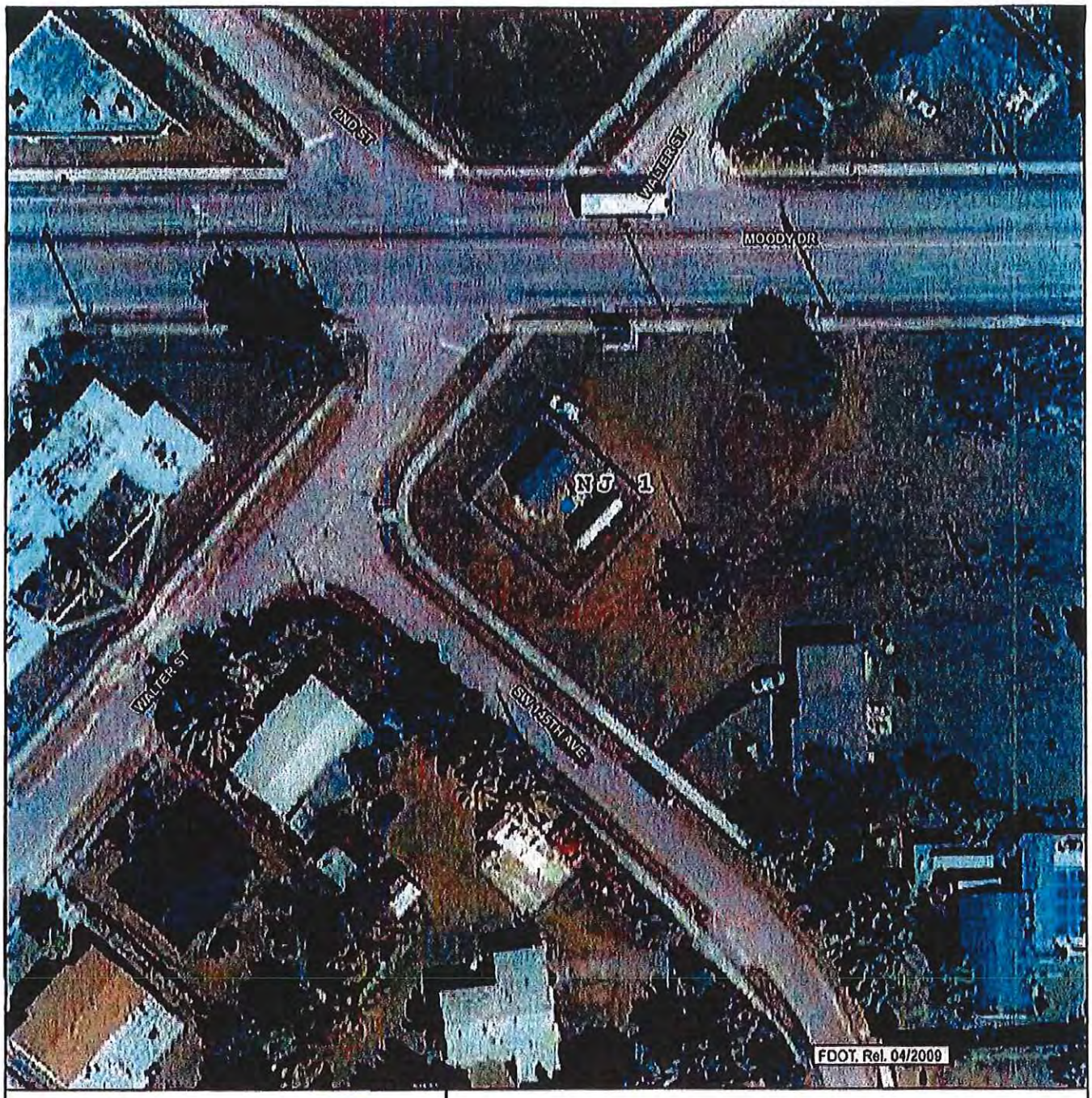
Project Name: MIAMI-DADE CONSOLIDATED P W S

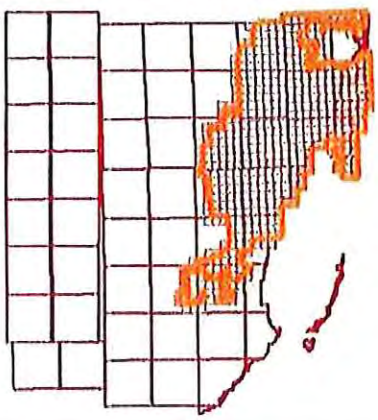
NARANJA, LEISURE CITY, ELEVATED TANK, NEWTON, AND EVERGLADES WELLFIELDS

0 0.5

Miles

Exhibit : 3M





MIAMI-DADE COUNTY, FLORIDA

N

Legend

Application ◆ Pumps

◆ Wells

Map Date: 10/11/2010

Application Number: 140627-12

Permit Number: 13-00017-W

Project Name: MIAMI-DADE CONSOLIDATED P W S

NARANJA WELLFIELD

0 0.005 0.01

Miles

Exhibit : 3N

MIAMI-DADE COUNTY, FLORIDA

Legend

Application ◆ Pumps

◆ Wells

N

Map Date: 10/11/2010

Application Number: 140627-12

Permit Number: 13-00017-W

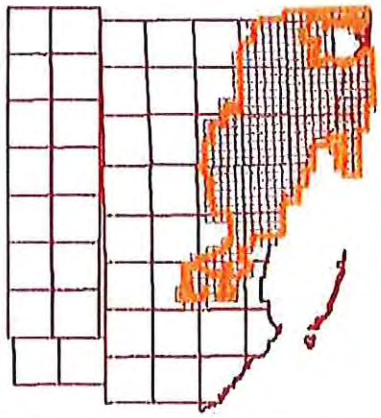
Project Name: MIAMI-DADE CONSOLIDATED P W S

LEISURE CITY WELLFIELD

0 0.01 0.02

Miles

Exhibit : 30



MIAMI-DADE COUNTY, FLORIDA

N

Legend

Application ◆ Pumps

◆ Wells

Map Date: 10/11/2010

Application Number: 140627-12

Permit Number: 13-00017-W

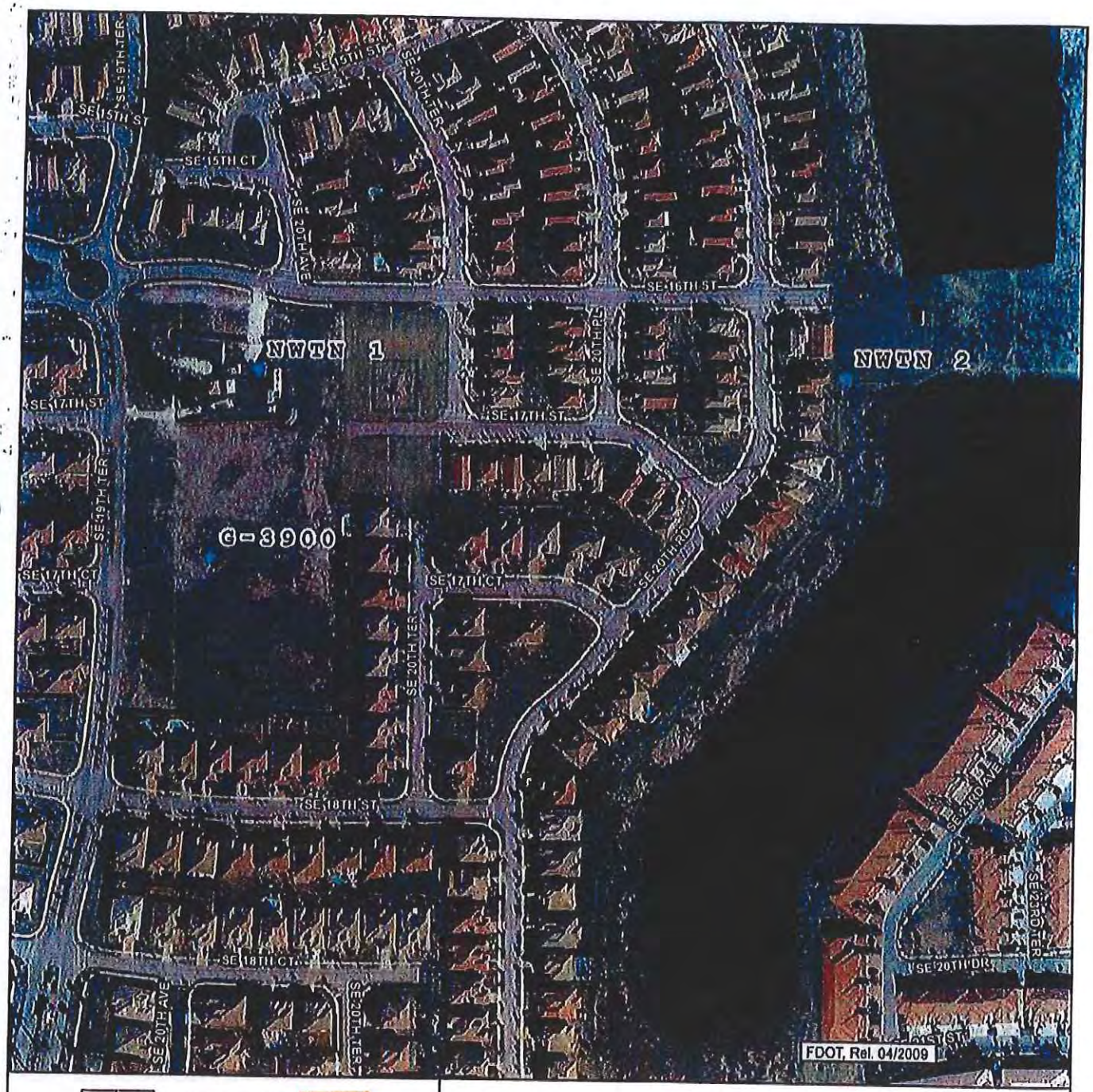
Project Name: MIAMI-DADE CONSOLIDATED P W S

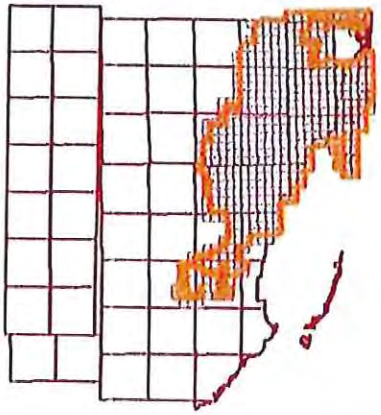
ELEVATED TANK WELLFIELD

0 0.0125 0.025

Miles

Exhibit : 3P





MIAMI-DADE COUNTY, FLORIDA

Legend

Application ◆ Pumps

◆ Wells

N

Map Date: 10/11/2010

Application Number: 140627-12

Permit Number: 13-00017-W

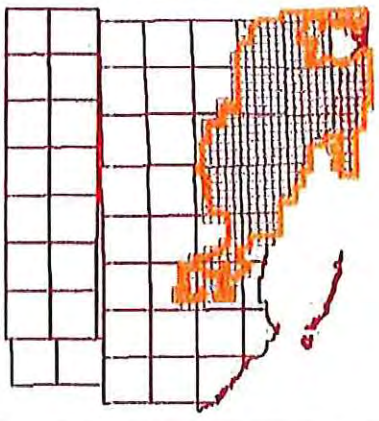
Project Name: MIAMI-DADE CONSOLIDATED P W S

NEWTON WELLFIELD

0 0.02 0.04

Miles

Exhibit : 3Q



MIAMI-DADE COUNTY, FLORIDA

Legend
Application ◆ Pumps
◆ Wells

Map Date: 10/11/2010

Application Number: 140627-12

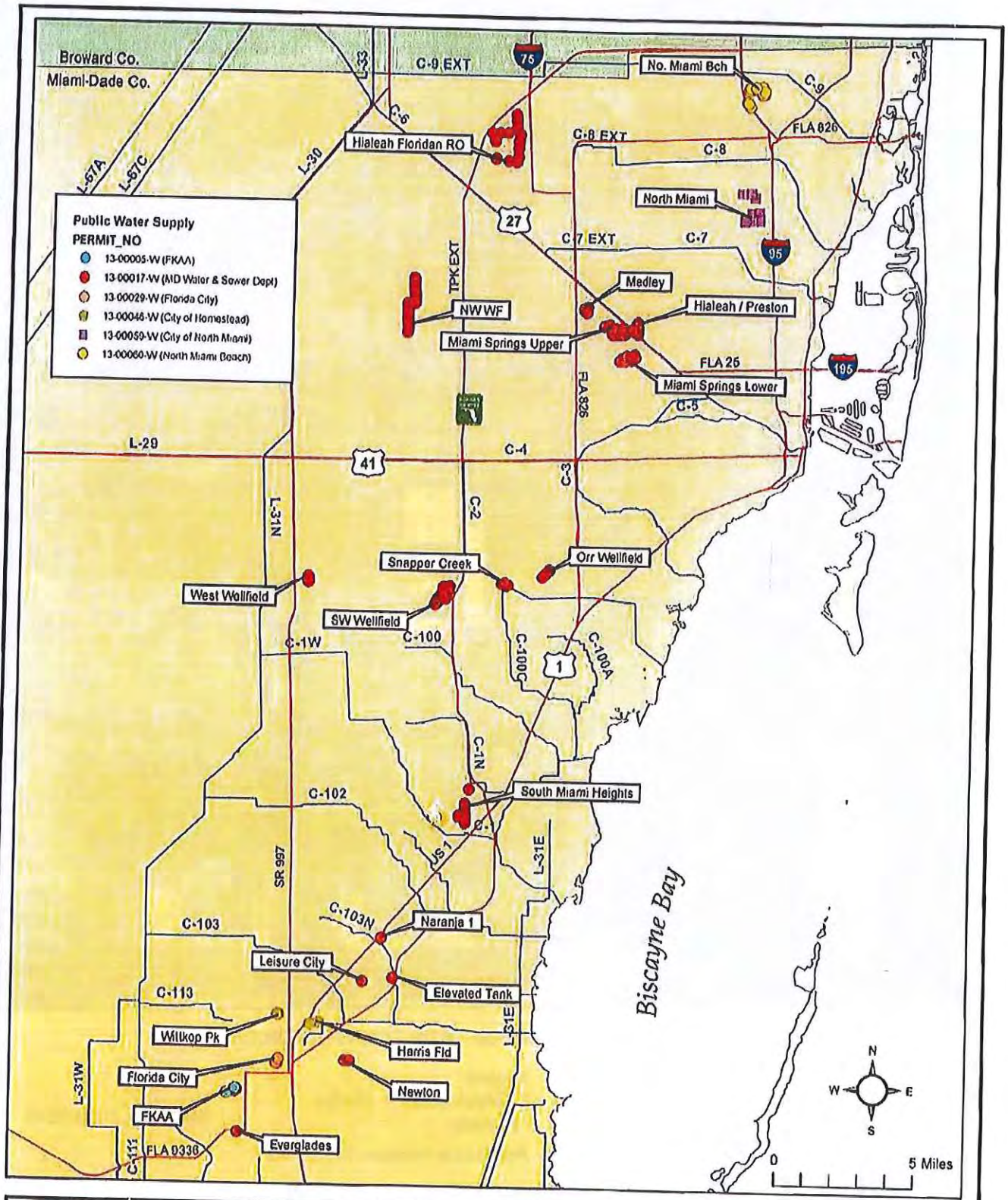
Permit Number: 13-00017-W

Project Name: MIAMI-DADE CONSOLIDATED P W S
EVERGLADES WELLFIELD

N

0 0.005 0.01
Miles

Exhibit : 3R



South Florida Water Management District
Water Use Regulation
3301 Gun Club Road, West Palm Beach, FL 33406
561-686-8800 – www.sfwmd.gov

Miami-Dade County PWS Wellfields

DISCLAIMER
This map is a conceptual tool utilized for project development and implementation only. This map is not self executing or binding, and does not otherwise affect the interests of any person including any vested rights or existing uses of real property. Any information, including but not limited to maps and data, received from the SFWMD is provided "as is" without any warranty and the SFWMD expressly disclaims all express and implied warranties of merchantability and fitness for a particular purpose. The District does not make any representations regarding the information provided to you by the Distr

Exhibit 4A

\\sdd\dfsroot\data\dn_wu\Water_Use_Data\PWS_Wellfields\MDWD_Wellfields_Rev_9-7-10.mxd

Upper Floridan Aquifer
Permitted Users

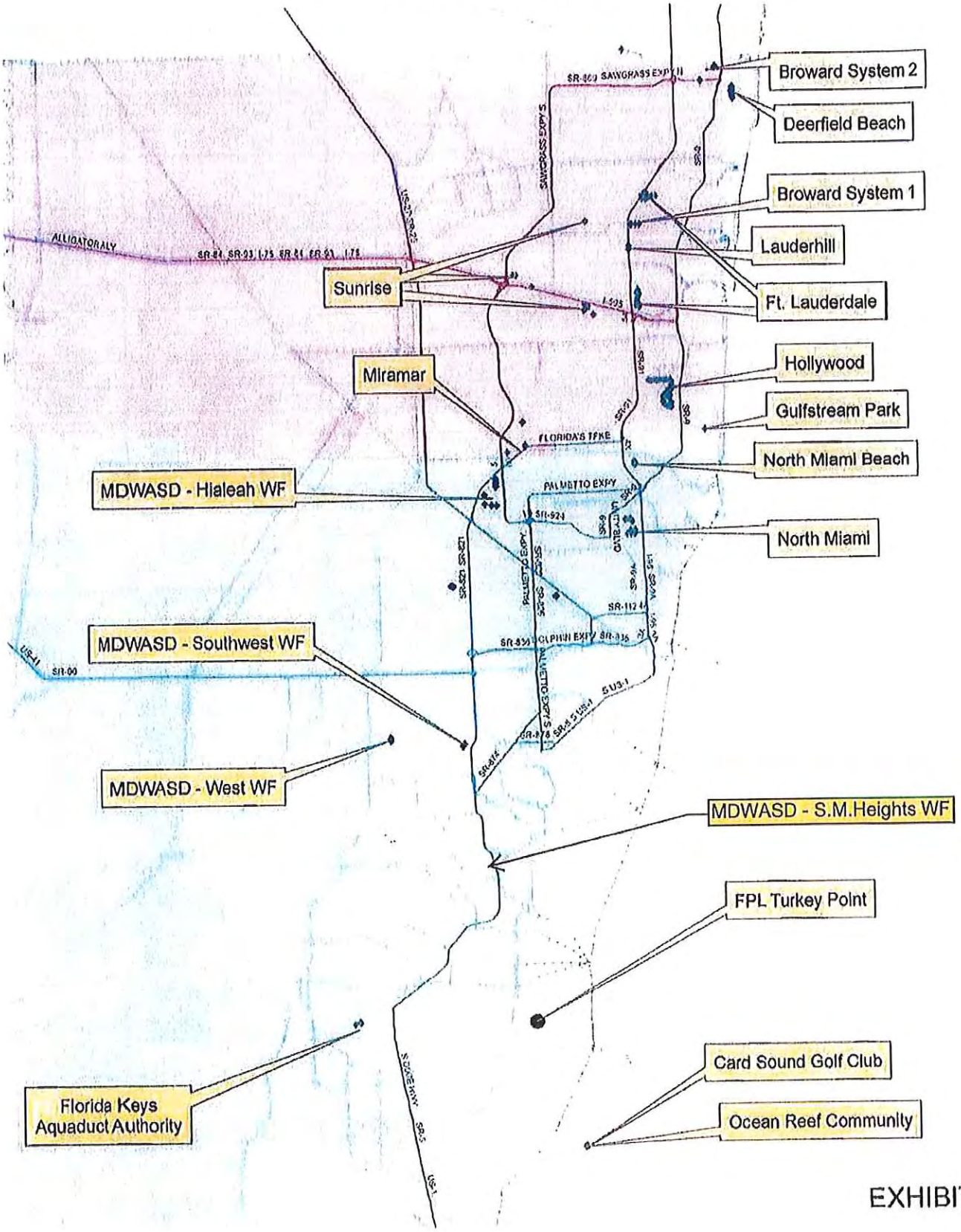


EXHIBIT 4B

Permitted Floridan Users
Miami-Dade, Broward, Monroe

PERMIT_NO	Permittee	Facility Status	Allocation (mgd)
44-00284-W	SILVER SHORES MOBILE HOME PARK	1 existing	0.0200
44-00002-W	OCEAN REEF COMMUNITY	4 existing	1.42
44-00001-W	CARD SOUND GOLF CLUB	1 existing	0.58
13-00005-W	FLORIDA KEYS AQUEDUCT AUTHORITY	5 existing	6.18
13-00017-W	MIAMI-DADE CONSOLIDATED P W S	6 existing; 13 proposed	19.95
13-01556-W	LA GORCE COUNTRY CLUB INC	1 existing; 1 proposed	0.95
13-00059-W	CITY OF NORTH MIAMI	10 proposed	7.97
13-00060-W	CITY OF NORTH MIAMI BEACH	3 existing	12.07
06-00054-W	CITY OF MIRAMAR PUBLIC WATER SUPPY	3 proposed	2.67
06-00954-W	GULFSTREAM PARK	1 existing	0.16
06-00038-W	HOLLYWOOD WATER TREATMENT PLANT	6 existing; 17 proposed	8.68
06-00134-W	TOWN OF DAVIE WATER PLANT SYS I, III, AND V	1 existing; 9 proposed	14.83
06-00120-W	CITY OF SUNRISE	2 existing; 6 proposed	10.98
06-00123-W	FORT LAUDERDALE PUBLIC WATER SUPPLY	2 existing; 14 proposed	10
06-00129-W	CITY OF LAUDERHILL	2 proposed	1.02
06-00146-W	BROWARD COUNTY DISTRICT 1	4 proposed	4.7
06-01634-W	BROWARD COUNTY 2A / NORTH REGIONAL PWS	1 existing; 4 proposed	10
06-00082-W	DEERFIELD BEACH PUBLIC WATER SUPPLY	1 existing; 1 proposed	6.5
Site Certification	FPL TURKEY POINT FLORIDAN PRODUCTION WELL	3 existing	14

EXHIBIT 4C

TABLE - A
Description Of Wells.

Application Number: 140627-12

Well ID	217724	217725	217726	217727	217728	217730
Name	RO1 Hialeah	RO2 Hialeah	RO3 Hialeah	RO4 Hialeah	RO5 Hialeah	RO6 Hialeah
Map Designator	Hialeah 1 RO	Hialeah 2 RO	Hialeah 3 RO	Hialeah 4 RO	Hialeah 5 RO	Hialeah 6 RO
FLUWID Number						
Well Field	Hialeah RO WTP	Hialeah RO WTP	Hialeah RO WTP	Hialeah RO WTP	Hialeah RO WTP	Hialeah RO WTP
Existing/Proposed	E	E	E	E	P	P
Well Diameter(Inches)	17	17	17	17	17	17
Total Depth(feet)	1490	1490	1490	1490	1490	1490
Cased Depth(feet)	1150	1080	1080	1080	1080	1080
Facility Elev. (ft. NGVD)						
Screened Interval From						
To						
Pumped Or Flowing	P	P	P	P	P	P
Pump Type	Turbine	Turbine	Turbine	Turbine	Turbine	Turbine
Pump Int. Elev. Feet (NGVD)						
Feet (BLS)						
Pump Capacity(GPM)	1400	1400	1400	1400	1400	1400
Year Drilled	2009	2011	2011	2011	2011	2011
Planar Location Source	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER
Feet East	863270	863450	864770	865950	866950	866990
Feet North	578595	574835	574835	574835	584875	583590
Accounting Method	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter
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	Upper Floridan Aquifer	Upper Floridan Aquifer	Upper Floridan Aquifer	Upper Floridan Aquifer	Upper Floridan Aquifer	Upper Floridan Aquifer

TABLE - A
Description Of Wells.

Application Number: 140627-12

Well ID	217731	257400	257401	257402	257403	257404
Name	RO7 Hialeah	RO8 Hialeah	RO9 Hialeah	RO10 Hialeah	RO11 Hialeah	RO12 Hialeah
Map Designator	Hialeah 7 RO	Hialeah 8 RO	Hialeah 9 RO	Hialeah 10 RO	Hialeah 11 RO	Hialeah 12 RO
FLUWID Number						
Well Field	Hialeah RO WTP	Hialeah RO WTP	Hialeah RO WTP	Hialeah RO WTP	Hialeah RO WTP	Hialeah RO WTP
Existing/Proposed	P	P	P	E	E	P
Well Diameter(Inches)	17	17	17	17	17	17
Total Depth(feet)	1490	1490	1490	1490	1490	1490
Cased Depth(feet)	1080	1080	1080	1080	1080	1080
Facility Elev. (ft. NGVD)						
Screened Interval From						
To						
Pumped Or Flowing	P	P	P	P	P	P
Pump Type	Turbine	Turbine	Turbine	Turbine	Turbine	Turbine
Pump Int. Elev. Feet (NGVD)						
Feet (BLS)						
Pump Capacity(GPM)	1400	1400	1400	1400	1400	1400
Year Drilled	2011	2011	2011	2011	2011	2011
Planar Location Source	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER
Feet East	867085	866240	865035	867410	867175	864485
Feet North	581265	584315	583230	574835	578665	582690
Accounting Method	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter
Use Status	Standby	Primary	Primary	Primary	Primary	Primary
Water Use Type	Public Water Supply Monitor	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply
Aquifer	Upper Floridan Aquifer	Upper Floridan Aquifer	Upper Floridan Aquifer	Upper Floridan Aquifer	Upper Floridan Aquifer	Upper Floridan Aquifer

Exhibit No: 5

TABLE - A
Description Of Wells.

Application Number: 140627-12

Well ID	257405	257406	28291	28292	28293	28294
Name	RO13 Hialeah	RO14 Hialeah	1 NWWF	2 NWWF	3 NWWF	4 NWWF
Map Designator	Hialeah 13 RO	Hialeah 14 RO	1 NWWF	2 NWWF	3 NWWF	4 NWWF
FLUWID Number						
Well Field	Hialeah RO WTP	Hialeah RO WTP	Northwest	Northwest	Northwest	Northwest
Existing/Proposed	P	P	E	E	E	E
Well Diameter(Inches)	17	17	48	48	48	48
Total Depth(feet)	1490	1490	80	80	80	80
Cased Depth(feet)	1080	1080	46	46	46	46
Facility Elev. (ft. NGVD)						
Screened Interval From			0	0	0	0
To			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)			40	40	40	40
Pump Capacity(GPM)	1400	1400	10420	10420	10420	10420
Year Drilled	2011	2011	1980	1980	1980	1980
Planar Location Source	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER
Feet East	863250	862450	847729	847805	847767	847747
Feet North	581590	580860	543166	543988	544714	545498
Accounting Method	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter
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	Upper Floridan Aquifer	Upper Floridan Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer

Exhibit No: 5

TABLE - A
Description Of Wells.

Application Number: 140627-12

Well ID	28295	28296	28297	28298	28299	28300
Name	5 NWWF	6 NWWF	7 NWWF	8 NWWF	9 NWWF	10 NWWF
Map Designator	5 NWWF	6 NWWF	7 NWWF	8 NWWF	9 NWWF	10 NWWF
FLUWID Number						
Well Field	Northwest	Northwest	Northwest	Northwest	Northwest	Northwest
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	48	48	48	48	48	40
Total Depth(feet)	80	80	80	80	80	100
Cased Depth(feet)	46	46	46	46	46	57
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)	40	40	40	40	40	40
Pump Capacity(GPM)	10416.67	10420	10420	10420	10420	10420
Year Drilled	1980	1980	1980	1980	1980	1980
Planar Location						
Source	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER
Feet East	847757	847705	847685	847664	849022	848971
Feet North	546203	546981	547728	548464	548516	549252
Accounting Method	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter
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

Exhibit No: 5

TABLE - A
Description Of Wells.

Application Number: 140627-12

Well ID	28301	28302	28303	28304	28305	217680
Name	11 NWWF	12 NWWF	13 NWWF	14 NWWF	15 NWWF	1 Medley
Map Designator	11 NWWF	12 NWWF	13 NWWF	14 NWWF	15 NWWF	Medley - 1
FLUWID Number						
Well Field	Northwest	Northwest	Northwest	Northwest	Northwest	Medley
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	48	48	40	40	40	42
Total Depth(feet)	80	80	100	100	100	68
Cased Depth(feet)	46	46	57	57	57	60
Facility Elev. (ft. NGVD)						
Screened Interval From	0	0	0	0	0	
To	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)	40	40	40	40	40	
Pump Capacity(GPM)	10420	10420	10420	10420	10420	10000
Year Drilled	1980	1980	1980	1980	1980	1975
Planar Location Source	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER
Feet East	848960	848929	848877	848877	848867	881370
Feet North	550030	550777	551492	552260	553017	548300
Accounting Method	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter
Use Status	Primary	Primary	Primary	Primary	Primary	Standby
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

Exhibit No: 5

TABLE - A
Description Of Wells.

Application Number: 140627-12

Well ID	217681	217684	217686	28261	28262	28263
Name	2 Medley	5 Medley	6 Medley	1 MS Lower	2 MS Lower	3 MS Lower
Map Designator	Medley - 2	Medley - 5	Medley - 6	1 MS Lower	2 MS Lower	3 MS Lower
FLUWID Number						
Well Field	Medley	Medley	Medley	Miami Springs Lower	Miami Springs Lower	Miami Springs Lower
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	42	42	42	14	14	14
Total Depth(feet)	68	68	68	115	115	115
Cased Depth(feet)	54	60	54	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	Centrifugal	Centrifugal	Centrifugal
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)				0	0	
Pump Capacity(GPM)	8500	8500	10000	3800	2500	2500
Year Drilled	1975	1975	1975	1924	1924	1924
Planar Location						
Source	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER
Feet East	881370	880830	880820	890660	889990	889800
Feet North	548300	547620	548070	539170	538745	539400
Accounting Method	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter
Use Status	Standby	Standby	Standby	Primary	Primary	Primary
Water Use Type	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply Monitor	Public Water Supply	Public Water Supply
Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer

Exhibit No: 5

TABLE - A
Description Of Wells.

Application Number: 140627-12

Well ID	28264	28265	28268	28266	28267	28269
Name	4 MS Lower	5 MS Lower	6 MS Lower	7 MS Lower	8 MS Lower	9 MS Upper
Map Designator	4 MS Lower	5 MS Lower	6 MS Lower	7 MS Lower	8 MS Lower	9 MS Upper
FLUWID Number						
Well Field	Miami Springs Lower	Miami Springs Lower	Miami Springs Lower	Miami Springs Lower	Miami Springs Lower	Miami Springs Upper
Existing/Proposed	E	E	E	E	E	E
Well Diameter(inches)	14	14	30	14	14	14
Total Depth(feet)	115	115	115	115	115	115
Cased Depth(feet)	80	80	80	80	80	80
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	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal
Pump Int. Elev. Feet (NGVD)						
Feet (BLS)	0	0	0	0	0	
Pump Capacity(GPM)	2500	2500	2500	2500	2500	2500
Year Drilled	1924	1924	1924	1924	1924	1949
Planar Location Source	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER
Feet East	890450	888955	888105	887545	888575	884630
Feet North	539785	539515	539115	538585	538565	544870
Accounting Method	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Unspecified	Flow Meter
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

Exhibit No: 5

TABLE - A
Description Of Wells.

Application Number: 140627-12

Well ID	28280	28271	28272	28273	28274	28275
Name	10 MS Upper	14 MS Upper	15 MS Upper	16 MS Upper	17 MS Upper	18 MS Upper
Map Designator	10 MS Upper	14 MS Upper	15 MS Upper	16 MS Upper	17 MS Upper	18 MS Upper
FLUWID Number						
Well Field	Miami Springs Upper	Miami Springs Upper	Miami Springs Upper	Miami Springs Upper	Miami Springs Upper	Miami Springs Upper
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	14	30	14	14	14	14
Total Depth(feet)	115	115	115	115	115	115
Cased Depth(feet)	80	80	80	80	80	80
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	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)	0		0	0	0	0
Pump Capacity(GPM)	2500	4170	2500	2500	2500	2500
Year Drilled	1954	1936	1936	1936	1936	1945
Planar Location						
Source	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER
Feet East	888960	889520	888430	887776	888460	886890
Feet North	544210	544190	544440	544475	543550	544430
Accounting Method	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter
Use Status	Primary	Primary	Standby	Standby	Primary	Standby
Water Use Type	Public Water Supply	Public Water Supply Monitor	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: 140627-12

Well ID	28276	28277	28278	28279	28270	28281
Name	19 MS Upper	20 MS Upper	21 MS Upper	22 MS Upper	23 MS Upper	1 Preston
Map Designator	19 MS Upper	20 MS Upper	21 MS Upper	22 MS Upper	23 MS Upper	1 Preston
FLUWID Number						
Well Field	Miami Springs Upper	Miami Springs Upper	Miami Springs Upper	Miami Springs Upper	Miami Springs Upper	Preston
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	14	14	14	14	14	42
Total Depth(feet)	115	115	115	115	115	107
Cased Depth(feet)	80	80	80	80	80	66
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	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Turbine
Pump Int. Elev. Feet (NGVD)						
Feet (BLS)	0	0	0	0	0	40
Pump Capacity(GPM)	2500	2500	2500	2500	2500	7000
Year Drilled	1945	1945	1945	1945	1949	1966
Planar Location Source	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER
Feet East	886105	887684	886890	886110	885590	890540
Feet North	544425	543499	543510	543510	545090	544500
Accounting Method	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter
Use Status	Standby	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: 140627-12

Well ID	28282	28283	28284	28285	28286	28287
Name	2 Preston	3 Preston	4 Preston	5 Preston	6 Preston	7 Preston
Map Designator	2 Preston	3 Preston	4 Preston	5 Preston	6 Preston	7 Preston
FLUWID Number						
Well Field	Preston	Preston	Preston	Preston	Preston	Preston
Existing/Proposed	E	E	E	E	E	E
Well Diameter(inches)	42	42	42	42	42	42
Total Depth(feet)	107	107	107	107	107	107
Cased Depth(feet)	66	66	66	66	66	69
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)	40	40	40	40	40	40
Pump Capacity(GPM)	7000	7000	7000	7000	7000	7000
Year Drilled	1966	1966	1966	1966	1966	1972
Planar Location						
Source	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER
Feet East	890510	890430	891080	891029	891000	890100
Feet North	545010	544680	544650	545190	545680	544270
Accounting Method	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter
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: 140627-12

Well ID	28288	28289	28290	26330	26331	26332
Name	11 Hialeah	12 Hialeah	13 Hialeah	1 Orr	2 Orr	3 Orr
Map Designator	11 Hialeah	12 Hialeah	13 Hialeah	ORR 1	ORR 2	ORR 3
FLUWID Number						
Well Field	Hialeah	Hialeah	Hialeah	Alexander Orr	Alexander Orr	Alexander Orr
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	14	14	14	16	16	16
Total Depth(feet)	115	115	115	100	100	100
Cased Depth(feet)	80	80	80	40	40	40
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	Centrifugal	Centrifugal	Centrifugal	Turbine	Turbine	Turbine
Pump Int. Elev. Feet (NGVD)						
Feet (BLS)						
Pump Capacity(GPM)	2500	2500	2500	4170	4170	4170
Year Drilled	1936	1936	1936	1949	1949	1949
Planar Location Source	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER
Feet East	891050	890830	890650	875100	875110	875000
Feet North	543550	544140	543790	499520	499640	499430
Accounting Method	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter
Use Status	Primary	Primary	Primary	Primary	Primary	Primary
Water Use Type	Public Water Supply	Public Water Supply	Public Water Supply Monitor	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: 140627-12

Well ID	26304	26306	26309	26310	26311	26312
Name	4 Orr	5 Orr	6 Orr	7 Orr	8 Orr	9 Orr
Map Designator	ORR 4	ORR 5	ORR 6	ORR 7	ORR 8	ORR 9
FLUWID Number						
Well Field	Alexander Orr	Alexander Orr	Alexander Orr	Alexander Orr	Alexander Orr	Alexander Orr
Existing/Proposed	E	E	E	E	E	E
Well Diameter(inches)	16	16	16	16	16	24
Total Depth(feet)	100	100	100	100	100	100
Cased Depth(feet)	40	40	40	40	40	50
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)						
Pump Capacity(GPM)	4170	4170	4170	4170	7500	7500
Year Drilled	1949	1952	1952	1952	1952	1964
Planar Location						
Source	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER
Feet East	874830	874670	874500	874340	874160	874000
Feet North	499250	499070	498880	498690	498510	498310
Accounting Method	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter
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: 140627-12

Well ID	26313	26314	26315	26319	27172	27173
Name	10 Orr	11 SW	12 SW	13 SW	14 SW	15 SW
Map Designator	ORR 10	Southwest 11	Southwest 12	Southwest 13	Southwest 14	Southwest 15
FLUWID Number						
Well Field	Alexander Orr	Southwest	Southwest	Southwest	Southwest	Southwest
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	24	20	20	20	20	20
Total Depth(feet)	100	100	100	100	100	100
Cased Depth(feet)	50	40	40	40	40	40
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)						
Pump Capacity(GPM)	7500	4900	4900	4900	4900	4900
Year Drilled	1964	1953	1953	1953	1953	1953
Planar Location Source	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER
Feet East	873830	856559	856380	856180	855960	855740
Feet North	498110	496044	495440	495215	494980	494750
Accounting Method	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter
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: 140627-12

Well ID	27174	27175	27176	27177	27178	27179
Name	16 SW	17 SW	18 SW	19 SW	20 SW	21 SC
Map Designator	Southwest 16	Southwest 17	Southwest 18	Southwest 19	Southwest 20	SNPR CRK 21
FLUWID Number						
Well Field	Southwest	Southwest	Southwest	Southwest	Southwest	Snapper Creek
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	20	24	24	24	24	24
Total Depth(feet)	100	100	100	100	100	108
Cased Depth(feet)	40	35	35	35	35	50
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)						
Pump Capacity(GPM)	4900	4900	4900	4900	4900	8300
Year Drilled	1953	1959	1959	1959	1959	1976
Planar Location						
Source	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER
Feet East	855470	855280	855080	855850	854640	867480
Feet North	494440	494280	494050	493810	493590	496570
Accounting Method	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter
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: 140627-12

Well ID	27180	27181	27182	27183	27184	27185
Name	22 SC	23 SC	24 SC	25 SW	26 SW	27 SW
Map Designator	SNPR CRK 22	SNPR CRK 23	SNPR CRK 24	Southwest 25	Southwest 26	Southwest 27
FLUWID Number						
Well Field	Snapper Creek	Snapper Creek	Snapper Creek	Southwest	Southwest	Southwest
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	24	24	24	24	24	24
Total Depth(feet)	108	108	108	104	104	104
Cased Depth(feet)	50	50	50	54	54	54
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)						
Pump Capacity(GPM)	8300	8300	8300	6940	6940	6940
Year Drilled	1976	1976	1976	1982	1982	1982
Planar Location Source	REVIEWER	REVIEWER	REVIEWER	REVIEWER	Migrate	REVIEWER
Feet East	866830	866640	866310	854400	854160	853920
Feet North	496920	496560	496750	493320	493060	492810
Accounting Method	Unspecified	Unspecified	Flow Meter	Flow Meter	Flow Meter	Flow Meter
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: 140627-12

Well ID	27186	27187	27188	27189	27192	27191
Name	28 SW	29 W	30 W	31 W	32 SW	33 SW
Map Designator	Southwest 28	West Wellfield 29	West Wellfield 30	West Wellfield 31	SW 32	SW 33
FLUWID Number						
Well Field	Southwest	West	West	West	Southwest	Southwest
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	24	24	24	24	48	48
Total Depth(feet)	104	70	70	70	88	88
Cased Depth(feet)	54	35	35	35	33	33
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
Pump Capacity(GPM)	6940	6945	3470	6945	7500	7500
Year Drilled	1982				1997	1997
Planar Location Source	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER
Feet East	853830	830235	830220	830210	855470	855970
Feet North	492801	496590	497150	497700	495900	494350
Accounting Method	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Unspecified
Use Status	Primary	Primary	Primary	Standby	Standby	Standby
Water Use Type	Public Water Supply	Public Water Supply Monitor	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: 140627-12

Well ID	27190	27193	27195	27194	27196	27197
Name	34 SW	ASR/Blending 1W	ASR/Blending 2W	ASR/Blending 3W	ASR/Blending 4SW	ASR/Blending 5SW
Map Designator	Southwest 34	ASR 1W	ASR 2W	ASR 3W	ASR 4SW	ASR-5SW
FLUWID Number						
Well Field	Southwest	Alexander Orr WTP	Alexander Orr WTP	Alexander Orr WTP	Alexander Orr WTP	Alexander Orr WTP
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	48	30	30	30	30	30
Total Depth(feet)	88	1300	1250	1210	1200	1200
Cased Depth(feet)	33	850	845	835	765	760
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	Unspecified	Unspecified	Unspecified	Unspecified	Unspecified
Pump Int. Elev. Feet (NGVD)						
Feet (BLS)						
Pump Capacity(GPM)	7500	3500	3500	3500	3500	3500
Year Drilled	1997	1996	1997	1997	1997	1998
Planar Location Source	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER
Feet East	854350	830190	830100	830160	855386	854880
Feet North	493690	496430	496700	497420	495060	494320
Accounting Method	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter
Use Status	Standby	Primary	Primary	Primary	Standby	Standby
Water Use Type	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply
Aquifer	Biscayne Aquifer	Upper Floridan Aquifer	Upper Floridan Aquifer	Upper Floridan Aquifer	Upper Floridan Aquifer	Upper Floridan Aquifer

TABLE - A
Description Of Wells.

Application Number: 140627-12

Well ID	23826	128172	128166	128168	23821	23822
Name	ET 1	ET 2	EVRGL 1	EVRGL 2	EVRGL 3	LC 2
Map Designator	ELEVATED TANK 1	ELEVATED TANK 2	EVERGLADES 1	EVERGLADES 2	EVERGLADES 3	LEISURE CITY 2
FLUWID Number						
Well Field	Elevated Tanks	Elevated Tanks	Everglades Labor	Everglades Labor	Everglades Labor	Leisure City
Existing/Proposed	E	E	E	E	E	E
Well Diameter(inches)	12	16	18	18	18	6
Total Depth(feet)	40	50	55	55	50	30
Cased Depth(feet)	35	40	45	42	40	25
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)	37	37	38	38	38	22
Pump Capacity(GPM)	1600	1600	1500	1500	500	400
Year Drilled	1982	1996	2000	2001	2000	1953
Planar Location Source	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER
Feet East	847490	847500	818850	818880	818905	841830
Feet North	423470	423360	394500	394500	394500	422680
Accounting Method	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter
Use Status	Primary	Standby	Primary	Standby	Primary	Primary
Water Use Type	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Water Shortage Monitoring Facility	Public Water Supply	Public Water Supply Monitor	Public Water Supply Monitor
Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer

TABLE - A
Description Of Wells.

Application Number: 140627-12

Well ID	23823	23824	23825	27411	27407	27408
Name	LC 3	LC 4	LC 5	NJ 1	NWTN 1	NWTN 2
Map Designator	LEISURE CITY 3	LEISURE CITY 4	LEISURE CITY 5	NARANJA 1	NEWTON 1	NEWTON 2
FLUWID Number						
Well Field	Leisure City	Leisure City	Leisure City	Naranja Lakes	Newton	Newton
Existing/Proposed	E	E	E	E	E	E
Well Diameter(inches)	12	12	12	12	18	18
Total Depth(feet)	35	35	40	40	65	66
Cased Depth(feet)	30	30	35	35	60	63
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)	27	-27	27	32	45	43
Pump Capacity(GPM)	1200	800	1600	800	1500	1500
Year Drilled	1957	1966	1971	1975	2000	2001
Planar Location Source	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER
Feet East	841825	841770	841740	845240	838720	839675
Feet North	422746	422730	422725	430800	408020	408020
Accounting Method	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter
Use Status	Primary	Primary	Primary	Primary	Primary	Primary
Water Use Type	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Water Shortage Monitoring Facility	Public Water Supply Monitor
Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer

TABLE - A
Description Of Wells.

Application Number: 140627-12

Well ID	128173	128178	128179	128180	128181	261790
Name	FP 1	RHP 1	RHP 2	RHP 3	RHP 4	SMH-F1
Map Designator	Former Plant 1	Roberta Hunter 1	Roberta Hunter 2	Roberta Hunter 3	Roberta Hunter 4	SMH-FA1
FLUWID Number						
Well Field	South Miami Heights	South Miami Heights	South Miami Heights	South Miami Heights	South Miami Heights	South Miami Heights
Existing/Proposed	P	P	P	P	P	P
Well Diameter(Inches)	24	24	24	24	24	24
Total Depth(feet)	50	72	50	72	72	1200
Cased Depth(feet)	45	45	45	45	45	1100
Facility Elev. (ft. NGVD)						
Screened Interval From						
To						
Pumped Or Flowing	P	P	P	P	P	P
Pump Type	Submersible	Submersible	Submersible	Submersible	Submersible	Submersible
Pump Int. Elev. Feet (NGVD)						
Feet (BLS)						
Pump Capacity(GPM)	2800	1400	1400	1400	1400	2430
Year Drilled						2012
Planar Location Source	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER
Feet East	860980	860208	860255	860256	860255	860300
Feet North	458580	456482	455755	455142	454065	455490
Accounting Method	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter
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	Upper Floridan Aquifer

TABLE - A
Description Of Wells.

Application Number: 140627-12

Well ID	261791	261792	261793	261794	261795	262633
Name	SMH-F2	SMH-F3	SMH-F4	SMH-F5	SMH-F6	SMH-F7
Map Designator	SMH-FA2	SMH-FA3	SMH-FA4	SMH-FA5	SMH-FA6	SMH-FA7
FLUWID Number						
Well Field	South Miami Heights	South Miami Heights	South Miami Heights	South Miami Heights	South Miami Heights	South Miami Heights
Existing/Proposed	P	P	P	P	P	P
Well Diameter(Inches)	24	24	24	24	24	24
Total Depth(feet)	1200	1200	1200	1200	1200	1200
Cased Depth(feet)	1100	1100	1100	1100	1100	1100
Facility Elev. (ft. NGVD)						
Screened Interval From						
To						
Pumped Or Flowing	P	P	P	P	P	P
Pump Type	Submersible	Submersible	Submersible	Submersible	Submersible	Submersible
Pump Int. Elev. Feet (NGVD)						
Feet (BLS)						
Pump Capacity(GPM)	2430	0	2430	2430	2430	2430
Year Drilled	2012	2012	2012	2012	2012	
Planar Location Source	REVIEWER		REVIEWER	REVIEWER	REVIEWER	
Feet East	860315	860315	860350	860785	861435	860256
Feet North	454555	453205	452090	451310	450545	457056
Accounting Method	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter
Use Status	Primary	Monitor	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	Upper Floridan Aquifer	Upper Floridan Aquifer	Upper Floridan Aquifer	Upper Floridan Aquifer	Upper Floridan Aquifer	Upper Floridan Aquifer

TABLE - A
Description Of Wells.

Application Number: 140627-12

Well ID	262635	217858	217859	217860	217861	257879
Name	SMH-F8	AO-6N	AO-8C	SC-1N	SC-6N	SW-2W
Map Designator	SMH-FA8					SW-2W
FLUWID Number						
Well Field	South Miami Heights					
Existing/Proposed	P	E	E	E	E	E
Well Diameter(inches)	24					
Total Depth(feet)	1200	60	60	60	60	60
Cased Depth(feet)	1100	55	55	55	55	60
Facility Elev. (ft. NGVD)						
Screened Interval From						
To						
Pumped Or Flowing	P					
Pump Type	Submersible	None	None	None	None	Unspecified
Pump Int. Elev. Feet (NGVD)						
Feet (BLS)						
Pump Capacity(GPM)	2430	0	0	0	0	0
Year Drilled						
Planar Location Source						
Feet East	860256	871935	876599	866517	867733	852444
Feet North	458125	497928	503302	498298	494945	496094
Accounting Method	Flow Meter	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	Upper Floridan Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer

TABLE - A
Description Of Wells.

Application Number: 140627-12

Well ID	217863	217869	217870	217881	217878	217877
Name	SW-7W	WWF-21S	WWF-755	NW-3A	NW-6F	NW-8D
Map Designator						
FLUWID Number						
Well Field						
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)						
Total Depth(feet)	60	48	55	88	60	60
Cased Depth(feet)	55	43	50	83	55	55
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	852849	830122	833267	841714	850785	855531
Feet North	491131	496604	496314	562395	543261	548212
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	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer

TABLE - A
Description Of Wells.

Application Number: 140627-12

Well ID	217882	217879	137231	257889	257888	257887
Name	NW-19C	WASD-1C	F-45	F-279	G-354	G-432
Map Designator			F-45	F-279	G-354	G-432
FLUWID Number						
Well Field						
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)						
Total Depth(feet)	50	40	84.9	117	90.2	99.5
Cased Depth(feet)	45	35		113.5	89.2	97.5
Facility Elev. (ft. NGVD)						
Screened Interval From						
To						
Pumped Or Flowing						
Pump Type	None	None	None	Unspecified	Unspecified	Unspecified
Pump Int. Elev. Feet (NGVD)						
Feet (BLS)						
Pump Capacity(GPM)	0	0	0	0	0	0
Year Drilled						
Planar Location Source			REVIEWER			
Feet East	863277	848891	918017	923283	896054	891645
Feet North	548736	553433	544328	565633	536487	506889
Accounting Method	None	None	None	None	None	None
Use Status	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Water Use Type	Monitor	Monitor	Monitor Water Shortage Monitoring Facility	Monitor	Monitor	Monitor
Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer

TABLE - A
Description Of Wells.

Application Number: 140627-12

Well ID	257886	217851	257878	257885	137249	137251
Name	G-548	G-551	G-553	G-571	G-894	G-896
Map Designator	G-548		G-553	G-571	G-894	G-896
FLUWID Number						
Well Field						
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)					2	2
Total Depth(feet)	97.3	80	91	94.5	76	74
Cased Depth(feet)	91.4	71	79	94.5	74.5	60
Facility Elev. (ft. NGVD)						
Screened Interval From						
To						
Pumped Or Flowing						
Pump Type	Unspecified	None	Unspecified	Unspecified	None	None
Pump Int. Elev. Feet (NGVD)						
Feet (BLS)						
Pump Capacity(GPM)	0	0	0	0	0	0
Year Drilled						
Planar Location Source					DIGITIZED	DIGITIZED
Feet East	894029	855096	874041	893396	924897	892989
Feet North	539211	494095	479217	537785	569308	492088
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	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer

TABLE - A
Description Of Wells.

Application Number: 140627-12

Well ID	257884	257883	217716	217853	257882	137233
Name	G-901	G-939	G-1009B	G-1074B	G-1179	G-1180
Map Designator	G-901	G-939	G-1009B		G-1179	G-1180
FLUWID Number						
Well Field						
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)						9
Total Depth(feet)	96	60	100	39	80	67
Cased Depth(feet)	94.8	57		17		
Facility Elev. (ft. NGVD)						
Screened Interval From						
To						
Pumped Or Flowing						
Pump Type	Unspecified	Unspecified	None	None	Unspecified	None
Pump Int. Elev. Feet (NGVD)						
Feet (BLS)						
Pump Capacity(GPM)	0	0	0	0	0	0
Year Drilled						
Planar Location Source			REVIEWER			DIGITIZED
Feet East	889410	883435	887960	824944	856447	854786
Feet North	497387	466158	491810	498493	422815	423247
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 Water Shortage Monitoring Facility
Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer

TABLE - A
Description Of Wells.

Application Number: 140627-12

Well ID	137236	137237	257880	217854	137240	217715
Name	G-1351	G-1354	G-1488	G-3074	G-3162	G-3224
Map Designator	G-1351	G-1354	G-1488			G-3224
FLUWID Number						
Well Field						
Existing/Proposed	E	E	E	A	E	E
Well Diameter(Inches)	2	2			2	
Total Depth(feet)	103	104	20	40	92	95.5
Cased Depth(feet)	100	91		40	82	93.5
Facility Elev. (ft. NGVD)						
Screened Interval From						
To						
Pumped Or Flowing						
Pump Type	None	None	Unspecified	None	None	None
Pump Int. Elev. Feet (NGVD)						
Feet (BLS)						
Pump Capacity(GPM)	0	0	0	0	0	0
Year Drilled						
Planar Location Source	REVIEWER	DIGITIZED			DIGITIZED	REVIEWER
Feet East	896137	897679		866535	857302.951	916450
Feet North	535114	537142		496866	433858.484	560230
Accounting Method	None	None	None	None	None	None
Use Status	Monitor	Monitor	Monitor	Abandoned	Monitor	Monitor
Water Use Type	Monitor Water Shortage Monitoring Facility	Monitor	Monitor	Monitor	Monitor	Monitor
Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer

TABLE - A
Description Of Wells.

Application Number: 140627-12

Well ID	137241	137242	217872	217873	257881	217713
Name	G-3229	G-3250	G-3253	G-3259A	G-3313C	G-3313E
Map Designator	G-3229	G-3250			G-3313C	G-3313E
FLUWID Number						
Well Field						
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)		2				
Total Depth(feet)	85	116	34.5	60	110	114
Cased Depth(feet)		106	18		107	32
Facility Elev. (ft. NGVD)						
Screened Interval From						
To						
Pumped Or Flowing						
Pump Type	None	None	None	None	Unspecified	None
Pump Int. Elev. Feet (NGVD)						
Feet (BLS)						
Pump Capacity(GPM)	0	0	0	0	0	0
Year Drilled						
Planar Location Source	DIGITIZED	DIGITIZED				REVIEWER
Feet East	897343	889597	848470	853204	886586	886590
Feet North	615333	544468	548281	548219	476178	476160
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	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer

TABLE - A
Description Of Wells.

Application Number: 140627-12

Well ID	217864	217865	217866	217855	217867	217856
Name	G-3551	G-3553	G-3554	G-3555	G-3556	G-3563
Map Designator						
FLUWID Number						
Well Field						
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)						
Total Depth(feet)	18.3	19.9	20	19	19.1	18
Cased Depth(feet)	13.3	14.9	15	14	14.1	13
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	822180	829849	833159	834977	830406	872346
Feet North	496766	496216	496238	492107	498278	507267
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	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer

TABLE - A
Description Of Wells.

Application Number: 140627-12

Well ID	217857	217874	217868	217875	217880	217944
Name	G-3565	G-3567	G-3577	G-3676	G-3760	G-3761
Map Designator						
FLUWID Number						
Well Field						
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)						8
Total Depth(feet)	19	18.7	8	33	72.7	16.3
Cased Depth(feet)	14	13.7	0	23	70.7	
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	852082	841565	820631	845381	842356	842339
Feet North	498927	596563	497721	529396	548457	548452
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	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Water Table Aquifer

TABLE - A
Description Of Wells.

Application Number: 140627-12

Well ID	217876	257890	257891	257892	257893	217883
Name	G-3818	G-3885	G-3886	G-3887	G-3888	G-3897
Map Designator		G-3885	G-3886	G-3887	G-3888	SWWF-1(Boystown Pin
FLUWID Number						
Well Field						
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)		2	2	2	2	6
Total Depth(feet)	20	107	109	134	149	22.5
Cased Depth(feet)	15	76	86	80	103.5	22.5
Facility Elev. (ft. NGVD)						
Screened Interval From		76	86	80	103.5	
To		81	91	85	113.5	
Pumped Or Flowing						
Pump Type	None	Unspecified	Unspecified	Unspecified	Unspecified	None
Pump Int. Elev. Feet (NGVD)		6.19	9.54	9.7	13.67	
Feet (BLS)						
Pump Capacity(GPM)	0	0	0	0	0	0
Year Drilled		2009	2009	2009	2009	2009
Planar Location Source						APPLICANT
Feet East	836580	863870	876430	888022	903086	847536
Feet North	549140	441922	457549	481537	519784	483700
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	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer

TABLE - A
Description Of Wells.

Application Number: 140627-12

Well ID	217884	217885	217887	217886	257894	257895
Name	G-3898	G-3899	G-3900	G-3901	G-3946	G-3947
Map Designator	WWF-1SW	SMH-1	Newton 1	Ever 1	G-3946	G-3947
FLUWID Number						
Well Field						
Existing/Proposed	E	E	E	E	E	E
Well Diameter(inches)	6	6	6	6		
Total Depth(feet)	22.8	20.5	22	22.3	99	230
Cased Depth(feet)	22.8	20.5	22	22.3	90	200
Facility Elev. (ft. NGVD)						
Screened Interval From						
To						
Pumped Or Flowing						
Pump Type	None	None	None	None	Unspecified	Unspecified
Pump Int. Elev. Feet (NGVD)						
Feet (BLS)						
Pump Capacity(GPM)	0	0	0	0	0	0
Year Drilled	2009	2009	2009	2009		
Planar Location Source	APPLICANT	APPLICANT	APPLICANT	APPLICANT		
Feet East	828900	861418	838647	850586	863870	915184
Feet North	495915	450646	407718	394645	441939	546997
Accounting Method	None	None	None	None	None	None
Use Status	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Water Use Type	Monitor	Monitor	Monitor Water Shortage Monitoring Facility	Monitor Water Shortage Monitoring Facility	Monitor	Monitor
Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer

TABLE - A
Description Of Wells.

Application Number: 140627-12

Well ID	257896	257897	217829	270263	217831	217832
Name	G-3948	G-3949	FA-3N NDWWTP	FA-1 (Replaces FA-5)	ASR MW-1 (WEST)	ASR MW-1 (SW)
Map Designator	G-3948	G-3949	NDWWTP FA-3N	FA-1	ASR MW-1	SWWF MW-1
FLUWID Number						
Well Field						
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)						
Total Depth(feet)	279		1510	1890	1396	1200
Cased Depth(feet)			1410	1890	1350	1110
Facility Elev. (ft. NGVD)						
Screened Interval From					855	845
To					1010	900
Pumped Or Flowing			F			F
Pump Type	Unspecified	Unspecified	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	926769	930332		817470		
Feet North	577670	591728		443075		
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	Biscayne Aquifer	Biscayne Aquifer	Upper Floridan Aquifer	Floridan Aquifer System	Upper Floridan Aquifer	Upper Floridan Aquifer

TABLE - A
Description Of Wells.

Application Number: 140627-12

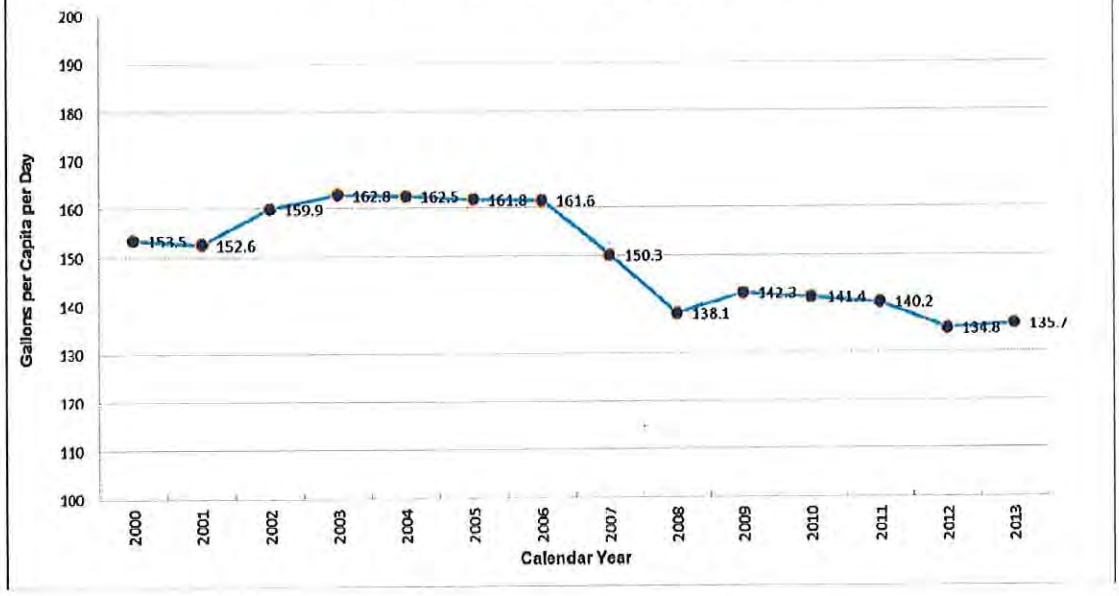
Well ID	217833	268268	265515
Name	CHI SDWWTP	G-3913	NW-3AR (replaces NW-
Map Designator	Central Hospital	G-3913	
FLUWID Number			
Well Field			
Existing/Proposed	E	E	E
Well Diameter(inches)		4	
Total Depth(feet)	1500	74	88
Cased Depth(feet)	1400	63.5	83
Facility Elev. (ft. NGVD)			
Screened Interval From	1000		
To	1100		
Pumped Or Flowing	F		
Pump Type	None	None	None
Pump Int. Elev. Feet (NGVD)		7.25	
Feet (BLS)			
Pump Capacity(GPM)	0	0	0
Year Drilled		2010	
Planar Location Source		APPLICANT	
Feet East		866757.441	841714
Feet North		496754.022	562395
Accounting Method	None	None	None
Use Status	Monitor	Primary	Monitor
Water Use Type	Monitor	Monitor	Monitor
Aquifer	Upper Floridan Aquifer	Biscayne Aquifer	Biscayne Aquifer

SECTION I - PLAN IMPLEMENTATION

The Conserve Florida BMPs that MDWASD has implemented as part of the Water Use Efficiency Plan are shown in this Report in Appendix A.

As a result of the implementation of the BMPs and the landscape irrigation restriction measures, Miami-Dade County has continued to see a lower than expected per capita water consumption. Figure 1 reflects the historical systemwide per capita, showing the effectiveness of all of MDWASD's water efficiency strategies. It should be noted that the historic per capita calculations have been revised based on the most current population data Miami-Dade County Planning Division of the Regulatory and Economic Resources

Figure 1 Historical Systemwide Average Finished Water per Capita



Notes:
1. Data from Table F, revised April 3, 2014
2. Per capita from 2008 to 2013, per finished water flows reported to SFWMD
3. Historic Population from 2001 – 2009 adjusted downward based on data from Miami-Dade County Planning Division of the Regulatory and Economic Resources Department. 2010-2013 represents the 2010 TAZ population projections by the Miami-Dade County Planning Division.

EXHIBIT 6

Table F (September 2014)
Miami-Dade Water and Sewer Department (MDWASD)
Past Water Use (2004-2013)

1	2	3	4	5	6	7	8	9	10	11	12	13
FINISHED WATER HISTORICAL USE							RAW WATER HISTORICAL USE [(a)]					Ratio Finished:Raw (Total Annual Use)
Year	Population Served *	Per Capita Usage (gpcd)	Total Annual Use (MG)	Average Month Use (MG)	Max Month Use (MG)	Ratio Max : Aver. Month	Per Capita Usage (gpcd)	Total Annual Use (MG)	Average Month Use (MG)	Max Month Use (MG)	Ratio Max : Aver. Month	
TOTAL MDWASD WATER SYSTEM SERVICE AREA **												
2004	2,090,099	162.5	124,301	10,358	10,861.1	1.05	165.6	126,685	10,557	11,063	1.05	1.019
2005	2,101,772	161.8	124,098	10,342	10,734.8	1.04	165.1	126,670	10,556	11,031	1.04	1.021
2006	2,113,445	161.6	124,677	10,390	10,988.6	1.06	164.7	127,019	10,585	11,170	1.06	1.019
2007	2,125,118	150.3	116,602	9,717	10,485.4	1.08	151.6	117,585	9,799	10,648	1.09	1.008
2008	2,136,791	138.1	108,029	9,002	9,583.0	1.06	149.4	116,820	9,735	10,508	1.08	1.081
2009	2,148,464	142.3	111,627	9,302	9,662.7	1.04	151.2	118,575	9,881	10,550	1.07	1.062
2010	2,160,138	141.4	111,453	9,288	9,700.0	1.04	151.0	119,056	9,921	10,346	1.04	1.068
2011	2,181,073	140.2	111,585	9,299	9,597.6	1.03	149.2	118,768	9,897	10,273	1.04	1.064
2012	2,202,008	134.8	108,626	9,052	9,693.9	1.07	142.5	114,807	9,567	10,223	1.07	1.057
2013	2,222,944	136.5	111,052	9,254	9,483.7	1.02	144.6	117,623	9,802	10,252	1.05	1.059
3-year Average (2011-2013)	-	137.2	-	-	-	1.04	145.4	-	-	-	1.05	1.060

EXHIBIT 7

* Source of Population Information: Miami-Dade County (MDC) Planning Department. Historic Population 2001 to 2009 adjusted (downward) based on, and 2010 to 2013 represents the 2010TAZ population projections by the MDC Planning Department, based on 2010 Census.

** For 2004 - 2007 from MDWASD Raw & Finished Water Historical Data, For 2008 - 2013 from MDWASD reports to SFWMD of Water Treatment Plant Influent & Effluent Flow Meter Flows

(a) Raw-to-finished water ratio is 1.06. MDWASD is improving its raw water metering/accounting system.

EXHIBIT 8A

TABLE G (Revised January 2015)
MDWASD PROJECTED RAW WATER DEMAND BY SOURCE

1	2	3	4	5	6	7	8	9	19	20	21	22	23	24	25	26	27	28	29
	PROJECTIONS (2013) FOR MDWASD SERVICE AREA									RAW WATER AADD (MGD)									
										Biscayne Aquifer[f]						Floridan Aquifer			
Year	Population[a]	Finished Water Use (gpcd)	AADD Finished Water Use[b] (MGD)	Water Conservation[c] (MGD) Credit	Reuse/ Reclaimed Water[d] (MGD) Credit	Adjusted Finished Water Demand[e] (MGD)	Adjusted Finished Water Use (gpcd)	CITY OF HOMESTEAD Finished Water Demand (MGD)	AADD Finished Water "SURPLUS" (Col. 18 - Col. 9 = Col. T)	South Dade[g]		South Miami Heights (SMH) Membrane Softening WTP[g,m]	Hialeah-Preston/ Alexander-Orr Lime Softening [j,n]	ASR Losses[k]	Total Biscayne Aquifer [f,n]	Hialeah RO WTP[f]	South Miami Heights (SMH) RO WTP[m]	Total Floridan Aquifer	Total All Sources
										Elevated Tank/ Leisure City/ Naranja	Everglades Labor Camp/ Newton[h]								
System-Wide																			
2014	2,243,879	137.2	307.79	1.36	0.00	306.43	136.56	2.50	0.00	4.30	4.08	0.00	310.63	0.14	319.15	10.00	0.00	10.00	329.15
2015	2,266,092	137.2	310.84	2.04	0.00	308.80	136.27	3.00	0.00	4.30	4.10	0.00	311.00	0.14	319.54	13.30	0.00	13.30	332.84
2020	2,370,769	137.2	325.20	5.44	0.00	319.76	134.88	3.00	0.00	0.00	*4.10 (h)*	3.00	315.63	0.14	318.77	13.30	16.60	29.90	348.67
2025	2,475,446	137.2	339.56	8.84	0.00	330.72	133.60	3.00	0.00	0.00	*4.10 (h)*	3.00	327.24	0.14	330.38	13.30	16.60	29.90	360.28
2030	2,580,123	137.2	353.92	9.55	0.00	344.37	133.47	3.00	0.00	0.00	*4.10 (h)*	3.00	341.71	0.14	344.85	13.30	16.60	29.90	374.75
2031	2,601,058	137.2	356.79	9.55	0.00	347.24	133.50	3.00	0.00	0.00	*4.10 (h)*	3.00	339.45	0.14	342.59	13.30	23.27	36.57	379.16
2032	2,621,994	137.2	359.66	9.55	0.00	350.11	133.53	3.00	0.00	0.00	*4.10 (h)*	3.00	342.50	0.14	345.64	13.30	23.27	36.57	382.21
2033	2,642,929	137.2	362.53	9.55	0.00	352.98	133.56	3.00	0.00	0.00	*4.10 (h)*	3.00	346.36	0.14	349.50	13.30	23.27	36.57	386.07

MDWASD PROJECTED FINISHED WATER DEMAND BY SOURCE

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	PROJECTIONS (2013) FOR MDWASD SERVICE AREA								ADJUSTED FINISHED WATER AADD (MGD)								
									Biscayne Aquifer					Floridan Aquifer			
Year	Population[a]	Finished Water Use (gpcd)	AADD Finished Water Use[b] (MGD)	Water Conservation[c] (MGD) Credit	Reuse/ Reclaimed Water[d] (MGD) Credit	Adjusted Finished Water Demand[e] (MGD)	Adjusted Finished Water Use (gpcd)	CITY OF HOMESTEAD Finished Water Demand (MGD)	South Dade[g]		South Miami Heights (SMH) Membrane Softening WTP[l,m]	Hialeah-Preston/ Alexander-Orr Lime Softening [j]	Total Biscayne Aquifer [f]	Hialeah RO WTP[f]	South Miami Heights (SMH) RO WTP[m]	Total Floridan Aquifer	Total All Sources
									Elevated Tank/ Leisure City/ Naranja	Everglades Labor Camp/ Newton[h]							
System-Wide																	
2014	2,243,879	137.2	307.79	1.36	0.00	306.43	136.56	2.50	4.30	4.08	0.00	293.05	301.43	7.50	0.00	7.50	308.93
2015	2,266,092	137.2	310.84	2.04	0.00	308.80	136.27	3.00	4.30	4.10	0.00	293.40	301.80	10.00	0.00	10.00	311.80
2020	2,370,769	137.2	325.20	5.44	0.00	319.76	134.88	3.00	0.00	*4.10 (h)*	2.55	297.76	306.31	10.00	12.45	22.45	328.76
2025	2,475,446	137.2	339.56	8.84	0.00	330.72	133.60	3.00	0.00	*4.10 (h)*	2.55	308.72	311.27	10.00	12.45	22.45	333.72
2030	2,580,123	137.2	353.92	9.55	0.00	344.37	133.47	3.00	0.00	*4.10 (h)*	2.55	322.37	324.92	10.00	12.45	22.45	347.37
2031	2,601,058	137.2	356.79	9.55	0.00	347.24	133.50	3.00	0.00	*4.10 (h)*	2.55	320.24	322.79	10.00	17.45	27.45	350.24
2032	2,621,994	137.2	359.66	9.55	0.00	350.11	133.53	3.00	0.00	*4.10 (h)*	2.55	323.11	325.66	10.00	17.45	27.45	353.11
2033	2,642,929	137.2	362.53	9.55	0.00	352.98	133.56	3.00	0.00	*4.10 (h)*	2.55	325.98	328.53	10.00	17.45	27.45	355.98

TABLE G (Revised January 2015)
MDWASD PROJECTED RAW AND FINISH WATER DEMAND BY SOURCE

Footnotes

(a) Population Served represents most recent represents the 2010TAZ population projections by the MDC Planning Department.

(b) Annual Average Daily Demand (AADD) Finished Water Projections between 2014 and 2035 assume 137.2 gpcd (a decrease from 145.4 gpcd) total water system demand prior to application of credits (e.g. conservation).

(c) WASD has implemented a 20-year water use efficiency plan and is experiencing reductions in per capita water consumption. Water Conservation projections were revised based on the 2010 Annual Water Conservation Plan Conserve Florida Report (March 2011). Real losses in non-revenue water (e.g. unaccounted-for-water) are assumed to remain at less than 10%. The conservation amounts experienced through 2010 (6.54 MGD) were deducted from the 20-year conservation amount in the Conserve Florida Report and the remaining conservation amounts were distributed for the balance of the 20-year period (2011-2027).

(d) Not Used (TBD).

(e) Adjusted after taking credit in finished water demand projections for reductions in finished water use associated with water conservation.

(f) The Modified Base condition raw water use (349.5 mgd) represents values agreed to by SFWMD and MDWASD and demonstrated by modeling to not cause a net increase in water from the regional canal system. Biscayne Aquifer base condition raw water use allocation of 349.5 mgd (South Dade at 7.1 mgd, North and South at 342.4 mgd) equates to 342.8 mgd of finished water annual average daily demand (AADD).

(g) South Dade (Raw : Finished) Ratio = 1.0 : 1.0

(h) Everglades Labor Camp and Newton are to remain as *stand-by* once the SMH WTP starts up. This *stand-by* capacity is <u>not</u> used in the total raw and finished water amounts.

(i) Assumes withdrawals from Elevated Tank, Leisure City, Naranja, Caribbean Park, Former Plant, and Roberta Hunter Park are consolidated. Biscayne Aquifer supplied Membrane Softening (Raw : Finished) Ratio = 1.17 : 1.00 (85% Recovery).

(j) Hialeah-Preston / Alexander-Orr (Raw : Finished) Ratio = 1.050 : 1.00 (Lime Softening)

(k) The values are based on initial cycle testing of the ASR well facilities and the projected seasonal operations of the ASR well facilities at full design capacities with the storing of Biscayne aquifer water during the wet weather months of June through October and the recovery of the stored Biscayne aquifer water during the dry weather months of December through April, assuming an ultimate storage loss of 1.31%.

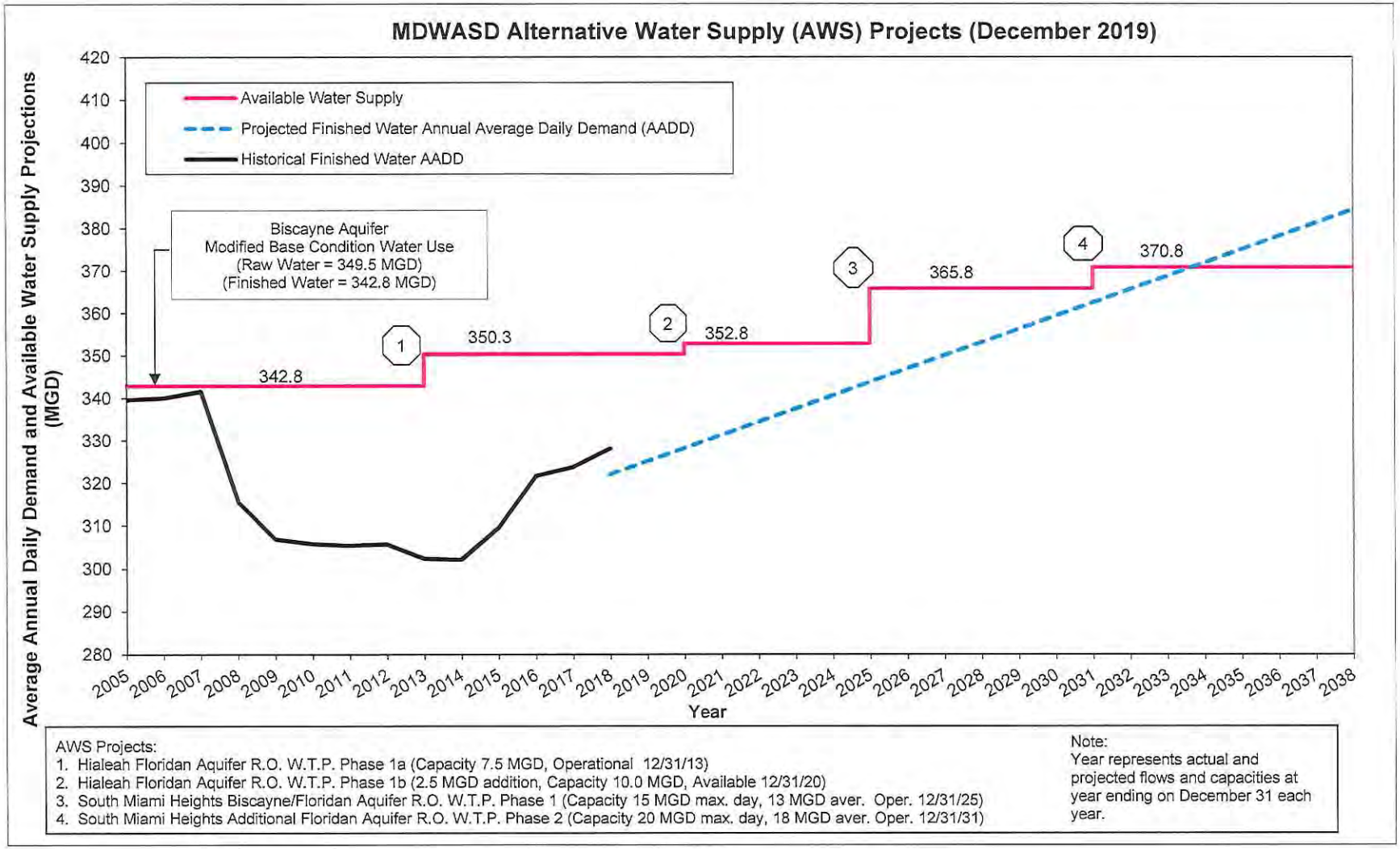
(l) Floridan Aquifer supplied RO WTP (Raw : Finished) Ratio = 1.333 : 1.00 (75% recovery)

(m) At an ultimate 20 mgd plant operating capacity, the raw water withdrawal would be 3.00 MGD from the Biscayne and 23.27 MGD from the Floridan in accordance with the Wellfield Operation Plan. In order to maintain operational flexibility and protect the nanofiltration membranes (Biscayne supply), MDWASD is requesting that the WTP be allowed to operate with up to a constant supply of 3.0 MGD from the Biscayne aquifer and the rest, to meet demand, be provided from the Floridan aquifer. The full use of the small Biscayne aquifer allocation at SMH supplemented by Floridan aquifer water will allow a blended finished water product that is expected to be lower in sodium and chloride, which will be beneficial to customers on low sodium diets, and more will require less chemical addition for product water stabilization.

(n) An additional 0.82 MGD of Raw Water AADD has been included in year 2033 for Hialeah-Preston / Alexander Orr Lime Softening to maintain the total Biscayne aquifer Modified Base condition raw water use at 349.5 mgd and to provide needed operational flexibility in withdrawals of Floridan aquifer water.

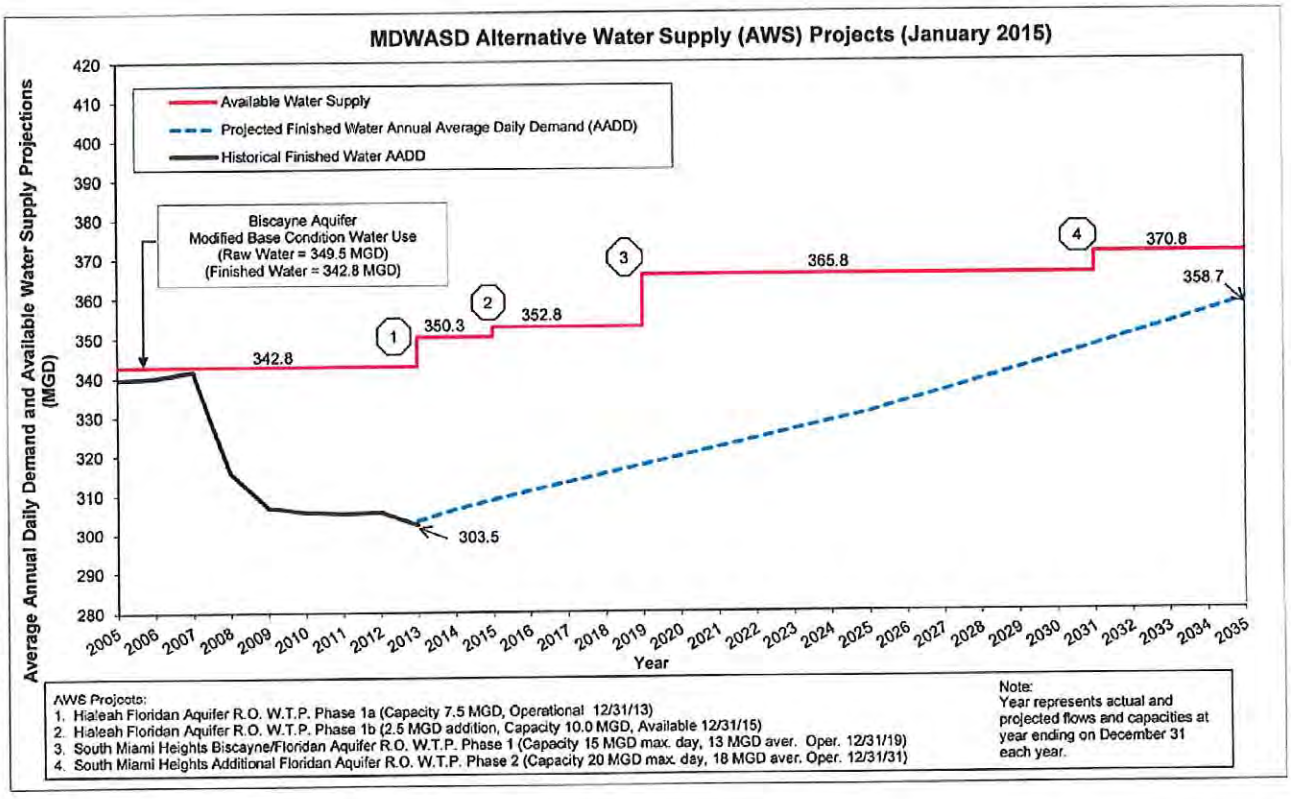
EXHIBIT 8B

EXHIBIT 9



Alternative Water Supply Projects Step Chart December 2019

EXHIBIT 9



Alternative Water Supply Projects Step Chart January 2015

MDWASD Biscayne Aquifer Wellfields Operation Plan Summary (Revised January 2015)

1	2	3	4		5	6	7	8	9	10	11	12	13
WTP Subarea and Wellfield	Existing Wellfield Data (2014		Historic [b] (Pre 4/1/2006) Base Condition Annual Average Pumpage (MGD)	Revised Base Condition Annual Average Pumpage (MGD)	Individual Wellfield ANNUAL AVERAGE Pumpage Allocation								Remarks
	Design Capacity (mgd)	Number of Wells			2014-2018		2019 - 2025		2026 - 2030		2031 - 2033		
					BG	(mgd)	BG	(mgd)	BG	(mgd)	BG	(mgd)	
Hialeah-Preston [c]													
Hialeah	12.54	3	3.1	70.0	25.550	70.00	25.550	70.00	25.550	70.00	25.550	70.00	Total not to exceed 25.500 BGY
John E. Preston	53.28	7	37.2										
Miami Springs	79.3	20	29.7										
Medley	48.96	4	0										
Northwest [a]	149.36	15	88.7	96.8	35.332	96.80	35.332	96.80	35.332	96.80	35.332	96.80	
Subtotal	**343.43**	**49**	**164.5**	**155.4**	**56.721**	**155.40**	**56.721**	**155.40**	**56.721**	**155.40**	**56.721**	**155.40**	
Alexander Orr [d]													
Alexander Orr	74.40	10	62.0	40.0	62.524	171.30	62.524	171.30	62.524	171.30	62.524	171.30	
Snapper Creek	40.00	4	20.4	21.9									
Southwest	161.20	17	83.8	109.4									
West	32.40	3	15.0	15.0	5.475	15.00	5.475	15.00	5.475	15.00	5.475	15.00	
Subtotal	**308.00**	**34**	**181.2**	**186.3**	**67.999**	**186.30**	**67.999**	**186.30**	**67.999**	**186.30**	**67.999**	**186.30**	
South Dade [e]													
Elevated Tank	4.32	2	1.3	1.3	1.570	4.30	-	-	-	-	-	-	Drops out when SMH comes on line in 2019. Turning off at 4.3 mgd resulted in a 2.5 mgd reduction in impact to regional canals, making 2.5 mgd available to SMH wellfield.
Leisure City	4.18	4	2.9	2.9									
Naranja	1.15	1	0.1	0.1									
Everglades Labor Camp [e]	5.04	3	0.7	2.2	1.752	4.80	*1.752*	*4.80*	*1.752*	*4.80*	*1.752*	*4.80*	Goes to standby after SMH comes online in 2019. Subject to limitation of 4.8 mgd (1.752 BGY) and system wide total not-to-exceed allocation.
Newton [e]	4.32	2	2.1	2.6									
Subtotal	**19.01**	**12**	**7.1**	**7.8**	**2.647**	**7.80**	*1.752*	*4.80*	*1.752*	*4.80*	*1.752*	*4.80*	
South Miami Heights [f]													
Former Plant	*4*	*1*	*NA*	*NA*	-	-	1.095	3.00	1.095	3.00	1.095	3.00	Initial 2.5 mgd transfer from shut down of 4.3 mgd at South Dade plus 0.5 mgd additional
Roberta Hunter Park	*6*	*4*	*NA*	*NA*									
Subtotal	***10.00***	***5***			**0.000**	**0.00**	**1.095**	**3.00**	**1.095**	**3.00**	**1.095**	**3.00**	
MDWASD System Total	**680.44**	**100**	**347.0**	**349.5**									
Total Not-To-Exceed System Wide Pumpage			**Annual in BGY (mgd)**		**127.567**	**349.50**	**127.567**	**349.50**	**127.567**	**349.50**	**127.567**	**349.50**	System wide allocation, not less than revised baseline allocation, not the sum of individual wellfield pumpage allocations, and may be more restrictive.

Notes: BG = Billion Gallons; MGD = Million Gallons per Day

(a) Northwest wellfield design capacity at 110 mgd when pumps operate at low speed.

(b) These numbers are based on historical raw water values at the treatment plants for a 12-month running average during the five-year period preceding 4/1/2006 in accordance with SFWMD Water Availability Rule (April 26, 2007). Values for the individual wellfields are approximations.

(c) Base Condition Water Use of the North System, Hialeah-Preston is 164.5 mgd. The base condition impacts of 9.1 mgd for historical water deliveries by MDWASD to City of North Miami Beach were transferred to the City with re-issuance of their permit in July 2007; revising the base condition to 155.4 mgd.

(d) Base Condition Water Use of the Central System, Alexander Orr is 181.2 mgd. It was demonstrated through modeling that transfering 22.0 MGD from Alexander Orr WTP well field to the Southwest and an additional withdrawal of 1.5 MGD at Snapper Creek and 3.6 MGD at Southwest would not cause a net increase in volume or cause a change in timing of surface and groundwater from Everglades water bodies, consistent with Section 3.2.1.E(2) of the BOR; revising the base conditon to 214.18 mgd.

(e) The South Dade allocation associated with Elevated Tank, Leisure City, and Naranja is transferred to SMH when the new WTP is planned to begin operation in 2019. Everglades Labor Camp and Newton wellfields are placed in stand by service after the SMHWTP begins planned operations in 2019, with operations limited to minimum amount required to maintain operational readiness and Florida Department of Health clearance. For Everglades Labor Camp and Newton the historical pumpage of 2.8 mgd was increased by 1.5 mgd at Everglades Labor Camp and 0.5 mgd at Newton to 4.8 mgd total, consistent with Section 3.2.1E(2) of the Basis of Review for Water Use Applications within the South Florida Water Management District. Turning off Elevated Tank, Leisure City, and Naranja at 4.3 mgd results in a 2.5 mgd reduction in impact to regional canals, therefore 2.5 mgd is available to transfer to SMH wellfield, plus an additional 0.5 mgd was allowed to account for the reduced treatment efficiency of the proposed membrane softening plant, pursuant to Section 3.2.1E(3)(a).

(f) These proposed facilities are for membrane softening portion of SMH Water Treatment Plant.

EXHIBIT 10A

1/28/2015

Table 4 - MDWASD Floridan Aquifer Wellfields Operation Plan Summary (January 2015) Pumpage by Wellfield

1	2	3	4	5	6	7	8	9	10
WTP Subarea and Wellfield	Wellfield Data		Individual Wellfield ANNUAL Pumpage / Allocation						Remarks
	Design Capacity (mgd)	Number of Wells	2014 - 2018		2019 - 2030		2031 - 2033		
			BG	(mgd)	BG	(mgd)	BG	(mgd)	See Footnote (a)
Hialeah RO WTP [a]	20.00	14	4.855	13.30	4.855	13.30	4.855	13.30	
Alexander Orr WTP (Use of Floridan Aquifer Wells for ASR) [b]									
Southwest Wellfield ASR	10.00	2	(1.542)	10.08	(1.542)	10.08	(1.542)	10.08	See Footnote (b)
			1.522	10.08	1.522	10.08	1.522	10.08	
West Wellfield ASR	15.00	3	(2.313)	15.12	(2.313)	15.12	(2.313)	15.12	
			2.283	15.12	2.283	15.12	2.283	15.12	
South Miami Heights WTP (Use of Floridan Aquifer Wells for RO) [c]									
South Miami Heights WTP [c]	24.00	7	0	0.00	6.059	16.60	8.494	23.27	See Footnote (c)
MDWASD System Total	69.00	26							
Total Not-To-Exceed Pumpage	Annual Average		4.805	13.30	10.864	29.90	13.299	36.57	

Notes

BG = Billion Gallons; MGD = Million Gallons per Day

(a) New Upper Floridan Aquifer RO WTP - Finish water supply of 10.0 mgd, 7.5 mgd Phase 1a by Dec. 31, 2013, 10.0mgd Phase 1b by Dec. 31, 2015. Initial six (6) Floridan aquifer supply wells completed prior to Dec. 31, 2013; an additional four (4) Floridan aquifer supply wells to be completed prior to Dec. 31, 2015; with potential for an additional four (4) Floridan aquifer supply wells if needed.

(b) Based on 153 days of storage (indicated as negative withdrawal) and 151 days of recovery (positive withdrawal) per ASR well a year. Excludes initial Cycle and Operational Testing of the ASR Wells and ASR Facility UV Disinfection System Testing (Testing is currently underway at Southwest Wellfield ASR and is pending at West Wellfield ASR).

(c) New Upper Floridan Aquifer RO Treatment at South Miami Heights WTP (Phase 1 Finish water supply of 12.45 mgd by Dec. 31, 2019 with Phase 2 total Finish water supply of 17.45 mgd by Dec. 31, 2031)

Revised January 2015

EXHIBIT 10B

Revised Base Condition Pumping Rates (revised 6/29/2012)									
Subarea	Wellfield	Wellfield Base Condition Pumpage [a] (Pre 4/2006)		Base Condition Transfers [b] [c] & [d]		Modeled Transfers (Not inducing additional Regional Water demands)		Modified Base Condition Water Use	
		BGY	(mgd)	BGY	(mgd)	BGY	(mgd)	BGY	(mgd)
North Hialeah-Preston [b] (13-00037-W)	Hialeah	1.132	3.1	-3.322	-9.1			25.550	70.0
	John E. Preston	13.578	37.2						
	Medley								
	Miami Springs	10.841	29.7						
	Northwest	35.332	96.8					32.376	88.70
Permit Base Condition (13-00037-W) [b]		60.042	164.5	-3.322	-9.1	0.000	0.0	56.720	155.4
Central Alexander Orr [c] (13-00017-W)	Alexander Orr	22.630	62.0	-8.030	-22.0			62.524	171.3
	Snapper Creek	7.446	20.4			0.547	1.5		
	Southwest	30.586	83.8	8.030	22.0	1.314	3.6		
	West	5.475	15.0					5.475	15.0
Permit Base Condition (13-00017-W) [c]		66.138	181.2	0.000	0.0	1.861	5.1	67.999	186.3
South Dade (13-00040-W)	Elevated Tank [d]	0.475	1.3	-0.475	-1.3			1.571	4.3
	Leisure City [d]	1.067	2.9	-1.059	-2.9				
	Naranja [d]	0.037	0.1	-0.037	-0.1				
	Everglades Labor Camp [e]	0.256	0.7			0.547	1.5	1.752	4.8
	Newton [e]	0.767	2.1			0.182	0.5		
	South Miami Heights [d]			1.095	3.0			1.095	3.0
Permit Base Condition (13-00040-W)		2.592	7.1	-0.475	-1.3	0.729	2.0	2.847	7.8
SYSTEM-WIDE TOTAL BASE CONDITION PUMPING RATE [f]		128.772	352.8	-3.797	-10.4	2.590	7.1	127.566	349.5

Notes:

(a) Numbers were based on 12-month running average; values for individual wellfields are approximate. The sum of individual wellfield pumpages are higher than overall permit base condition due to differences in time period when the individual wellfield base volumes were established.

(b) Base Condition Water Use of the North System, Hialeah-Preston is 164.5 mgd. The base condition impacts of 9.1 mgd for historical water deliveries by MDWASD to City of North Miami Beach were transferred to the City with re-issuance of their permit in July 2007.

(c) Base Condition Water Use of the Central System, Alexander Orr is 181.2 mgd. It was demonstrated through modeling that transfering 22.0 MGD from Alexander Orr WTP well field to the Southwest and an additional withdrawal of 1.5 MGD at Snapper Creek and 3.6 MGD at Southwest would not cause a net increase in volume or cause a change in timing of surface and groundwater from Everglades water bodies, consistent with Section 3.2.1.E(2) of the BOR.

(d) Base Condition Water Use of the South Dade System is 7.1 mgd. Turning off 4.3 mgd at Elevated Tank, Leisure City and Naranja results in a 2.5 mgd reduction in impact on regional canals; therefore 2.5 is available to transfer to SMH wellfield. Increasing from 2.5 mgd to 3.0 mgd was allowed to account for the reduced treatment efficiency of the proposed membrane softening plant, pursuant to Section 3.2.1E(3)(a).

(e) The base condition water use for Newton is 2.1 mgd and for Everglades Labor Camp is 0.7 mgd. It was demonstrated through modeling that an additional withdrawal of 0.5 MGD at Newton and 1.5 MGD at Everglades wellfields would not cause a net increase in volume or cause a change in timing of surface and groundwater from Everglades water bodies, consistent with Section 3.2.1.E(2) of the BOR.

(f) All proposed Biscayne aquifer withdrawals above the revised base condition water use are proposed to be offset through the use of reclaimed water to recharge groundwater and canals in the vicinity of the wellfields.

EXHIBIT 10C

Revised 6/29/2012

Wholesale Customer Treated Water Deliveries

Entity	Treatment Plant	Deliveries in Millions gallons per fiscal year					
		FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014
Bal Harbor	Hialeah-Preston	466	455	486	430	494	407
Bay Harbor Islands	Hialeah-Preston	329	317	302	310	309	318
Hialeah	Hialeah-Preston	8110	9103	9598	9121	9429	7285
Hialeah Gardens	Hialeah-Preston	695	654	693	591	576	638
Homestead (1)	Alexander Orr	0	0	0	40	151	188
Indian Creek Village	Hialeah-Preston	140	121	133	122	120	117
Medley	Hialeah-Preston	393	400	328	479	516	470
Miami Beach	Hialeah-Preston	6489	6952	8410	7918	7903	7615
Miami Springs (2)	Hialeah-Preston	-	-	-	-	-	-
North Bay Village	Hialeah-Preston	365	395	387	391	415	405
North Miami	Hialeah-Preston	1502	1175	1331	1374	1655	1693
North Miami Beach (3)	Hialeah-Preston	107	100	-	-	-	- *
Opa-Locka	Hialeah-Preston	845	788	887	876	876	895
Surfside	Hialeah-Preston	343	328	317	312	299	303
Virginia Gardens	Hialeah-Preston	100	98	91	93	95	91
West Miami	Alexander Orr	290	293	275	292	236	278
Water Received from Others		386	145	179	152	172	NA

(1) Homestead usage of water is limited to an as needed basis. Their usage is not consistent to that of a wholesale customer.
(2) The City of Miami Springs water system was purchased by WASD and beginning fiscal year 2009, was no longer a wholesale customer. WASD is now providing direct services to customers.
(3) North Miami Beach constructed their own water plant and beginning fiscal year 2009, has not had the need to purchase significant amounts of water.
* Volumes for North Miami Beach reflect total delivered minus water passed thru for Aventura.

EXHIBIT 11
January 2015

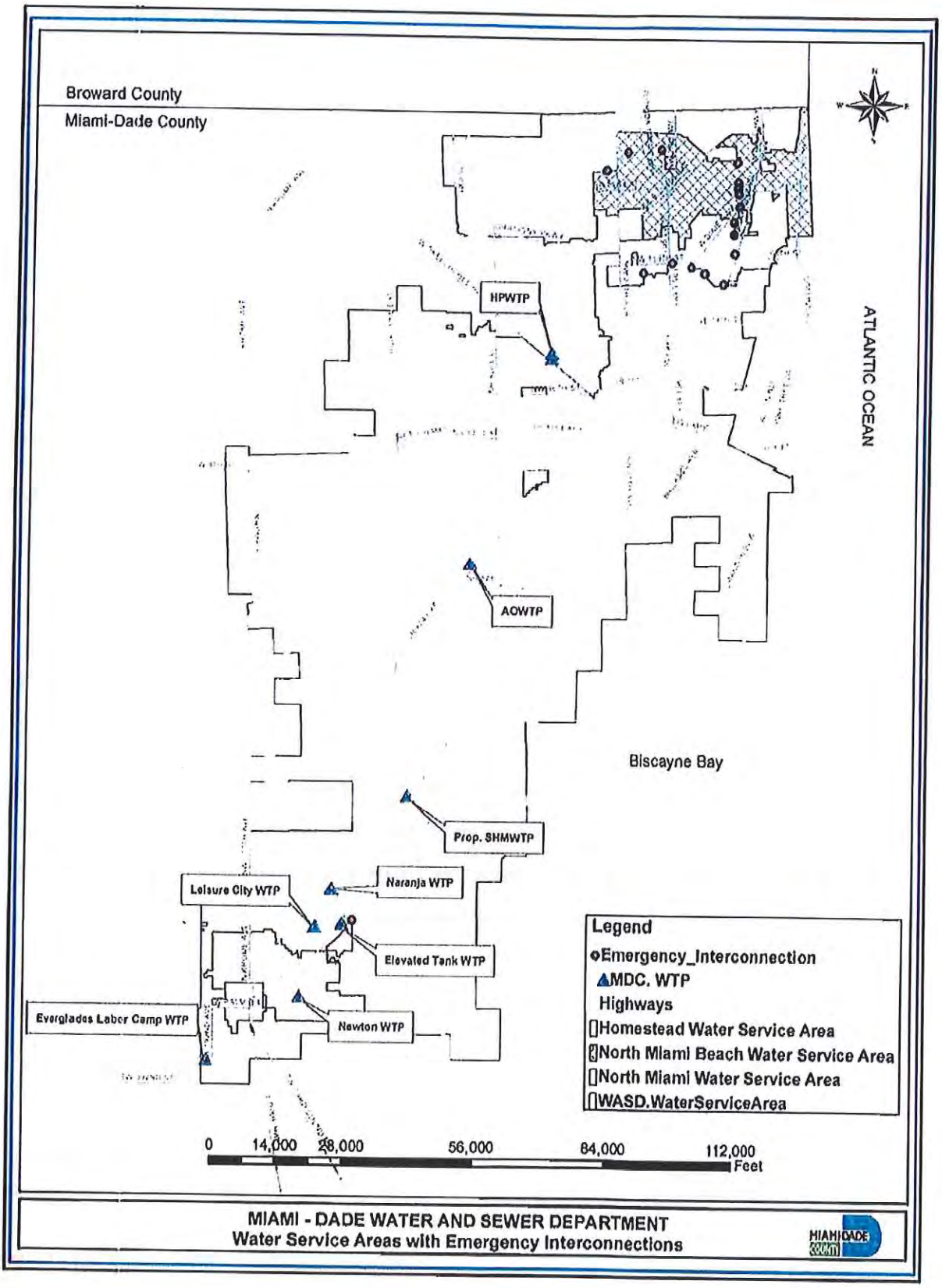
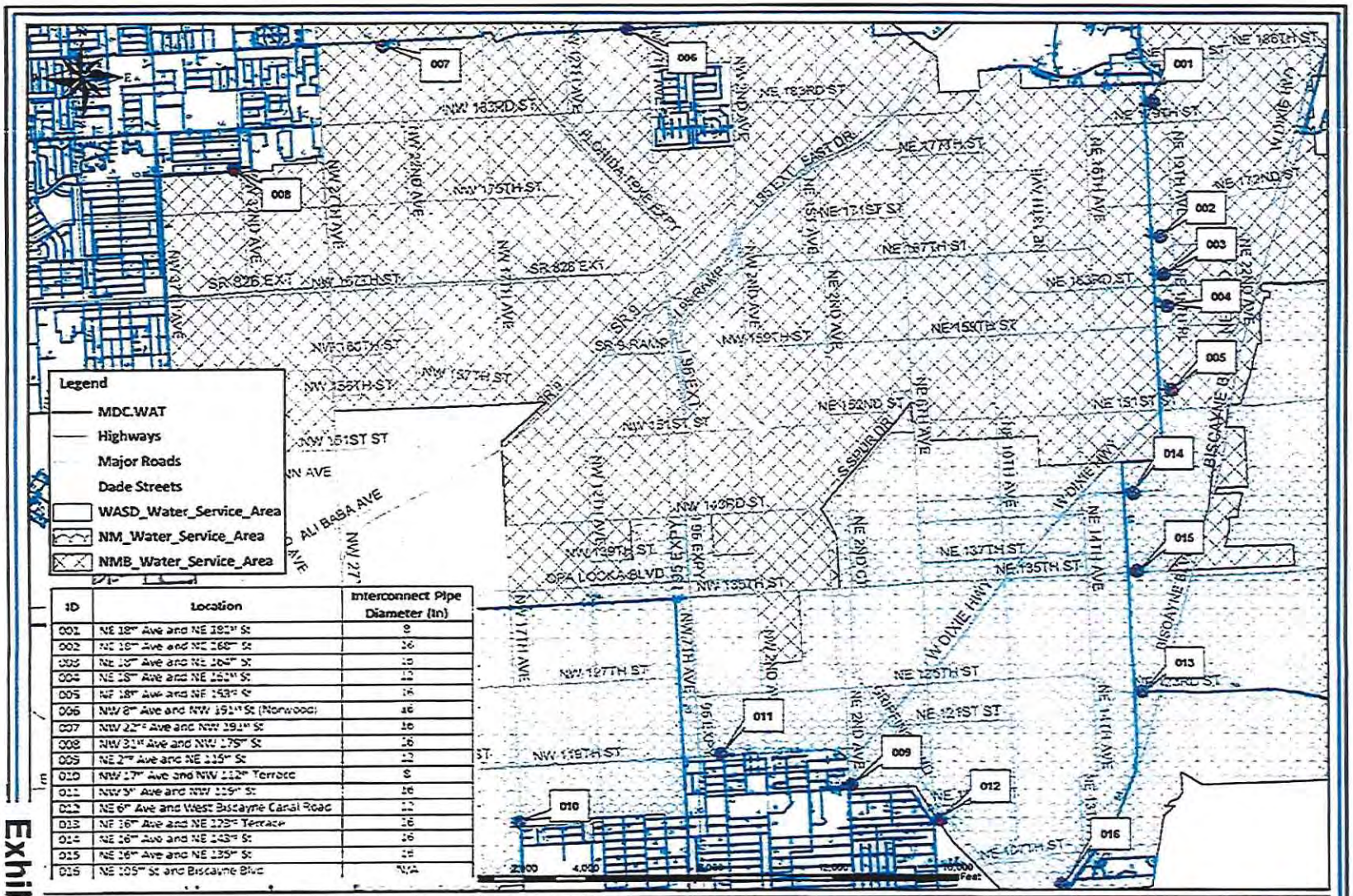

Broward County
Miami-Dade County
HPWTP
ATLANTIC OCEAN
AOWTP
Biscayne Bay
Prop. SHMWTP
Naranja WTP
Leisure City WTP
Elevated Tank WTP
Everglades Labor Camp WTP
Newton WTP
Legend
Emergency_Interconnection
MDC. WTP
Highways
Homestead Water Service Area
North Miami Beach Water Service Area
North Miami Water Service Area
WASD.WaterServiceArea
0
14,000
28,000
56,000
84,000
112,000
Feet
MIAMI - DADE WATER AND SEWER DEPARTMENT
Water Service Areas with Emergency Interconnections

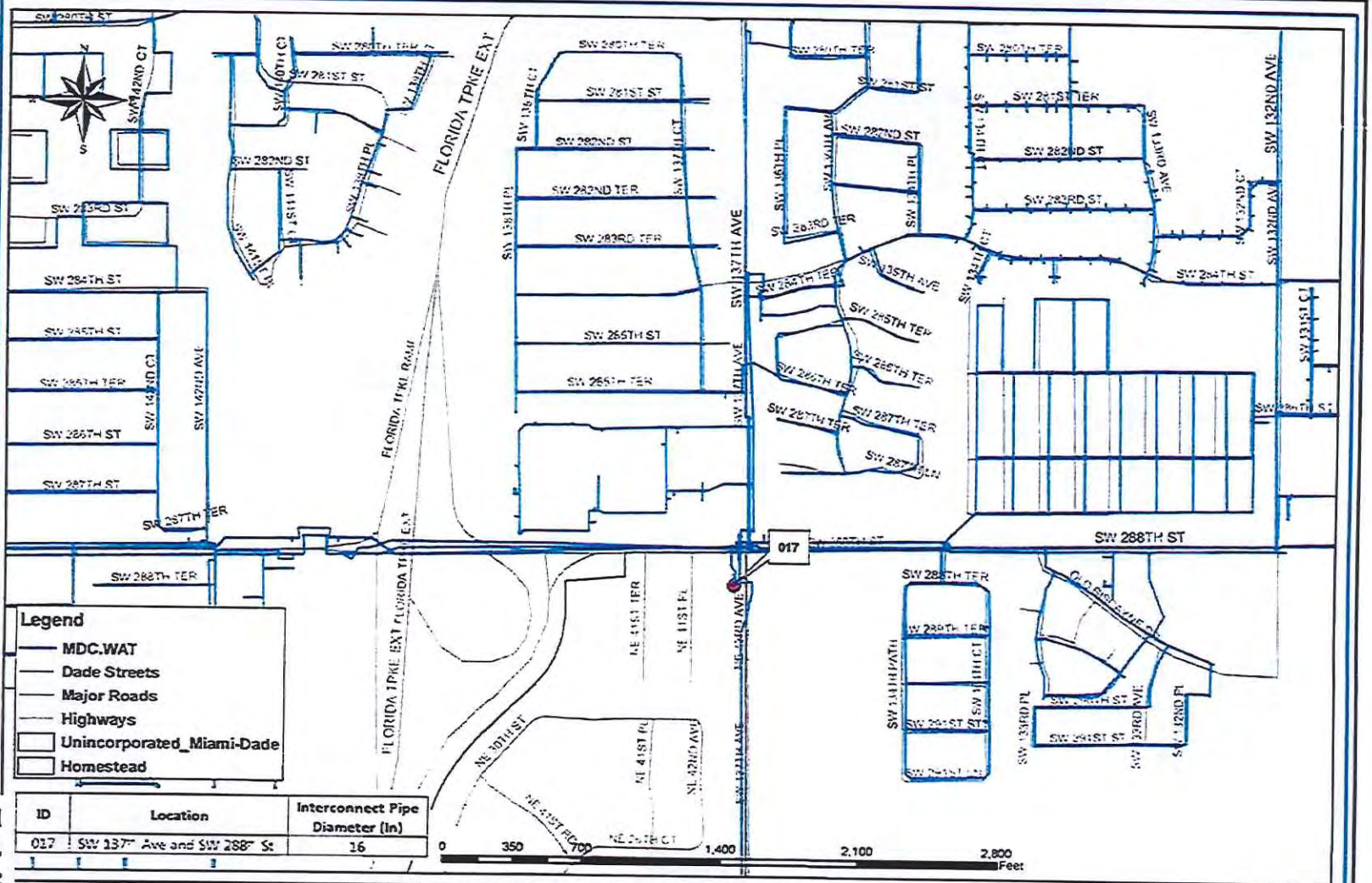
Exhibit 12A



ID	Location	Interconnect Pipe Diameter (In)
001	NE 18th Ave and NE 191st St	8
002	NE 16th Ave and NE 188th St	16
003	NE 16th Ave and NE 184th St	16
004	NE 16th Ave and NE 160th St	12
005	NE 16th Ave and NE 153rd St	16
006	NW 8th Ave and NW 151st St (Norwood)	16
007	NW 22nd Ave and NW 191st St	16
008	NW 31st Ave and NW 175th St	16
009	NE 2nd Ave and NE 115th St	12
010	NW 17th Ave and NW 112th Terrace	8
011	NW 9th Ave and NW 119th St	16
012	NE 6th Ave and West Biscayne Canal Road	12
013	NE 16th Ave and NE 125th Terrace	16
014	NE 16th Ave and NE 143rd St	16
015	NE 16th Ave and NE 135th St	16
016	NE 105th St and Biscayne Blvd	N/A

MIAMI - DADE WATER AND SEWER DEPARTMENT
North Miami and North Miami Beach Emergency Interconnections

Exhibit 12B



MIAMI - DADE WATER AND SEWER DEPARTMENT
City of Homestead Emergency Interconnection

Exhibit 12C

Alternative Water Supply Project Development

Project / Milestone	Average Finish Water daily flow	Milestone Completion Date
Hialeah Floridan Aquifer R.O. WTP, Phase 1-a, 10.0 mgd WTP and initial 6 Floridan aquifer supply wells. (7.5 mgd, limited by water supply)	(7.5 mgd)	
• Notice To Proceed Design / Permit		Completed
• Notice To Proceed Construction		Completed
• Turnover / Project Completion		Completed
Hialeah Floridan Aquifer R.O. WTP, Phase 1-b, additional 4 Floridan aquifer supply wells. (10.0 mgd, maximum treatment capacity)	(2.5 mgd)	
• Notice To Proceed Design / Permit		Completed
• Notice To Proceed Construction		Completed
• *Turnover / Project Completion*		*12/31/2020*
South Miami Heights WTP (R.O. portion) Phase 1	(12.45 mgd)	
• Notice To Proceed Design / Permit		Completed
• *Notice To Proceed Construction*		*12/31/2021*
• *Turnover / Project Completion*		*12/31/2025*
South Miami Heights WTP (R.O. addition) Phase 2	(5.0 mgd)	
• Notice To Proceed Design / Permit		Completed
• Notice To Proceed Construction		12/31/2028
• Turnover / Project Completion		12/31/2031

EXHIBIT 13

Revised: December 2019

Alternative Water Supply Project Development

Project / Milestone	Average Finish Water daily flow	Milestone Completion Date
Hialeah Floridan Aquifer R.O. WTP, Phase 1-a, 10.0 mgd WTP and initial 6 Floridan aquifer supply wells. (7.5 mgd, limited by water supply)	(7.5 mgd)	
• Notice To Proceed Design / Permit		Completed
• Notice To Proceed Construction		Completed
• Turnover / Project Completion		Completed
Hialeah Floridan Aquifer R.O. WTP, Phase 1-b, additional 4 Floridan aquifer supply wells. (10.0 mgd, maximum treatment capacity)	(2.5 mgd)	
• Notice To Proceed Design / Permit		Completed
• Notice To Proceed Construction		Completed
• Turnover / Project Completion		12/31/2015
South Miami Heights WTP (R.O. portion) Phase 1	(12.45 mgd)	
• Notice To Proceed Design / Permit		Completed
• Notice To Proceed Construction		12/31/2016
• Turnover / Project Completion		12/31/2019
South Miami Heights WTP (R.O. addition) Phase 2	(5.0 mgd)	
• Notice To Proceed Design / Permit		Completed
• Notice To Proceed Construction		12/31/2028
• Turnover / Project Completion		12/31/2031

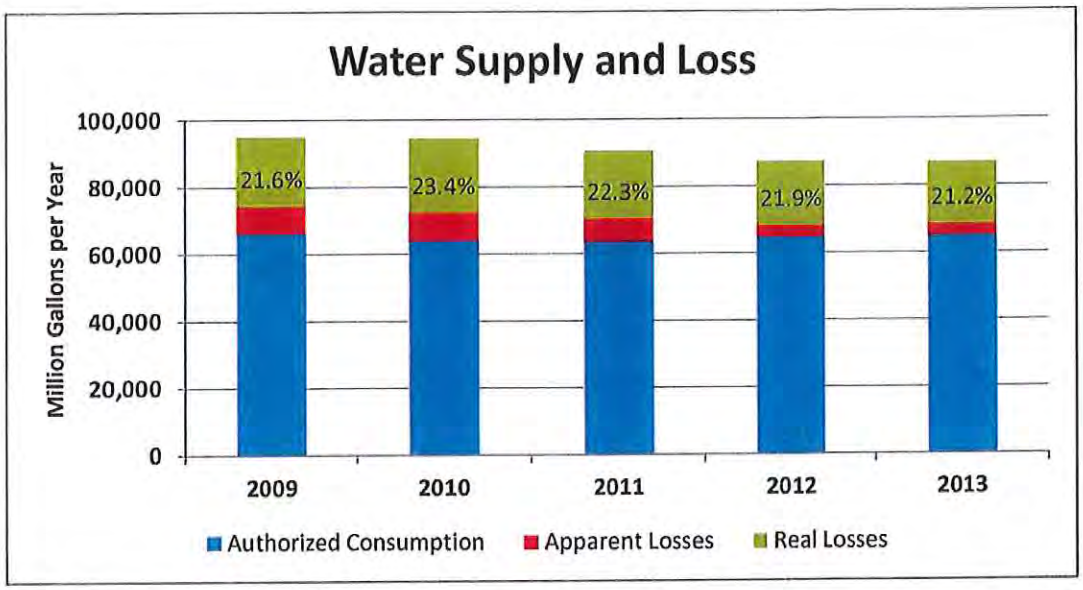
EXHIBIT 13

Revised January 2015

Reuse Projects

Project	Reclaimed water generated from and amount to be treated	Quantity of Reclaimed Wastewater Applied	Reclaimed water used for	Anticipated Completion
1.	North District WWTP (Permitted) **4.44 MGD**	4.44 MGD	2.94 MGD Industrial & 1.5 MGD Public Access	Existing
2.	Central District WWTP (Previous Permitted Limit) **7.84 MGD**	7.84 MGD	Industrial Use Only	Existing
3.	South District WWTP (Previous Permitted Limit) **4.17 MGD**	4.17 MGD	Industrial & Non-Public Access Irrigation	Existing
	TOTAL EXISTING PROJECTS (PERMITTED) = 16.49 MGD			
4.	South District WWTP **9.2 MGD**	9.2 MGD	Floridan aquifer recharge. The scope of these projects is part of the Ocean Outfall legislation implementation plan submitted to the Secretary of FDEP on June 28, 2013.	Dec 31, 2025
5.	Central District WWTP **9.2 MGD**	9.2 MGD		Dec 31, 2025
6.	West District Water Reclamation Plant **9.2 MGD**	9.2 MGD		Dec 31, 2025
7.	South District WWTP **90 MGD**	90 MGD	TPoint Units 5 & 6 cooling TP Unit 7 cooling	Dec 31, 2022 Dec 31, 2023
	TOTAL NEW PROJECTS = 117.5 MGD			Dec 31, 2025

EXHIBIT 14
September 2014



Retail Parameters	2009	2010	2011	2012	2013
Water Supplied (MG/Y)	94,950	94,552	90,626	87,326	86,887
Authorized consumption (MG/Y)	66,181	63,875	63,424	64,660	64,829
Apparent losses (MG/Y)	8,271	8,502	7,036	3,538	3,629
Real losses (MG/Y)	20,498	22,144	20,165	19,128	18,428
Water losses (apparent plus real)	28,769	30,647	27,202	22,666	22,058
Non-revenue water (MG/Y)	29,007	30,971	27,388	24,333	23,165
Performance indicators	**2009**	**2010**	**2011**	**2012**	2013
Infrastructure Leakage Index (ILI)	10.8	9.2	8.13	9.85	9.21
Apparent Losses per service connection*	54.22	53.66	44.13	22.19	22.16
Real Losses per service per connection*	131.23	139.75	126.46	119.95	112.51
Real water loss percentage	21.6%	23.4%	22.3%	21.9%	21.2%
Non-revenue water percentage	30.6%	32.8%	30.2%	27.9%	26.7%

* gallons/connection/day

Long Term Goals	Industry Average
Infrastructure Leakage Index	3
Real Losses (gallons/connection/day)	63
Apparent Losses (gallons/connection/day)	10

EXHIBIT 15

140627-12

MIAMI-DADE WATER AND SEWER DEPARTMENT
WATER LOSS ACCOUNTING

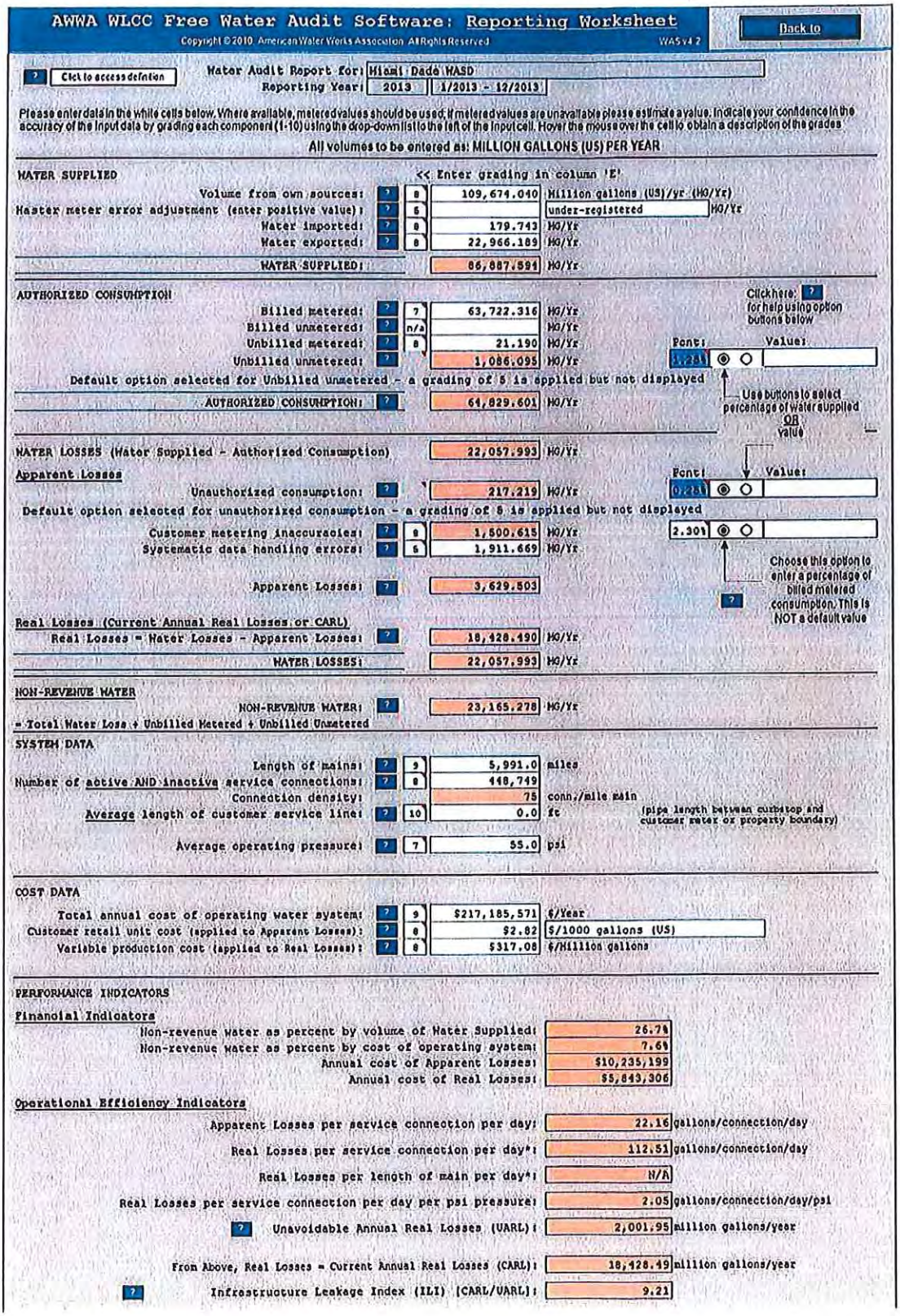
ESTIMATED ACCOUNTED FOR WATER (In thousands of gallons)																	
	1	2	NON-REVENUE ACCOUNT WATER			ADJUSTMENTS										UNACCOUNTED FOR DISTRIBUTION LOSSES	
			3	4		5	6 (a)	7 8 FLUSHING		9 10 11 12 DISTRIBUTION				13 (b)	14	15	
FISCAL YEAR BY QUARTERS	WATER PRODUCED & PURCHASED	WATER SOLD	TOTAL BEFORE ADJUSTMENTS (1 - 2)	PERCENT (3 / 1)	ANNUAL PERCENT (g)	NON-CONSUME USAGE	FIRE DEPT.	(d) CONTRACTS	DONATIONS	FLUSHING	LEAK DETECTION	CLEANING GRAVITY MAINS	UNDER - REGISTRATION OF METERS (f)	WASD FACILITIES NOT INC. IN RETAIL	TOTAL (SUM 6..13)	TOTAL AFTER ADJUSTMENT (3 - 14)	ANNUAL PERCENT (h)
JAN-MAR 2011	28,508,303	21,398,692	6,611,611	23.81	24.52	(e)	N/A		2,831	45,713	2,833,074	1,450	992,851	2,148	3,848,067	2,763,544	8.29
APR-JUN 2011	28,828,508	21,765,705	7,062,803	24.50	24.18	(e)	N/A		2,534	39,262	2,262,428	1,851	979,457	2,804	3,288,336	3,774,467	9.22
JUL-SEP 2011	28,213,664	22,612,877	5,600,787	19.85	23.54	(e)	N/A		1,809	28,625	2,395,436	1,324	1,017,579	3,390	3,448,365	2,152,422	10.46
OCT-DEC 2011	28,156,893	21,877,600	6,279,293	22.30	22.57	(e)	N/A		1,122	46,624	3,505,750	749	984,492	3,643	4,542,380	1,736,918	9.21
JAN-MAR 2012	23,337,168	21,466,611	6,870,557	24.25	22.74	(e)	N/A		152,072	90,394	4,014,474	5,565	965,997	4,542	5,233,047	1,637,510	8.19
APR-JUN 2012	27,778,842	21,058,908	6,721,934	24.20	22.64	(e)	N/A		0	52,480	6,973,473	1,222	947,581	4,783	7,979,496	(1,257,565)	3.80
JUL-SEP 2012	28,261,986	21,463,740	6,798,246	24.05	23.70	(e)	N/A		42,171	353,157	4,146,948	2,027	965,868	5,221	5,515,392	1,282,854	3.02
OCT- DEC 2012	27,919,856	21,056,642	6,863,224	24.58	24.27	(e)	N/A		0	80,147	3,823,648	661	947,549	5,089	4,857,095	2,006,129	3.27
JAN - MAR 2013	28,574,514	21,193,297	7,381,217	25.83	24.67	(e)	N/A		0	39,047	3,642,315	1,356	953,698	5,419	4,638,837	2,542,380	4.06
APR - JUN 2013	28,624,323	21,825,471	7,098,852	24.54	24.75	(e)	N/A		0	108,928	2,338,480	1,119	982,146	4,507	3,433,180	3,665,692	8.35
JUL - SEP 2013	27,922,611	22,850,698	5,072,013	18.16	23.31	(e)	N/A		0	127,333	3,086,137	1,131	1,028,277	5,647	4,248,525	823,488	7.97
OCT- DEC 2013	27,414,695	21,320,637	6,093,868	22.23	22.73	(e)	N/A		0	79,998	3,176,920	847	959,437	5,615	4,219,817	1,874,051	7.85

Notes: October - December 2012 Figures are provisional.
(a) Miami-Dade, City of Coral Gables and City of Miami, includes Key Biscayne
(b) Lejeune Building, Westwood Lake and Distribution
(c) Revised on 8/26/98 to include Non - Consumer Usage Reported by Collections
(d) Starting in October 1998 most of the contract work is PSIP, therefore, not much water was used for flushing
(e) Average from fiscal year (1998 - 1999) to (2000 - 2001). Eliminated in FY 2010 - 2011.
(f) A 4.5 percent under-registration is used, as conservative figure, en lieu of a 6 percent under-registration which is the 4-year mid-point of the overall average water meter accuracy of 88 percent at the 8-year replacement interval was determined in the Brown and Caldwell, Water Meter Periodic Testing (PT) Program Evaluation, November 1995, because the study did not evaluate meters less than 8 years in service. This percentage will be revised as additional evaluations are performed.
(g) Sum 4Qtrs Col 3/Sum 4Qtrs Col 1
(h) Sum 4Qtrs Col 15/Sum 4Qtrs Col 1

N/A Not available
Coral Gables Fire Department Only, City of Miami is unable to provide due to operating system & programing change
Miami-Dade Fire Rescue has not provided use.
Values from this column are now found in Distribution Flushing
Values were lost while computer system was being updated
Eliminated in FY 2010 - 2011.

EXHIBIT 16A

4/14/2014



AWWA WLCC Free Water Audit Software: Reporting Worksheet

Back to

 WAS v4.2

Click to access definition

Water Audit Report for: Miami Dade WASD

Reporting Year: 2013 1/2013 - 12/2013

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

All volumes to be entered as: MILLION GALLONS (US) PER YEAR

WATER SUPPLIED		<< Enter grading in column 'E'		
Volume from own sources:	8	109,674.040	Million gallons (US)/yr (MG/Yr)	
Master meter error adjustment (enter positive value):	5		under-registered	MG/Yr
Water imported:	8	179.743	MG/Yr	
Water exported:	8	22,966.189	MG/Yr	
WATER SUPPLIED:		86,887.594	MG/Yr	
AUTHORIZED CONSUMPTION			Click here: for help using option buttons below	
Billed metered:	7	63,722.316	MG/Yr	
Billed unmetered:	n/a		MG/Yr	
Unbilled metered:	8	21.190	MG/Yr	Pcnt: Value:
Unbilled unmetered:		1,086.095	MG/Yr	1.25%
Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed				
AUTHORIZED CONSUMPTION:		64,829.601	MG/Yr	Use buttons to select percentage of water supplied OR value
WATER LOSSES (Water Supplied - Authorized Consumption)		22,057.993	MG/Yr	
Apparent Losses				Pcnt: Value:
Unauthorized consumption:		217.219	MG/Yr	0.25%
Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed				
Customer metering inaccuracies:	8	1,500.615	MG/Yr	2.30%
Systematic data handling errors:	6	1,911.669	MG/Yr	
Apparent Losses:		3,629.503		Choose this option to enter a percentage of billed metered consumption. This is NOT a default value
Real Losses (Current Annual Real Losses or CARL)				
Real Losses = Water Losses - Apparent Losses:		18,428.490	MG/Yr	
WATER LOSSES:		22,057.993	MG/Yr	
NON-REVENUE WATER				
NON-REVENUE WATER:		23,165.278	MG/Yr	
= Total Water Loss + Unbilled Metered + Unbilled Unmetered				
SYSTEM DATA				
Length of mains:	9	5,991.0	miles	
Number of active AND inactive service connections:	8	448,749		
Connection density:		75	conn./mile main	
Average length of customer service line:	10	0.0	ft	(pipe length between curbstop and customer meter or property boundary)
Average operating pressure:	7	55.0	psi	
COST DATA				
Total annual cost of operating water system:	9	$217,185,571	$/Year	
Customer retail unit cost (applied to Apparent Losses):	8	$2.82	$/1000 gallons (US)	
Variable production cost (applied to Real Losses):	8	$317.08	$/Million gallons	
PERFORMANCE INDICATORS				
Financial Indicators				
Non-revenue water as percent by volume of Water Supplied:		26.7%		
Non-revenue water as percent by cost of operating system:		7.6%		
Annual cost of Apparent Losses:		$10,235,199		
Annual cost of Real Losses:		$5,843,306		
Operational Efficiency Indicators				
Apparent Losses per service connection per day:		22.16	gallons/connection/day	
Real Losses per service connection per day*:		112.51	gallons/connection/day	
Real Losses per length of main per day*:		N/A		
Real Losses per service connection per day per psi pressure:		2.05	gallons/connection/day/psi	
Unavoidable Annual Real Losses (UARL):		2,001.95	million gallons/year	
From Above, Real Losses = Current Annual Real Losses (CARL):		18,428.49	million gallons/year	
Infrastructure Leakage Index (ILI) [CARL/UARL]:		9.21		

140627-12

EXHIBIT 16B

Table 5-2: Schedule of Real Water Loss Reduction Activities
January 2007 through December 2026

Activity	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
5.3 Recommendations for Real Loss Reduction										
5.3.1 System Design (Active Review)										
5.3.2 System Management										
5.3.2.3 Asset Maintenance or Replacement										
5.3.2.4 Reduce Maintenance Response Times										
5.3.2.5 Active Leakage Control and Sounding		Pilot								
5.3.2.7 Pressure Management										
5.3.2.8 Speed and Quality of Repairs										
Perform Venturi Comparative Tests-WTPs										
Perform Venturi Comparative Tests-wholesale customers										
Conduct wholesale customer unmetered connection survey										
Pilot Fixed Network AMR		Pilot								
Enhance GIS database										
ANNUAL WATER SAVINGS (Million Gallons)				650	1300	1950	2600	3250	3900	4550
ANNUAL VALUE OF WATER SAVINGS (Million $)				$0.297	$0.595	$0.892	$1.189	$1.487	$1.784	$2.081

Activity	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
5.3 Recommendations for Real Loss Reduction										
5.3.1 System Design (Active Review)										
5.3.2 System Management										
5.3.2.3 Asset Maintenance or Replacement										
5.3.2.4 Reduce Maintenance Response Times										
5.3.2.5 Active Leakage Control and Sounding										
5.3.2.7 Pressure Management										
5.3.2.8 Speed and Quality of Repairs										
Achieve target real loss of 5 billion gallons per year	X									
Achieve target Infrastructure Leakage Index (ILI) of 3.0	X									
ANNUAL WATER SAVINGS (Million Gallons)	5200	5200	5200	5200	5200	5200	5200	5200	5200	5200
ANNUAL VALUE OF WATER SAVINGS (Million $)	$2.378	$2.378	$2.378	$2.378	$2.378	$2.378	$2.378	$2.378	$2.378	$2.378

Exhibit 17A

Updated 11-16-09

Table 6-2: Schedule of Apparent Water Loss Reduction Activities
January 2007 through December 2026

Activity	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
6.3 Recommendations for Apparent Water Loss Reduction										
6.3.1 Reducing Unmetered Supplies										
6.3.2 Improved Meter Accuracy										
6.3.3 Commercial Meter Types and Sizes										
6.3.3.2.1 Compound Meters Usage Compared to Same Size Turbine Meters										
6.3.3.3 Looking Forward (setting Economic Meter Testing Goals)										
6.3.4 Improved Calibration of Wholesale Customer Meters										
6.3.5 Wholesale Customer Unmetered Connection Analysis										
Conduct field accuracy testing of commercial meters										
Pilot AMR to improve data handling and reduce labor cost		Pilot								
Characterize residential water demand pattern										
Determine economic optimum for residential meter replacement										
ANNUAL WATER SAVINGS (Million Gallons)				400	800	1200	1600	2000	2400	2800
ANNUAL VALUE OF WATER SAVINGS (Million $)				0.788	1.576	2.364	3.152	3.94	4.728	5.516

Activity	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
6.3 Recommendations for Apparent Water Loss Reduction										
6.3.1 Reducing Unmetered Supplies										
6.3.2 Improved Meter Accuracy										
6.3.3 Commercial Meter Types and Sizes										
6.3.3.2.1 Compound Meters Usage Compared to Same Size Turbine Meters										
6.3.3.3 Looking Forward (setting Economic Meter Testing Goals)										
6.3.4 Improved Calibration of Wholesale Customer Meters										
6.3.5 Wholesale Customer Unmetered Connection Analysis										
Conduct field accuracy testing of commercial meters										
Reduce Apparent Losses to 10 billion gallons per year										X
ANNUAL WATER SAVINGS (Million Gallons)	3200	3600	4000	4400	4800	5200	5600	6000	6400	6800
ANNUAL VALUE OF WATER SAVINGS (Million $)	6.304	7.092	7.88	8.668	9.456	10.244	11.032	11.82	12.608	13.396

Exhibit 17B

STANDARD WATER CONSERVATION PLAN

MDWASD website (http://www.miamidade.gov/wasd/) includes a Water Conservation page.

Public Education Program Elements

- The MDWASD purchases and publishes a variety of brochures and literature promoting water conservation, in both English and Spanish, that are available to members of the public upon request.
- Sponsors a telephone message center, the Pipeline customer newsletter, and posts water conservation messages on Miami-Dade Transit Agency buses.
- Does a variety of presentations to school-aged children to educate them about water conservation.

Outdoor Water Use Conservation Program Elements

1. Limitation of lawn and ornamental irrigation. Section 32-8.2 of the Code of Miami-Dade County was amended on April 7, 2009 limiting landscape irrigation to two days a week. The ordinance also includes permanent irrigation restrictions which prohibits landscape irrigation between 9:00 am and 5:00 pm. The ordinance also encourages efficient water use by not restricting hours for low volume irrigation methods or irrigation with treated wastewater effluent.

2. Use of Florida Friendly landscaping principles. The Miami-Dade County Landscape Ordinance, Chapter 18A, was last updated May 5, 2009. Within the Ordinance, use of Florida Friendly landscaping principles is promoted through the use of drought tolerant landscape species, grouping of plant material by water requirements, the use of irrigation systems that conserve the use of potable and non-potable water supplies and restrictions of the amount of lawn areas. The ordinance is in effect for all landscaping for new construction and includes more efficient water use guidelines.

3. Rain Sensor Device Ordinance - Miami-Dade County's Landscape Ordinance requires all irrigation systems equipped with automatic controls to have a rain sensor switch which turns off the system when more than 0.5 inches of rain have fallen.

4. Landscape Irrigation Audit Program – provides free evaluation of irrigation systems and rebates for irrigation retrofits.

Water Use Efficiency based rate structure

Since 1990, MDWASD placed into effect a tiered schedule of water rates to encourage conservation. Additional surcharges apply during formally declared Phase I, II, III or IV water restrictions.

Water Loss Reduction Program

MDWASD maintains an ongoing leak detection program in which crews, using acoustical detection equipment, which includes an aqua-scope with an electronic sound amplifier, working at night when extraneous noise is reduced, find leaks which are recorded and subsequently repaired. A leak Location

System or correlator which uses sonar technology to locate leaks has also been in use since December 1993.

A water loss accounting table for 2007 thru 2013 (Exhibit 16A), was compiled using the current water accounting methodology used by MDWASD for determining the distribution system water losses. Also included in Exhibit 16B is the International Water Association (IWA) / American Water Works Association (AWWA) water audit methodology which focuses on determining an Infrastructure Leakage Index (ILI). This water audit methodology categorizes water losses into real losses and apparent losses. Real losses include leaks, breaks, overflows and service connections and these losses impact withdrawals of groundwater. Apparent losses include unauthorized consumption, meter inaccuracies and data handling errors and have a monetary impact on the utility. In 2013, the real losses were 18 BGY (50 mgd) and the apparent losses had a monetary value of $10 million. The County has committed to a Water Loss Reduction Plan (Exhibit 17) which will cost approximately $2 million per year with the goal of reducing 2013 real losses by 45% and apparent losses by 55%. Exhibit 15 shows results of the program from 2009-2013. Special Condition 20 requires annual updates on the results of the program.

Indoor Water Conservation Program Elements

- A water conservation kit is available to customers upon request, which includes a washer to reduce water flow in showerheads, a clip that reduces the amount of water used by toilets, a low-flow faucet aerator, and dye-tracing tablets for detecting water leaks in toilets.
- Ultra-low volume (ULV) water closets, showerheads and other water conserving plumbing fixtures are mandatory on all new construction. (County Ordinance 91-15).
- Showerhead exchange if fixtures older than 1996.
- High-Efficiency Toilet Rebate

Table 3: Summary of total water savings (MG) across the Water Savings Horizon, and cumulative costs ($ through 2026) by BMP type, with associated percentages.

BMP #	Description	Water Savings Across the 20-Year WSH (Cumulative Water Savings 2007-2026) (MG)	Percent of Total Savings, by BMP Type	Cumulative Costs by BMP Type ($ to date)	Percent of Total Costs, by BMP Type
1	Landscape/Irrigation Eval. + Rain Sensor, No Rebate, SF	6,076	7.3%	$1,773,200	7.0%
2	Landscape/Irrigation Eval. + Rain Sensor, No Rebate, NR	30,405	36.5%	$1,121,400	4.4%
3	Common-area High Efficiency Clothes Washer Rebate, MF	184	0.2%	$300,000	1.2%
4	High Efficiency Toilet + Showerhead & Aerators, SF-Elderly	4,906	5.9%	$5,000,000	19.8%
5	High Efficiency Toilet + Showerhead & Aerators, County MF	4,298	5.2%	$0	0.0%
6	High Efficiency Toilet Rebate, SF	159	0.2%	$75,000	0.3%
7	Toilet Exchange Program, SF	3,278	3.9%	$4,026,100	16.0%
8	Toilet Exchange Program,MF	2,845	3.4%	$4,368,000	17.3%
9	Showerhead Exchange, SF	4,664	5.6%	$56,096	0.2%
10	Showerhead Exchange, MF	4,555	5.5%	$54,656	0.2%
11	Retrofit Kit, SF	1,599	1.9%	$83,443	0.3%
12	Retrofit Kit, MF	1,562	1.9%	$81,301	0.3%
13	ICI, Leak detection & Repair, County NR	2,228	2.7%	$2,796,600	11.1%
14	ICI, Evaluate & Retrofit, County NR	1,035	1.2%	$195,200	0.8%
15	ICI, Evaluate & Retrofit, Commercial NR	13,994	16.8%	$5,112,000	20.3%
16	ICI, Hotel Program, NR	1,487	1.8%	$160,001	0.6%
	Plan Total for WSH (2007-2026)	84,000	100%	$25,203,000	100%

Exhibit 19A

Water Savings Projection Report Summary

			Demand (mgd)					Per Capita Demand (gpcd)		
	Water Savings (mgd)		With Conservation			Population		With Conservation		
Year	Planned	Reported	Without Conservation	Planned	Actual	Forecasted	Actual	Without Conservation	Planned	Actual
2007	1.09	1.212308	348.89	347.37865	315.8	2250944	2235179	155	154.33	142.92
2008	2.24	3.476908	345.76	342.732191	295.2	2230895	2213833	155	153.63	133.69
2009	3.53	4.902751	325.51	320.771322	305.8	2238700	2238700	145.4	143.28	136.61
2010	4.82	6.541536	329.12	322.429388	305.3	2263566	2263566*	145.4	142.44	134.90
2011	6.10	8.466445	332.74	324.247924	305.7	2288432	2288432*	145.4	141.69	133.59
2016	11.70		352.86	337.652284	--	2401027	--	145.4	139.14	--
2021	15.67		371.58	352.402364	--	2529835	--	145.4	137.89	--
2026	19.62		390.31	367.177444	--	2658643	--	145.4	136.78	--

*Pending Verification of Census Numbers

Table 1

EXHIBIT 19B

Table 5: Countywide BMP Implementation Schedule, Costs, and Savings Projections

BMP	Category	Sector	Cost/ measure[1]	Savings Rate (gallons per water... per day)	2010						2011						2015					
					No. of Meas. In 2010	Cumulative No. of Meas.	2010 Cost	Cum. Costs ($ to date)	New Water Savings (GPD)	2010 Cumulative Water Savings Rate (GPD)	No. of Meas. In 2011	Cumulative No. of Meas.	2011 Cost	Cum. Costs ($ to date)	New Water Savings (GPD)	2011 Cumulative Water Savings Rate (GPD)	No. of Meas. In 2015	Cumulative No. of Meas.	2015 Cost	Cum. Costs ($ to date)	New Water Savings (GPD)	2015 Cumulative Water Savings Rate (GPD)
Water-Efficient Landscape and Irrigation Evaluations and Rebates with Moisture Sensor Retrofits	Landscape & Irrigation Evaluations plus Moisture Sensor Retrofit (without Rebates)	SF	$260	233	360	1,330	$93,600	$343,200	83,880	307,560	360	1,680	$93,600	$436,800	83,880	391,440	340	3,430	$88,400	$889,200	79,220	796,860
		MF County-Owned (~25 irrigated acres)	$5,010	25,000	30	80	$150,300	$640,800	750,000	2,000,000	30	100	$150,300	$801,000	750,000	2,500,000	0	140	$0	$1,171,400	0	4,000,000
High-Efficiency Clothes Washer Rebate	Commercial Washers[4]	MF with Common-area Clothes Washers	$300	48	50	200	$15,000	$60,000	2,400	9,600	50	250	$15,000	$75,000	2,400	12,000	50	500	$15,000	$150,000	2,400	24,000
High Efficiency Toilet (HET) Rebate/Retrofits	Retrofit (includes showerhead and aerators)[3]	SF - Elderly	$250	64	1,000	4,000	$250,000	$1,000,000	64,000	256,000	1,000	5,000	$250,000	$1,250,000	64,000	320,000	1,000	10,000	$250,000	$2,500,000	64,000	640,000
		County-Owned MF Housing[5]	$0	64	2,500	6,000	$0	$0	160,000	384,000	2,500	8,500	$0	$0	160,000	544,000	0	11,000	$0	$0	0	704,000
	Rebate (toilet only)[6]	SF	$100	29	0	750	$0	$75,000	0	21,750	0	750	$0	$75,000	0	21,750	0	750	$0	$75,000	0	21,750
	Toilet Exchange Program	SF	$130	29	1,630	4,830	$211,900	$635,700	47,270	141,812	1,630	6,520	$211,900	$847,600	47,270	189,080	1,630	14,670	$211,900	$1,907,100	47,270	425,430
	Toilet Exchange Program	MF	$130	29	0	0	$0	$0	0	0	0	0	$0	$0	0	0	2,240	11,200	$291,200	$1,456,000	64,960	324,800
Showerhead Exchange	No Categories	SF	$1.60	35	1,770	6,740	$2,832	$10,784	61,950	235,900	1,770	8,510	$2,832	$13,616	61,950	297,850	1,770	17,360	$2,832	$27,775	61,950	607,600
	No Categories	MF	$1.60	35	1,720	6,840	$2,752	$10,624	60,200	239,400	1,720	8,560	$2,752	$13,376	60,200	299,600	1,720	16,960	$2,752	$27,136	60,200	593,600
Retrofit Kit Give Away	No Categories	SF	$2.38	12	1,770	6,740	$4,213	$16,041	21,240	80,880	1,770	8,510	$4,213	$20,254	21,240	102,120	1,770	17,360	$4,213	$41,317	21,240	208,320
	No Categories	MF	$2.38	12	1,720	6,840	$4,094	$15,803	20,640	79,080	1,720	8,560	$4,094	$19,897	20,640	100,320	1,720	16,960	$4,094	$40,365	20,640	203,520
Industrial, Commercial and Institutional Water Use Evaluations Implementation	Leak Detection and Repair of County-owned Facilities	NR	$4,740	1,000	30	110	$142,200	$521,400	30,000	110,000	30	140	$142,200	$663,600	30,000	140,000	30	290	$142,200	$1,374,600	30,000	290,000
	Evaluate and Retrofit County-owned Administrative Buildings[3]	NR	$1,520	1,500	10	52	$15,200	$80,200	15,000	78,000	10	62	$15,200	$95,200	15,000	93,000	10	112	$15,200	$175,200	15,000	168,000
	Evaluate and Retrofit Private Commercial Buildings	NR	$1,500	1,500	0	0	$0	$0	0	0	0	0	$0	$0	0	0	213	1,005	$363,000	$1,734,000	319,500	1,507,500
	Hotel Program[8]	NR	$667	1,617	12	48	$8,000	$32,000	19,404	77,616	12	60	$8,000	$40,000	19,404	97,020	12	120	$8,000	$80,000	19,404	194,040
Plan Total					For 2010		$911,000	$3,443,000	1,298,000	4,814,000	For 2011		$911,000	$4,356,000	1,298,000	6,163,000	For 2015		$1,370,000	$11,874,000	808,000	11,780,000
Subtotal for SF							$563,000	$2,011,000	279,000	1,544,000			$563,000	$2,544,000	279,000	1,823,000			$518,000	$5,441,000	274,000	3,209,000
Subtotal for MF							$22,000	$87,000	244,000	704,000			$22,000	$109,000	244,000	848,000			$314,000	$1,674,000	118,000	1,459,000
Subtotal for NR							$327,000	$1,275,000	775,000	2,566,000			$327,000	$1,644,000	775,000	3,431,000			$528,000	$4,408,000	244,000	7,110,000

WSH = Water Savings Horizon
GPD = gallons per day
TG = thousand gallons

EXHIBIT 19C

Table 5: Countywide BMP Implementation Schedule, Costs, and Savings Projections

BMP	Category	Sector	Cost/ measure[1]	Savings Rate (gallons per meas., per day)	2021						2026						Water Savings Across the 20-Year WSH (Cumulative Water Savings 2007-2026) (MG)	Total # of BMPs (Count of BMPs 2007-2026)
					No. of Meas. in 2021	Cumulative No. of Meas.	2021 Cost	Cum. Costs ($ to date)	New Water Savings (GPD)	2021 Cumulative Water Savings Rate (GPD)	No. of Meas. in 2026	Cumulative No. of Meas.	2026 Cost	Cum. Costs ($ to date)	New Water Savings (GPD)	2026 Cumulative Water Savings Rate (GPD)		
Water Efficient Landscape and Irrigation Evaluations and Rebates with Moisture Sensor Retrofit	Landscape & Irrigation Evaluations and Moisture Sensor Retrofit (without Rebate)[1]	SF	$260	272	340	5,120	$88,400	$1,331,200	73,220	1,132,900	340	6,820	$88,400	$1,773,200	73,220	1,549,000	6,075	6,800
		MF County Owned (>25 irrigated acres)	$8,010	35,000	0	140	$0	$1,121,400	0	4,900,000	0	140	$0	$1,121,400	0	4,900,000	30,485	140
High-Efficiency Clothes Washer Rebate	Commercial Washers[1]	MF with Common Area Clothes Washers	$300	48	50	750	$15,000	$225,000	2,400	36,000	50	1,000	$15,000	$300,000	2,400	48,000	184	1,000
High Efficiency Toilet (HET) Retrofit/Rebate	Retrofit (includes showerhead and aerators)[1]	SF + Elderly	$250	64	1,000	15,000	$250,000	$3,750,000	64,000	960,000	1,000	20,000	$250,000	$5,000,000	64,000	1,280,000	4,906	20,000
		County Owned MF Housing[2]	$0	64	0	11,000	$0	$0	0	704,000	0	11,000	$0	$0	0	704,000	4,298	11,000
	Rebate (toilet only)[1]	SF	$100	29	0	750	$0	$75,000	0	21,750	0	750	$0	$75,000	0	21,750	159	750
	Toilet Exchange Program	SF	$130	29	1,630	22,620	$211,900	$2,945,500	47,270	661,750	1,630	30,570	$211,500	$4,026,100	47,270	886,530	3,279	30,570
	Toilet Exchange Program	MF	$130	29	2,240	22,400	$291,200	$2,912,000	64,900	649,600	2,240	33,600	$291,200	$4,368,000	64,960	974,400	2,845	33,600
Showerhead Exchange	No Categories	SF	$1.60	35	1,770	26,210	$2,832	$41,936	61,950	917,350	1,770	35,060	$2,832	$56,096	61,950	1,227,100	4,654	35,060
	No Categories	MF	$1.60	35	1,720	25,560	$2,752	$40,896	60,200	894,600	1,720	34,160	$2,752	$54,656	60,200	1,195,600	4,585	34,160
Retrofit Kit Give Away	No Categories	SF	$2.38	12	1,770	26,210	$4,213	$62,380	21,240	314,520	1,770	35,060	$4,213	$83,443	21,240	420,720	1,598	35,060
	No Categories	MF	$2.38	12	1,720	25,560	$4,094	$60,833	20,640	306,720	1,720	34,160	$4,094	$81,301	20,640	409,920	1,562	34,160
Industrial, Commercial and Institutional Water Use Evaluations Implementation	Leak Detection and Repair of County-owned Facilities	NR	$4,740	1,000	30	440	$142,200	$2,085,600	30,000	440,000	30	590	$142,200	$2,796,600	30,000	590,000	2,220	590
	Evaluate and Retrofit County-owned Administrative Buildings[2]	NR	$1,600	1,500	0	122	$0	$195,200	0	183,000	0	122	$0	$195,200	0	183,000	1,036	122
	Evaluate and Retrofit Private Commercial Buildings	NR	$1,600	1,500	213	2,130	$340,800	$3,408,000	319,500	3,195,000	213	3,195	$340,800	$5,112,000	319,500	4,792,500	13,994	3,195
	Field Program[3]	NR	$167	1,617	12	180	$2,000	$120,001	19,404	291,060	12	240	$2,000	$160,001	19,404	388,080	1,487	240
Plan Total					For 2021		$1,262,000	$18,947,000	781,000	11,649,000	For 2026		$1,262,000	$25,263,000	781,000	15,633,000	84,000	246,867
Subtotal for SF							$450,000	$8,224,000	274,000	4,069,000			$564,000	$11,214,000	274,000	5,437,000	31,000	135,660
Subtotal for MF							$314,000	$5,237,000	149,000	2,511,000			$314,000	$4,804,000	149,000	2,952,000	14,000	113,530
Subtotal for NR							$482,000	$6,531,000	369,000	5,319,000			$482,000	$9,346,000	369,000	10,554,000	33,000	4,147

WSH = Water Savings Horizon
GPD = gallons per day
TG = thousand gallons

EXHIBIT 19D

Miami-Dade Water and Sewer Department (MDWASD)
20-Year Water Use Efficiency Plan
Water Use Efficiency - Best Management Practices (BMP) Planning Spreadsheet

Prepared by: Malcolm Pirnie, Inc.
Contact: Brian Klett, (813) 242-7252
Last Modified: 4/02/2007

Purpose:

This spreadsheet is intended for water use efficiency BMP planning purposes only.
The spreadsheet assists in calculating estimated water savings rates and costs for a specified set of BMPs.
The spreadsheet includes the MDWASD Retail area as well as the 15 wholesale water customers of MDWASD.
Allocation of BMPs among MDWASD Retail Area and 15 wholesalers is calculated in a separate spreadsheet.

Spreadsheet Notes:

[*] *Throughout Plan, costs do not include County staff labor unless otherwise noted.*

[1] *Cost includes labor to perform evaluation, install a moisture sensor, and provide a report. Assumes 1,400 gpd/acre & 1/6 acre per SF home. Cost and savings for NR Park facilities assumes an average of 25 irrigated acres per facility (using potable water).*
[2] *Savings rate for common area washer is in gallons per day per washer.*
[3] *Cost and savings include 1 toilet, 1 showerhead, and 2 aerators (1 for the bathroom; one for the kitchen), and installation costs.*
[4] *Cost includes a $100 rebate to the customer.*
[5] *Cost is only for intradepartment assistance from WASD to other County departments for retrofit. Assistance may be in the form of a rebate or a credit on water bill.*
[6] *Savings shown are for a hotel with 50 to 100 rooms (SWFWMD Water CHAMP)*
[7] *Costs include equipment and outsourcing, unless otherwise noted costs do not include County staff time.*
[8] *Miami-Dade County Housing Agency is implementing this program through 'performance contracting', with the initial program funded by HUD.*

Exhibit 19E

Summary of 20-Year Water Use Efficiency Plan BMP Implementation 2007-2026

TABLE 1-A: Summary of Miami-Dade County 20-Year Water Use Efficiency Plan (2007-2026), including MDWASD retail & wholesale service areas.

Year	2007	2008	2009	2010	2011	2016	2021	2026
Cost ($/Yr.)	$753,000	$871,000	$911,000	$911,000	$911,000	$1,378,000	$1,362,000	$1,362,000
Cumulative Cost ($ to date)	$753,000	$1,623,000	$2,534,000	$3,445,000	$4,356,000	$11,574,000	$18,397,000	$25,203,000
Additional Water Savings (GPD)	1,086,000	1,158,000	1,286,000	1,286,000	1,286,000	806,000	791,000	791,000
Cumulative Water Savings Rate (GPD)	1,086,000	2,244,000	3,530,000	4,816,000	6,102,000	11,700,000	15,669,000	19,623,000

TABLE 1-B: Annual cost of Water Use Efficiency Plan by sector (Single Family, Multi-Family, Non-residential) ($/Yr.).

Year	2007	2008	2009	2010	2011	2016	2021	2026
Sub-total for SF	$410,000	$547,000	$563,000	$563,000	$563,000	$558,000	$558,000	$558,000
Sub-total for MF	$22,000	$22,000	$22,000	$22,000	$22,000	$314,000	$314,000	$314,000
Sub-total for NR	$322,000	$303,000	$327,000	$327,000	$327,000	$508,000	$492,000	$492,000
TOTALS	$753,000	$871,000	$911,000	$911,000	$911,000	$1,378,000	$1,362,000	$1,362,000

Exhibit 20

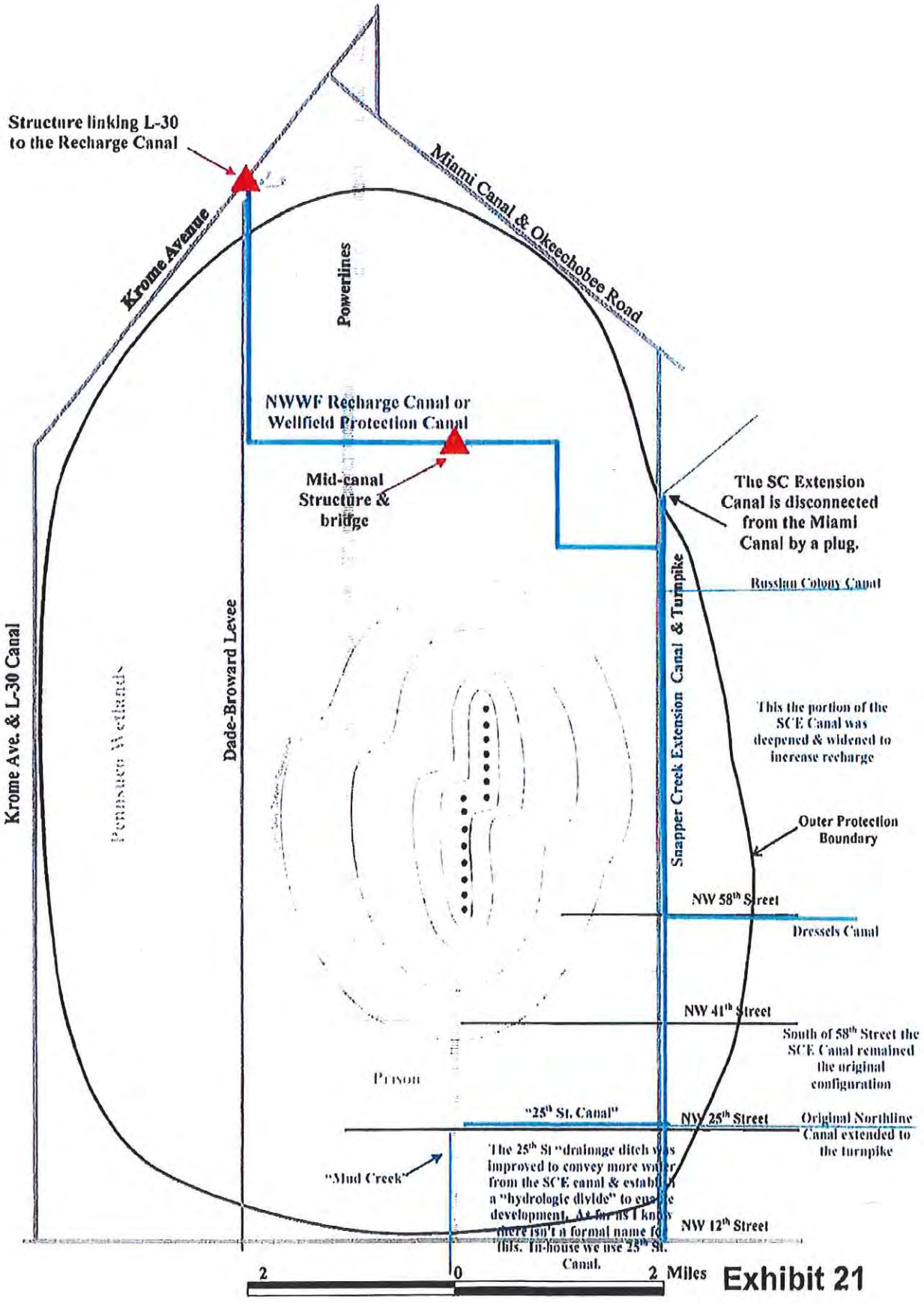

Structure linking L-30 to the Recharge Canal
Miami Canal & Okeechobee Road
Krome Avenue
Powerlines
NWWF Recharge Canal or Wellfield Protection Canal
Mid-canal Structure & bridge
The SC Extension Canal is disconnected from the Miami Canal by a plug.
Russian Colony Canal
Krome Ave. & L-30 Canal
Dade-Broward Levee
Snapper Creek Extension Canal & Turnpike
This the portion of the SCE Canal was deepened & widened to increase recharge
Outer Protection Boundary
NW 58th Street
Dressels Canal
NW 41th Street
South of 58th Street the SCE Canal remained the original configuration
"25th St. Canal"
NW 25th Street
Original Northline Canal extended to the turnpike
"Mud Creek"
NW 12th Street
Canal.
2
0
2 Miles

Exhibit 21

August 14, 2000

CERTIFIED: 7099 3400 0000 5273 9927
RETURN RECEIPT

Mr. Jeff Rosenfeld
Senior Supervising Hydrogeologist
Regulation Department / Water Use Division
South Florida Water Management District
PO Box 24680
West Palm Beach, Fl. 33416-4680

RE: Miami-Dade Water and Sewer Department
Hialeah / Preston / Miami Springs / Northwest Wellfields
Water Use Permit No. 13-00037-W

Dear Mr. Rosenfeld:

In accordance with limiting condition no.32 of the referenced permit, the following is a description of the schedule for operation of the surface water control structure located on the Northwest wellfield (NWWF) protection canal for District approval.

As per the control authority, Department of Environmental Resources Management (DERM), structures located in the NWWF protection canal are operated according to the specific circumstances. These structures are not automated and therefore would be manually opened or closed at specific canal elevations. Normal operation for the new water control structure is to be closed to induce flow to the west and south. The control structure would remain closed if groundwater stages are high and there is no need for additional water from the L-30 canal. It would be opened if the opposite is the case. The structure would also be closed in anticipation of a hurricane event to prevent additional flow from entering the secondary system canals.

Should you have any questions, please call Ms. Bertha M. Goldenberg, P.E. at (305) 669-5711.

Sincerely,

Jorge Rodriguez
Assistant Director

BMG/dje

c: Harvey Kottke, DERM Isaac Sznol, DERM

Exhibit 22

MDWASD Biscayne Aquifer
Final Modeling Scenarios

SCENARIO	DESCRIPTION OF SCENARIO	WTP SUB-AREA / WELLFIELD PUMPAGE																			MDWASD TOTAL
		Hialeah-Preston					Alexander Orr					South Dade									
		H	JP	MS	NW	TOTAL	AO	SC	SW	W	TOTAL	ELT	LC	NJ	EVLC	NWTN	CP	FP	RHP	RPP	TOTAL	
G	Base Condition	3.1	37.2	29.7	88.7	158.7	62	20.4	83.8	15	181.2	1.3	2.9	0.1	0.7	2.1	0	0	0	0	7.1	347
H	Alternative South Dade	3.1	37.2	29.7	88.7	158.7	62	20.4	88.8	15	186.2	0	0	0	0.7	2.1	0	3	2	0	7.8	352.7
I	Recharge Credit Evaluation	3.1	37.2	29.7	88.7	158.7	62	20.4	88.8	15	186.2	0	0	0	2.2	2.6	3	3	17	0	27.8	372.7
J	Recharge Credit Evaluation	3.1	37.2	29.7	88.7	158.7	62	20.4	88.8	15	186.2	0	0	0	2.2	2.6	3	3	17	0	27.8	372.7
K	Wellfield Ops Plan 2027	3.1	37.2	29.7	88.7	158.7	62	20.4	125.8	15	223.2	0	0	0	2.2	2.6	3	3	17	0	27.8	409.7
L	AO/SWWF Reallocation 2012	3.1	37.2	29.7	88.7	158.7	40	20.4	110	15	185.4	1.3	2.9	0.1	0.7	2.1	0	0	0	0	7.1	351.2
M	SMH Biscayne base 2012	3.1	37.2	29.7	88.7	158.7	62	20.4	83.8	15	181.2	0	0	0	2.2	2.6	0	0	3	0	7.8	347.7

Abbreviations = Wellfield
H = Hialeah
JP = John E. Preston
MS = Miami Springs
NW = Northwest
AO = Alexander Orr
SC = Snapper Creek
SW = Southwest
W = West
ELT = Elevated Tank
EvLC = Everglades Labor Camp
LC = Leisure City
NJ = Naranja
NWTN = Newton
CP = Caribbean Park
FP = Former Plant
RHP = Roberta Hunter Park
RPP = Rock Pit Park
SMH = South Miami Heights
CNMB = City of North Miami Beach

Purpose of Each Scenario

G - Establish Base Condition Water Use (NWWF at 88.7 because of CNMB shift)

H - Shifting 4.3 MGD from South Dade (ELT, LC, NJ) to SMH (FP & RHP)
Base condition prior to recharge at SMH and increasing from 4.3 to 5 MGD to account for new treatment at SMH WTP

I - Base Condition (South Dade 5 mgd at SMH with increases at NWTN and ELC) plus pumps ON at SMH at 23 MGD prior to SMH recharge.
Increase SW by 5.0 MGD

J - Pumps on at SMH (23 MGD) to determine benefits of 23 MGD Phase 1 SMH recharge offset. Increase SW by 5.0 MGD

K - Final 20 year permit conditions and determining how much regional impact does 37 MGD increased pumpage at Alex Orr subarea cause, to determine offset by Phases 2 and 3 canal recharge.

L - reallocation of 22 mgd from AO wellfield to SWWF, and an additional 3.6 mgd at SWWF with no modeled impact to regional system

M - SMH at 3 mgd (Turning off 4.3 mgd at ET, LC and NJ results in a 2.5 mgd reduction in impact on regional canals; transferred to SMH wellfield. Increasing from 2.5 mgd to 3.0 mgd for the reduced treatment efficiency of the proposed membrane treatment system)

Notes

Scenario G Base Condition adjustments lowered NW due to CNMB

Above pumpages are annual average values.

The simulated withdrawal for each month will vary based on historic ratios of individual months to the long-term average month withdrawal

Each scenario listed above (G through K) consisted of two runs: MDWASD-alone and cumulative (MDWASD plus adjacent permitted users.

An additional scenario ws run that simulated no public water supply (PWS) withdrawal (used as base case for drawdown evaluation).

MDWASD pumpage rates were as listed in the above table for each scenario (G through M).

Drawdowns were computed as the difference in simulated heads between the no-PWS pumpage scenario and the cumulative for each scenario.

Output consists of maps of head and drawdown, hydrographs, water budgets and vector plots.

EXHIBIT 23

Modified 6/22/2012

West Wellfield Modeled Drawdown - 15 mgd

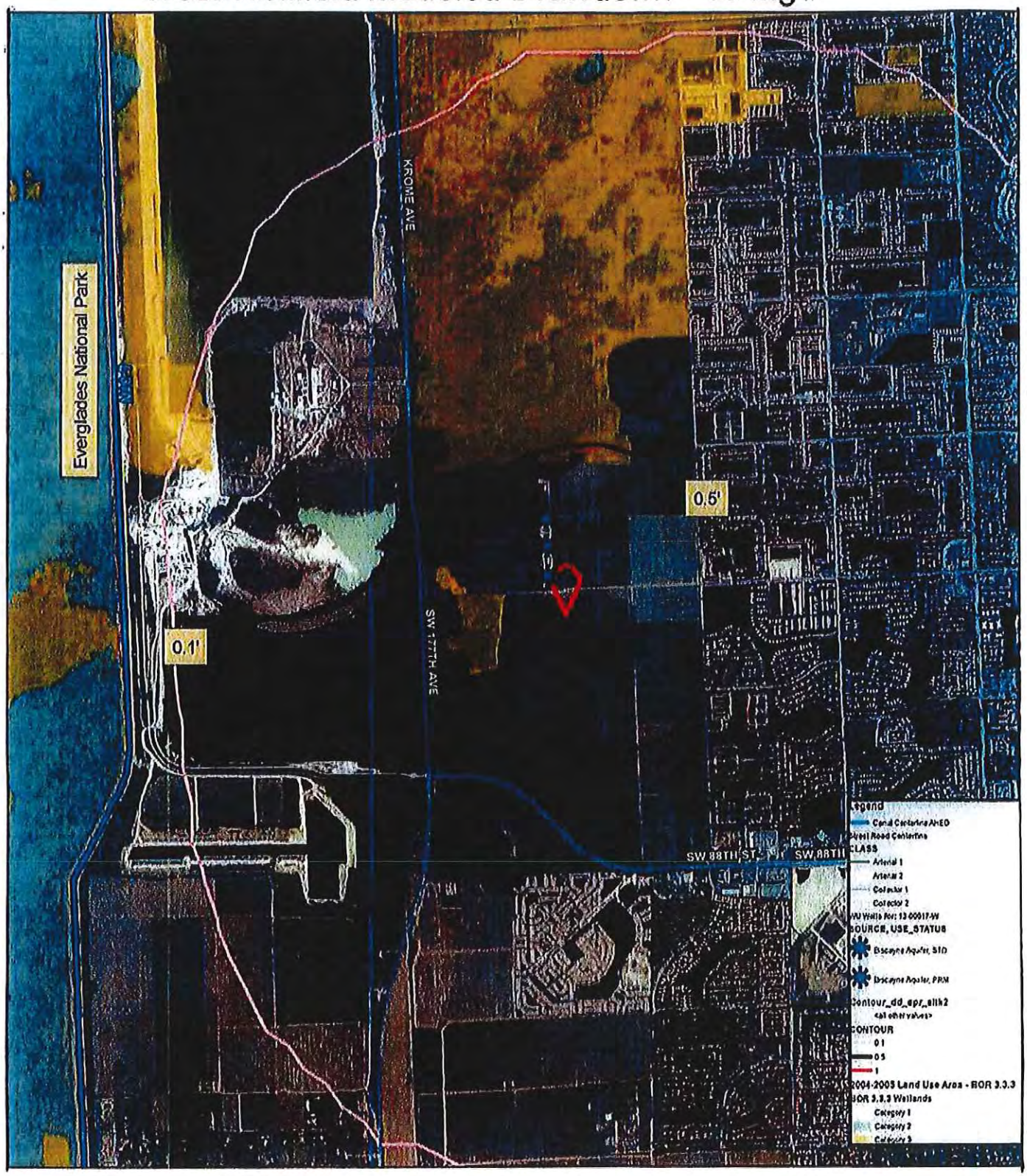


EXHIBIT 24A

Northwest Wellfield Modeled Drawdown - 88.7 mgd

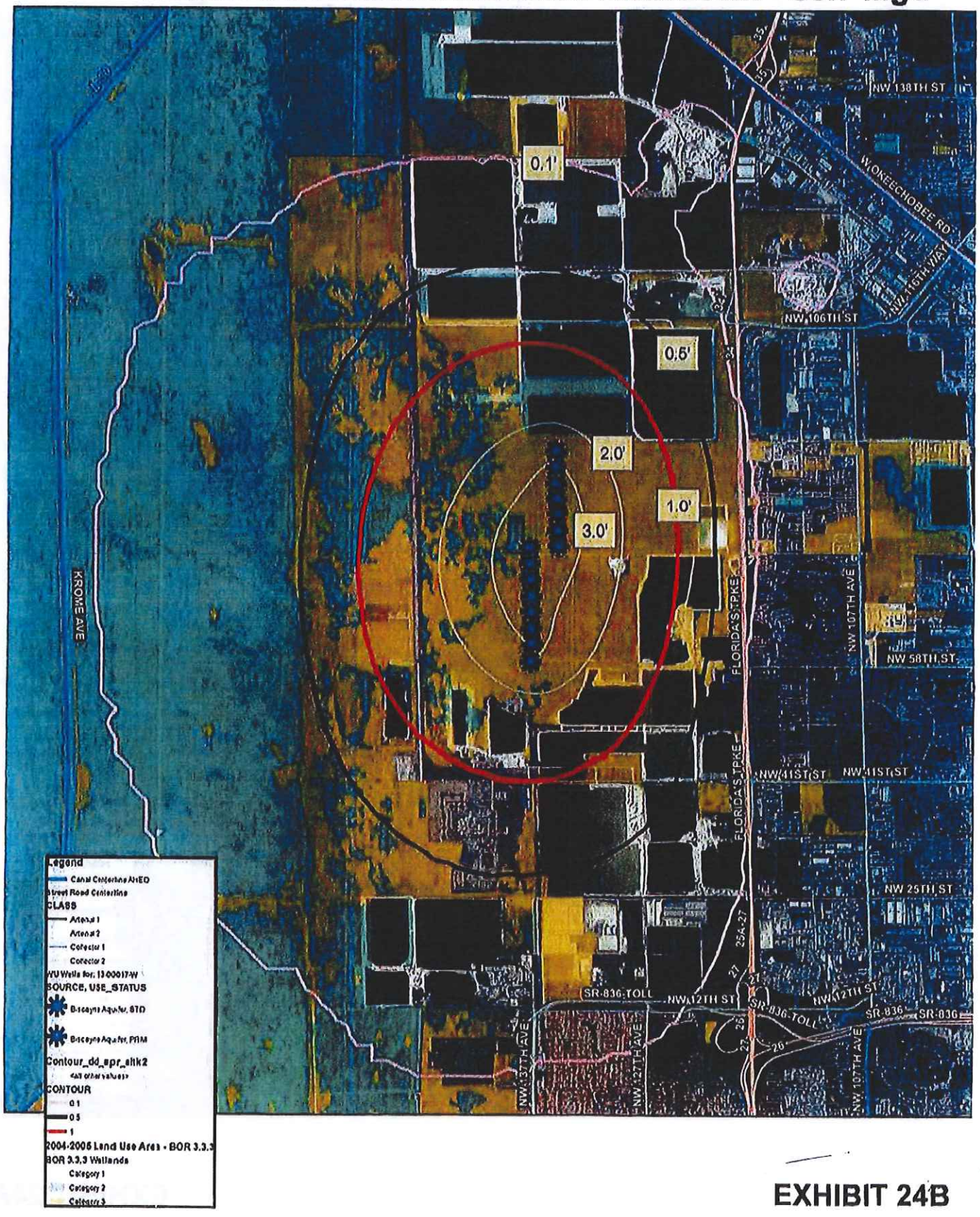
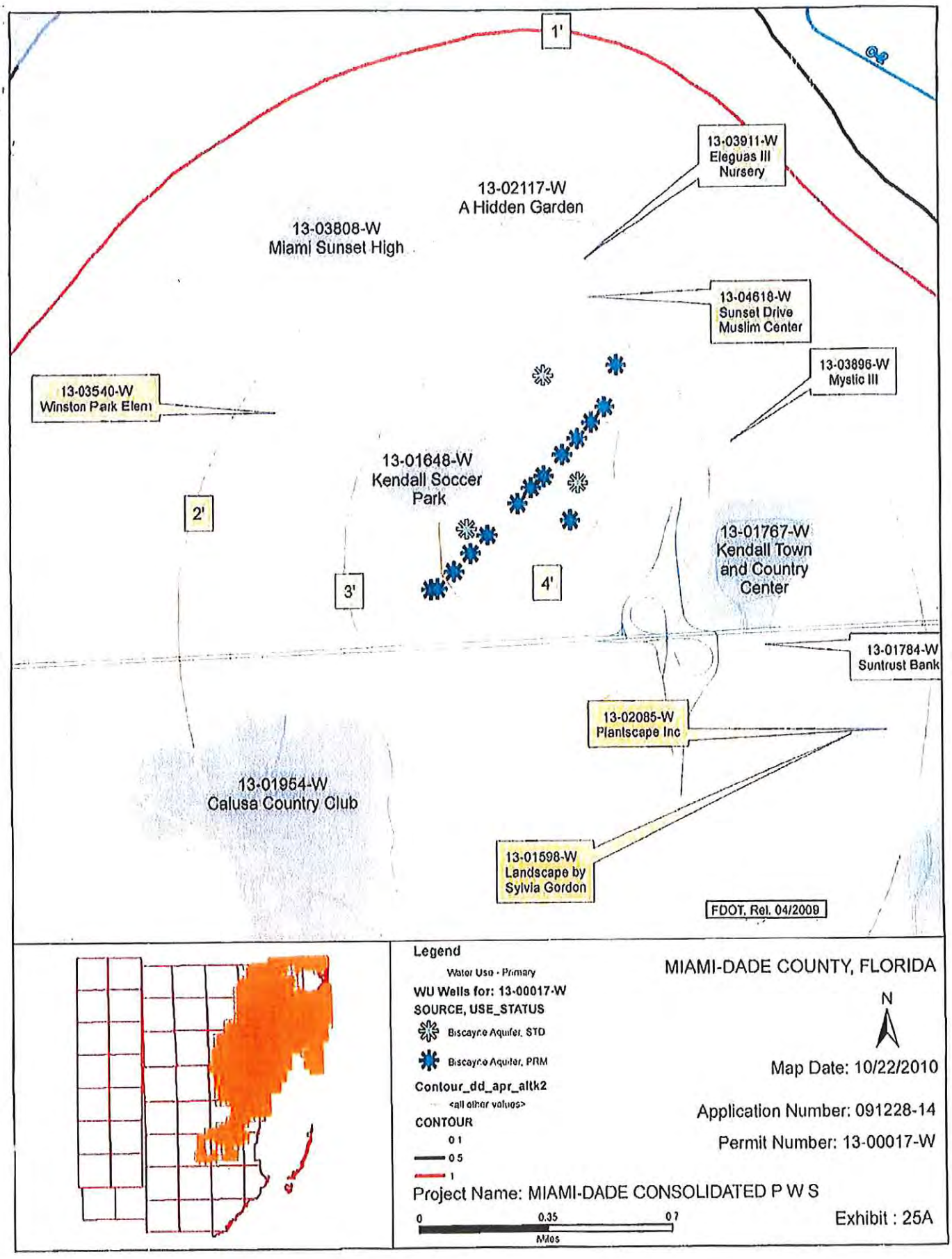


EXHIBIT 24B


1'
13-03911-W
Eleguas III
Nursery
13-02117-W
A Hidden Garden
13-03808-W
Miami Sunset High
13-04618-W
Sunset Drive
Muslim Center
13-03896-W
Mystic III
13-03540-W
Winston Park Elem
13-01648-W
Kendall Soccer
Park
2'
3'
4'
13-01767-W
Kendall Town
and Country
Center
13-01784-W
Suntrust Bank
13-02085-W
Plantscape Inc
13-01954-W
Calusa Country Club
13-01598-W
Landscape by
Sylvia Gordon
FDOT, Rel. 04/2009
Legend
Water Use - Primary
WU Wells for: 13-00017-W
SOURCE, USE_STATUS
Biscayne Aquifer, STD
Biscayne Aquifer, PRM
Contour_dd_apr_altk2
<all other values>
CONTOUR
0 1
0 5
1
MIAMI-DADE COUNTY, FLORIDA
N
Map Date: 10/22/2010
Application Number: 091228-14
Permit Number: 13-00017-W
Project Name: MIAMI-DADE CONSOLIDATED P W S
Exhibit : 25A
0
0.35
0 7
Miles

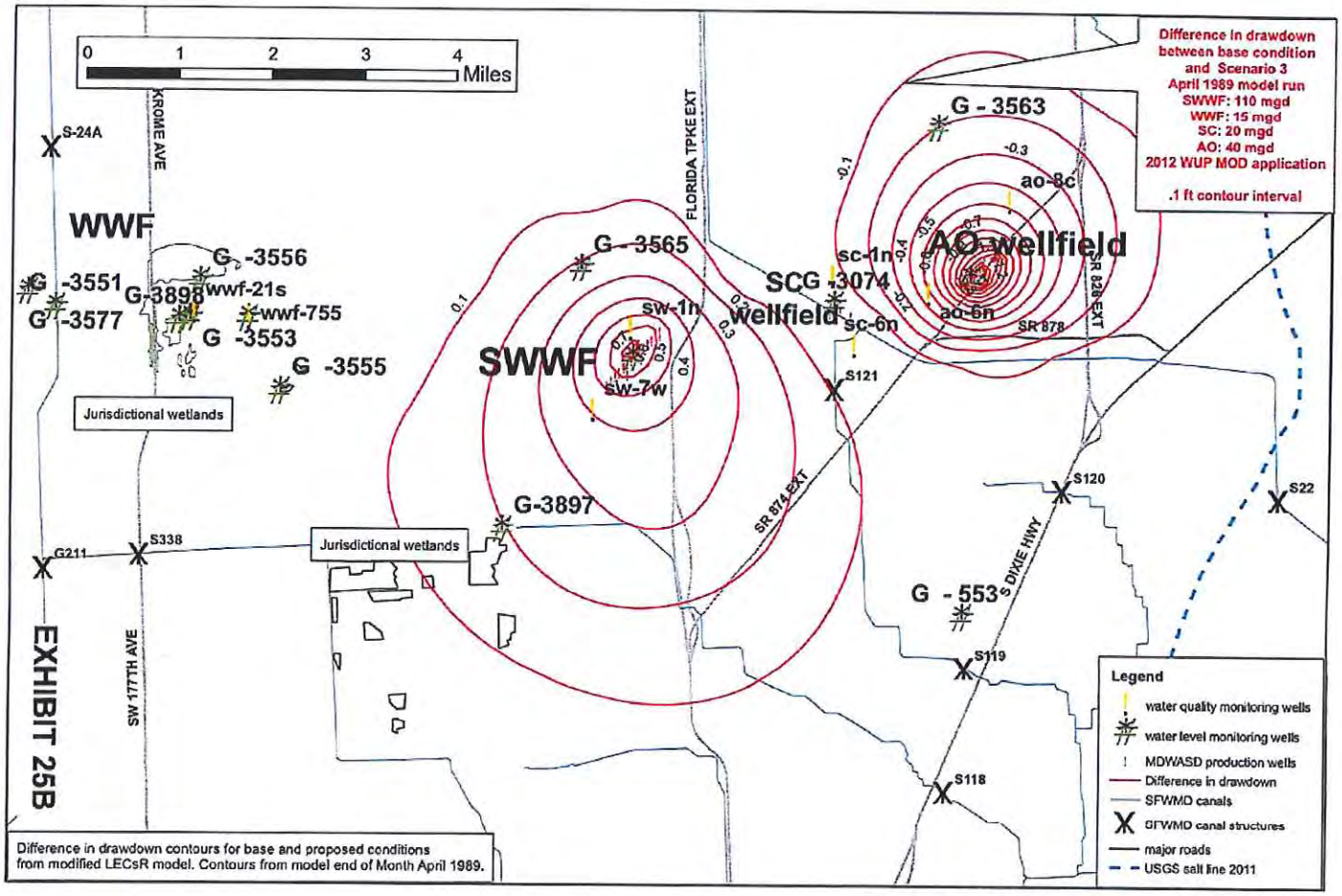


Figure 8c. Southwest, Snapper Creek and Alex Orr
Wellfield Groundwater Level
and Water Quality Monitoring
Drawdown difference

updated 2/27/12

Miami-Dade County Water and Sewer Department
3071 SW 38 Ave
Miami FL 33146

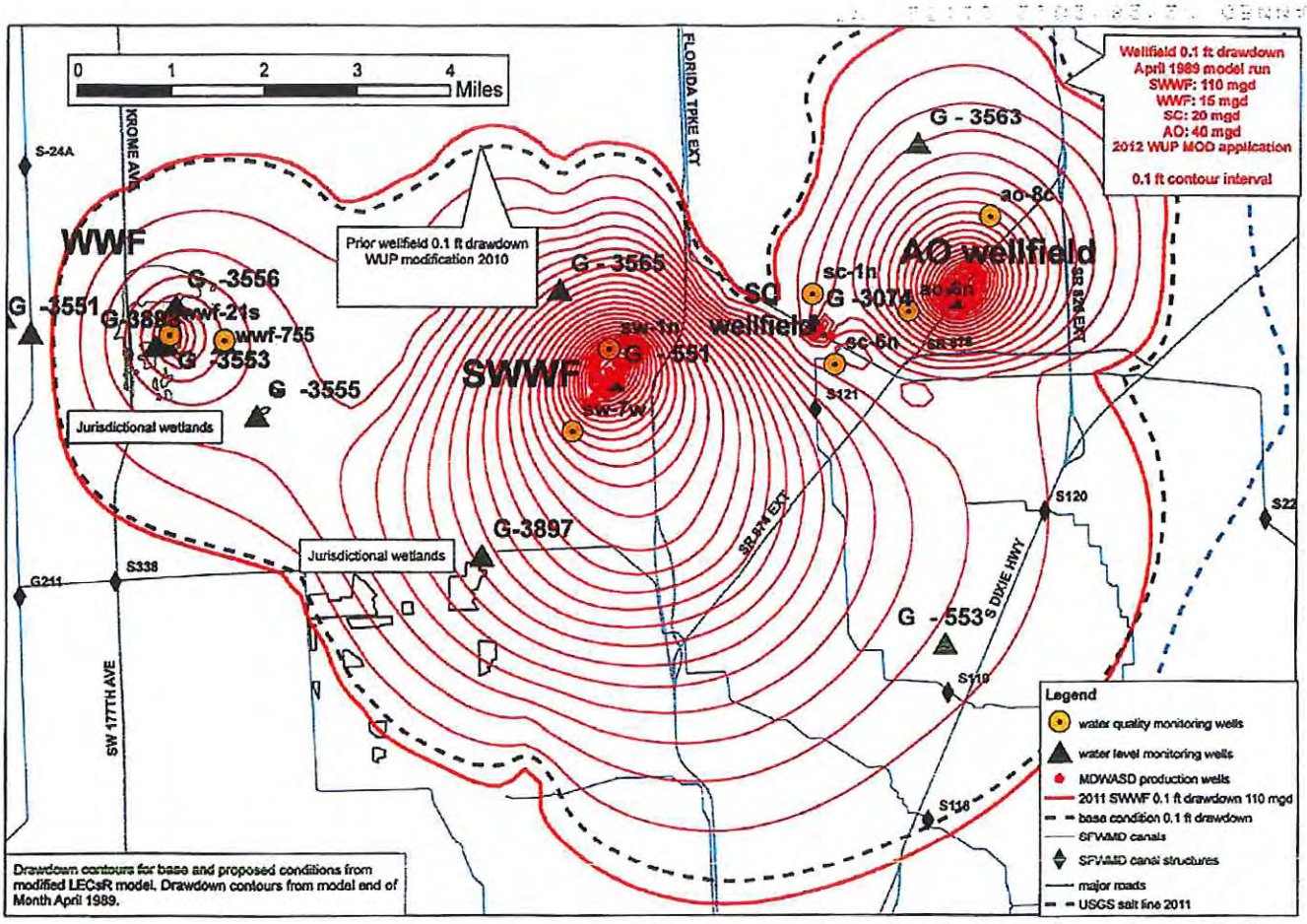


EXHIBIT 25C

MIAMI-DADE COUNTY

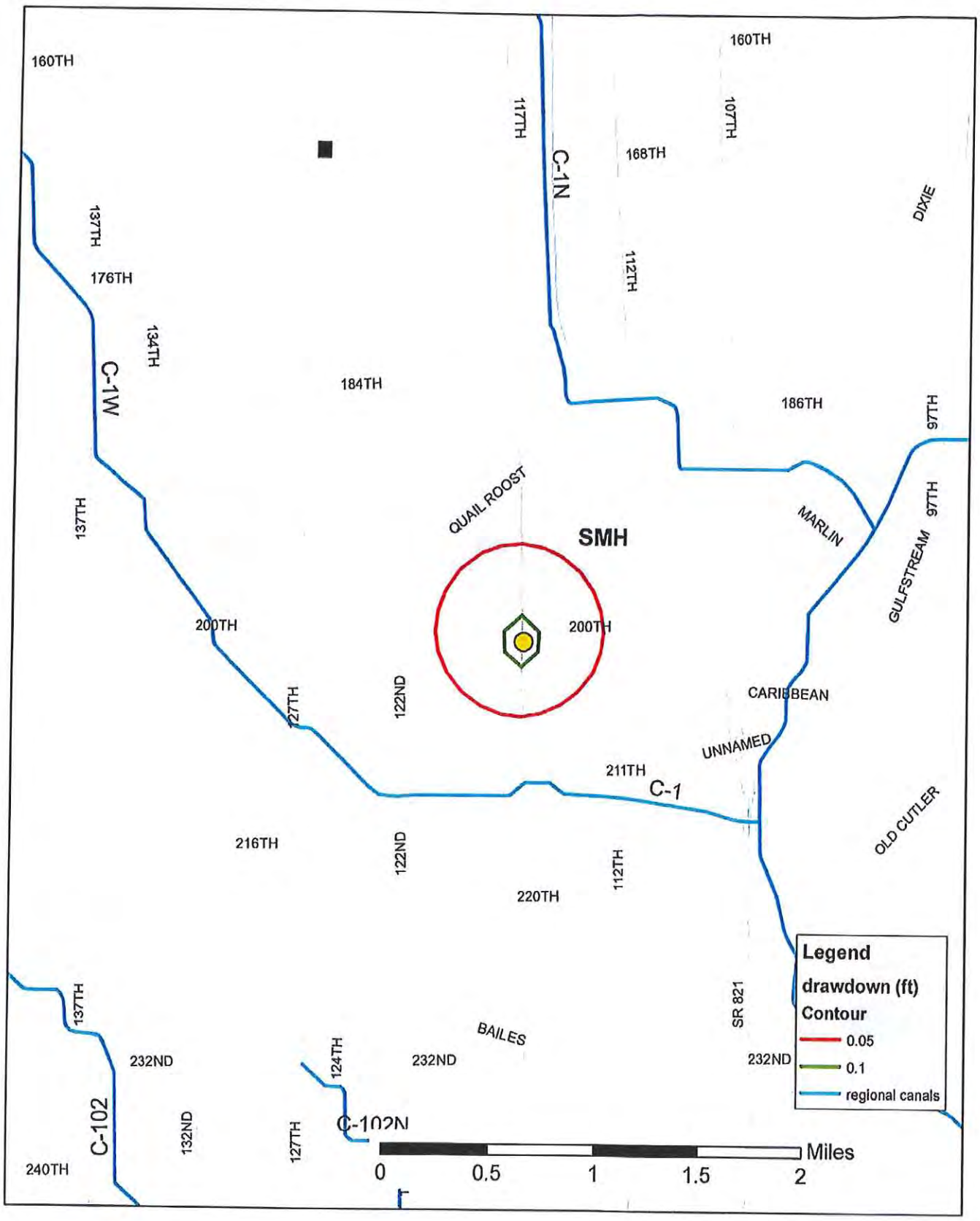
Miami-Dade County Water and Sewer Department
3071 SW38 Ave
Miami FL 33146

N W E S

Figure 8a. Southwest, Snapper Creek and Alex Orr Wellfield drawdown and Water Quality Monitoring

updated 2/22/12

110511-6

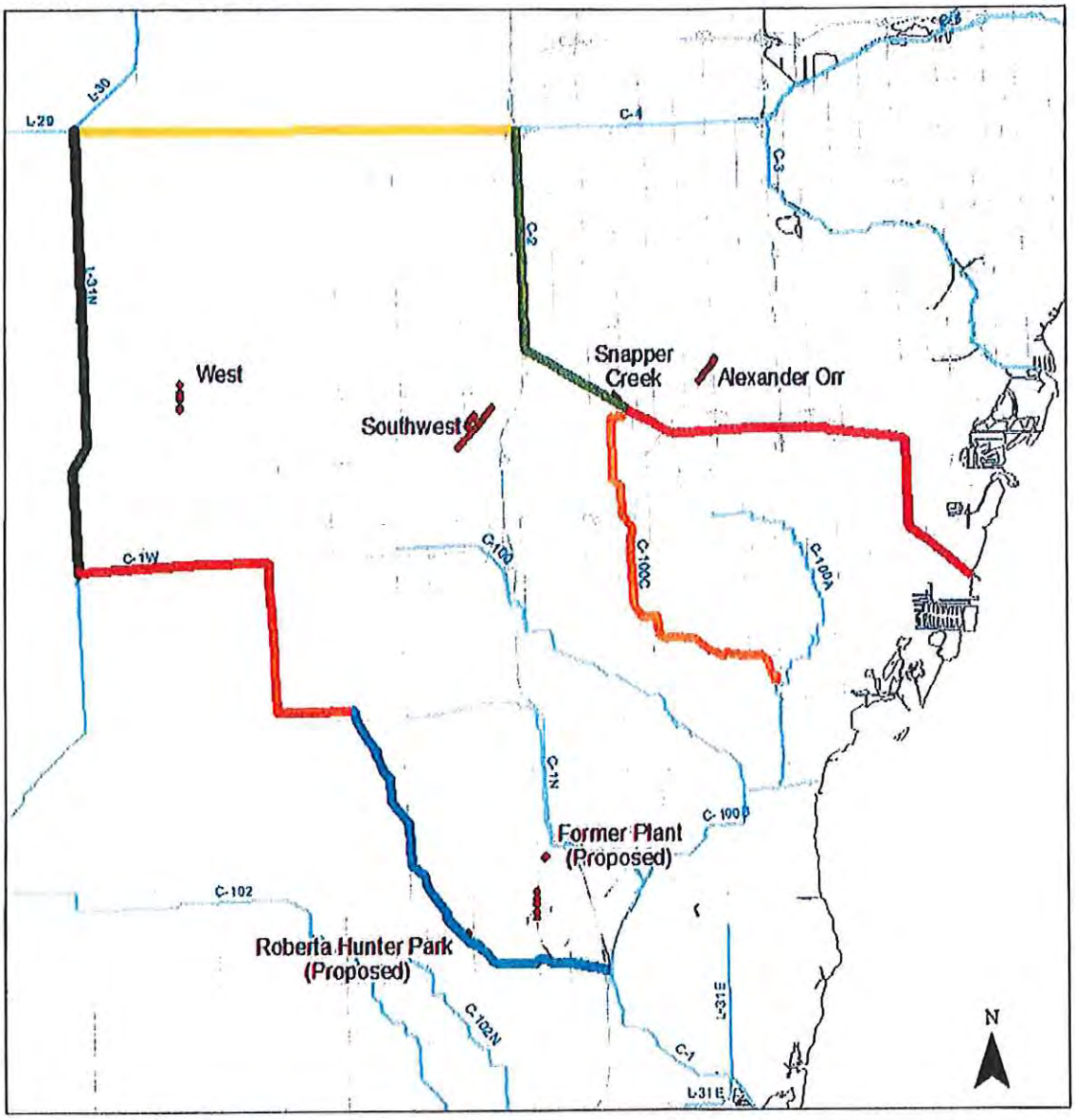


Miami-Dade County
Water and Sewer Department
3071 SW 38 Ave
Miami FL 33146

South Miami Heights
Biscayne Aquifer pumpage at 3 mgd
drawdown map

EXHIBIT 25D

FIGURE 1
Locations of Wellfields and Canal Reaches



CH2MHILL

GNV310311581181.DOCX/120240001
WBG012412122127DFB

EXHIBIT 25E

FIGURE 6
Net Additional Canal Seepage Relative to Base Conditions, C-4 Canal

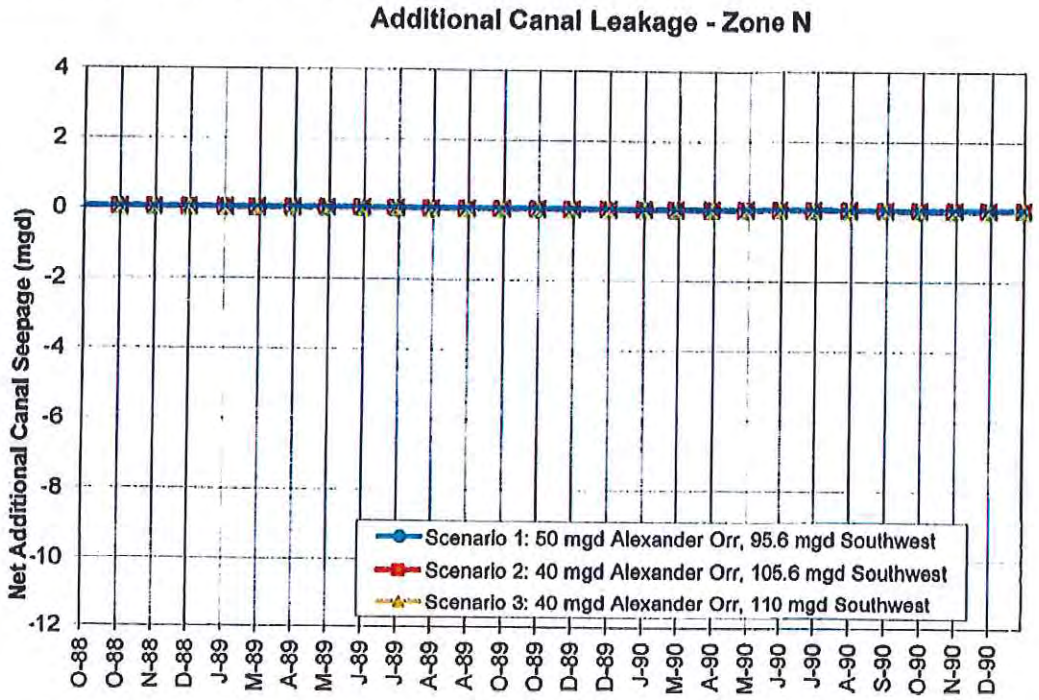


FIGURE 7
Total Net Additional Canal Seepage Relative to Base Conditions

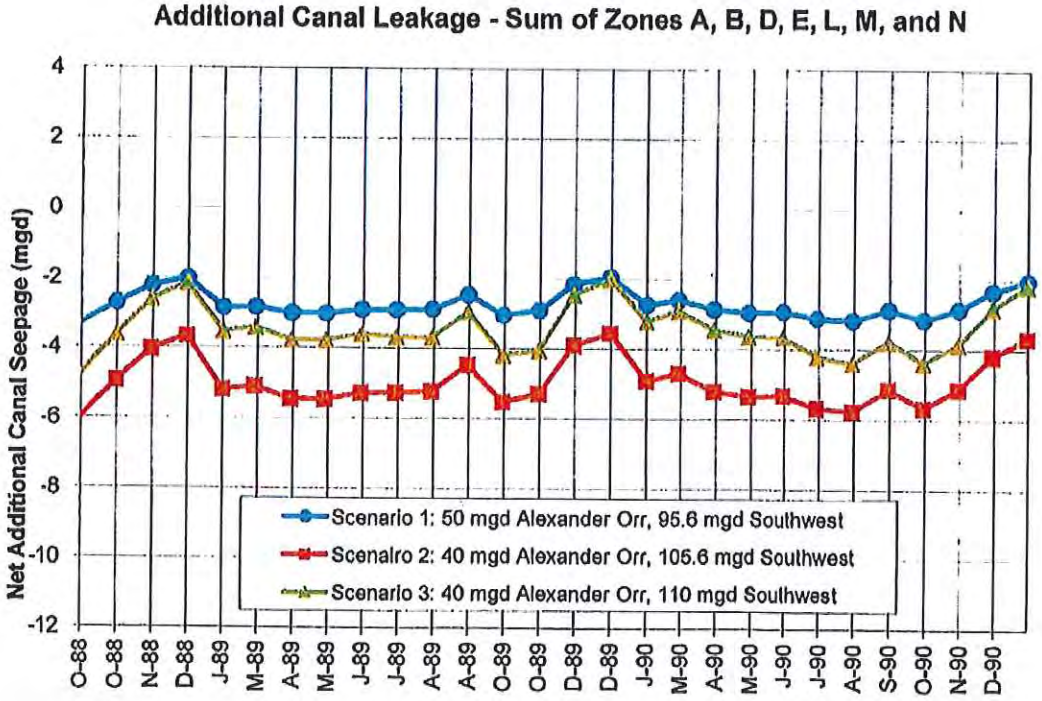


EXHIBIT 25F

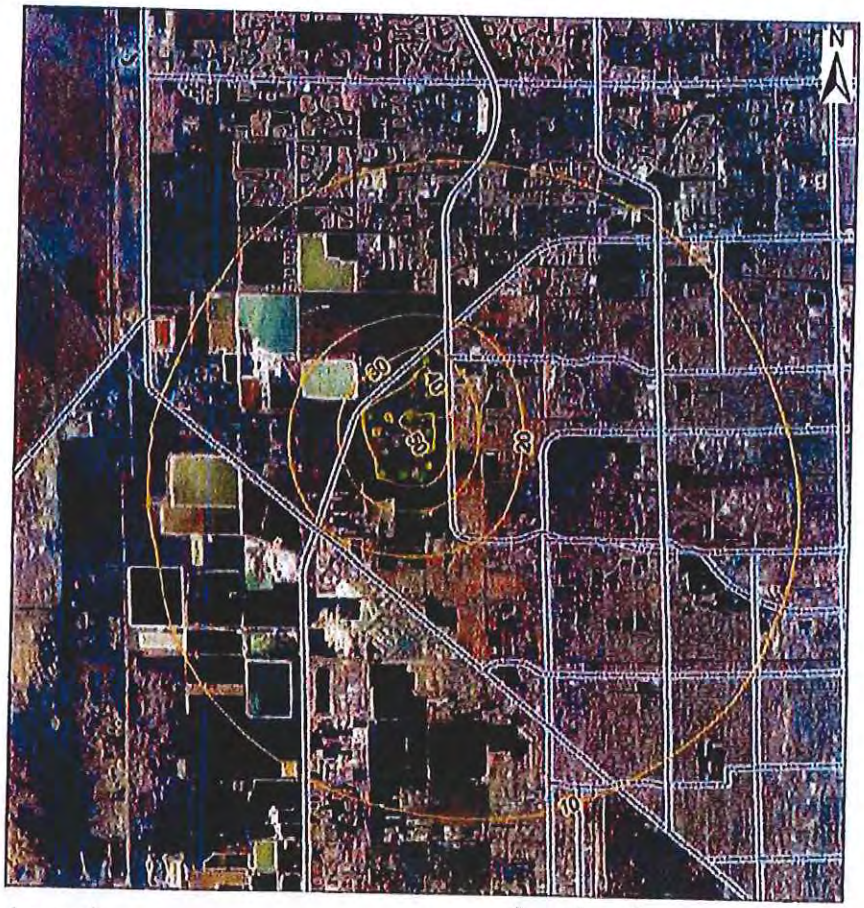
Table 5-1 ECFAS Model Structure and Hydraulic Parameters at Proposed Wellfield

Model Layer	Top Elevation (ft, NGVD)	Bottom Elevation (ft, NGVD)	Thickness (ft)	Aquifer	Boundary Conditions	H. Hydraulic conductivity (ft/day)	V. Hydraulic conductivity (ft/day)	Specific storativity (1/ft)	Effective Porosity
1	10	-194	204	SAS	constantHead	10	10	0.00125	0.25
2	-194	-1072	878	ICU	variable	0.006	0.0006	9.00E-07	0.35
3	-1072	-1207	135	UFA	variable	90	9	5.25E-07	0.18
4	-1207	-1341	134	UFA	variable	90	9	5.25E-07	0.18
5	-1341	-1494	153	MCU1	variable	0.01	0.002	9.00E-07	0.35
6	-1494	-1647	153	MCU1	variable	0.01	0.002	9.00E-07	0.35
7	-1647	-1721	74	APPZ	variable	450	45	7.50E-07	0.18
8	-1721	-1795	74	APPZ	variable	450	45	7.50E-07	0.18
9	-1795	-2000	205	MCU2	variable	0.3	0.0015	9.00E-07	0.35
10	-2001	-2207	206	MCU2	variable	0.3	0.0015	9.00E-07	0.35
11	-2207	-2412	205	MCU2	variable	0.3	0.0015	9.00E-07	0.35
12	-2412	-2514	102	LF1	variable	300	30	7.50E-07	0.18
13	-2514	-2977	463	LFCU1	variable	0.002	0.0002	9.00E-07	0.35
14	-2977	-3177	200	BZ	const Head	10000	10000	7.50E-07	0.18

Table 5-3 Revised Hydraulic Parameters at Proposed Wellfield

Layer	Bottom elevation (ft NGVD)	Kx (Ky) (TP1_Zone) (ft/day)	Kz (TP1_Zone) (ft/day)	Kx (ky) (Patch) (ft/day)	Kz (Patch) (ft/day)	Ss (1/ft)	Effective Porosity	Initial Concentration (TDS, mg/l)
1	-196	10	10	10	10	0.00125	0.25	350
2	-1080	0.006	0.0006	0.006	0.0006	9.00E-07	0.35	1520
3	-1210	10	2	32	4	3.00E-06	0.1	3500
4	-1300	10	2	32	4	1.00E-07	0.1	3500
5	-1480	10	10	10	10	1.00E-07	0.1	3500
6	-1550	0.01	0.01	0.01	0.01	1.00E-07	0.1	3900
7	-1721	450	45	450	45	7.50E-07	0.18	4600
8	-1795	450	45	450	45	7.50E-07	0.18	4600
9	-2000	0.3	0.0015	0.3	0.0015	9.00E-07	0.35	18410
10	-2207	0.3	0.0015	0.3	0.0015	9.00E-07	0.35	18410
11	-2412	0.3	0.0015	0.3	0.0015	9.00E-07	0.35	18410
12	-2514	300	30	300	30	7.50E-07	0.18	35000
13	-2977	0.002	0.0002	0.002	0.0002	9.00E-07	0.35	35000
13	-3177	10000	10000	10000	10000	7.50E-07	0.18	35000

Exhibit 26A



Schlumberger
WATER SERVICES

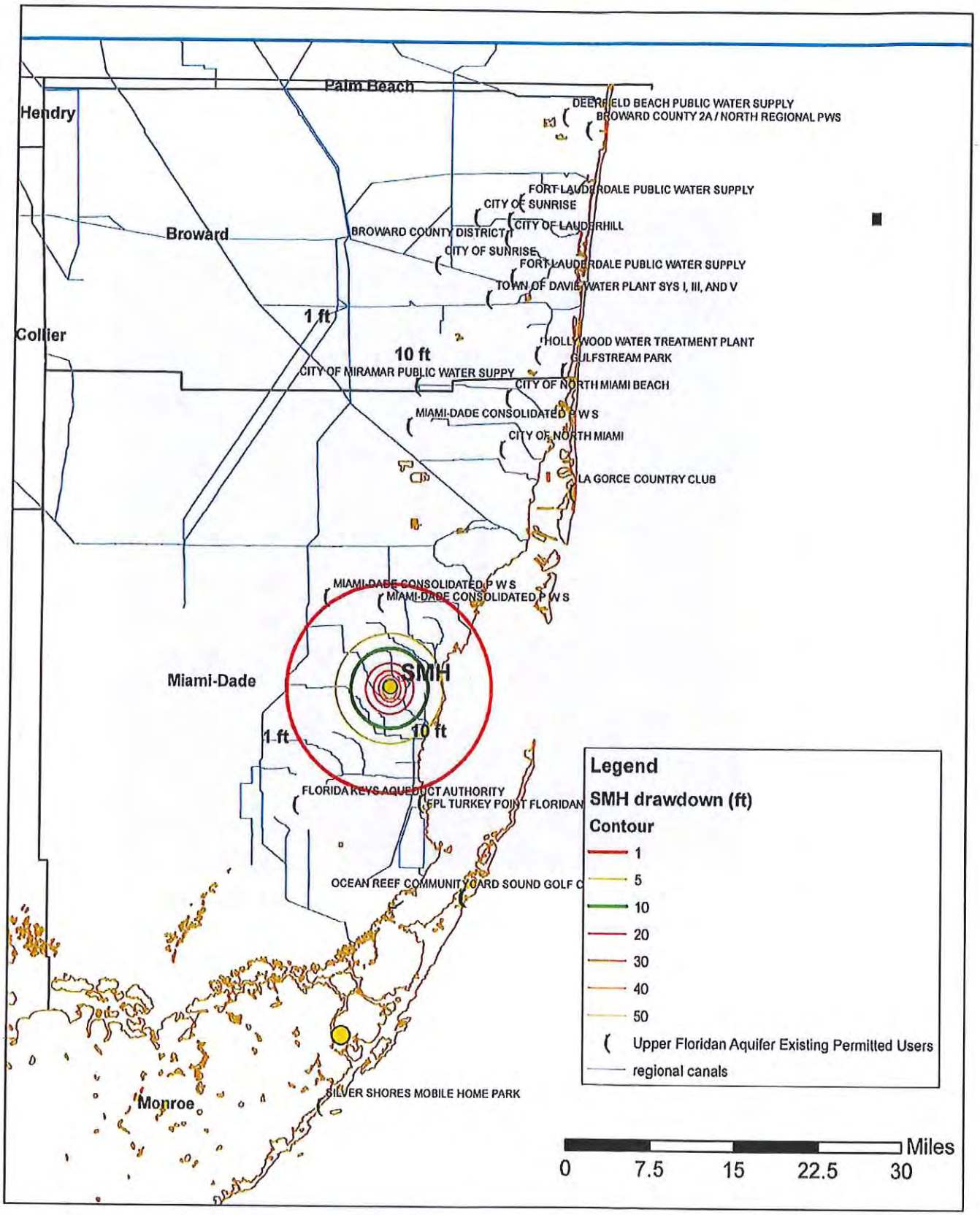
Figure 5-8e: Simulated drawdown (ft) in Model Layer 4 due to Pumpage of 13.33 MGD from the UFA after 30 Years

Exhibit 26B

Schlumberger WATER SERVICES

Figure 5-8b: Simulated drawdown (ft) in Model Layer 4 due to Proposed Pumping up to 23.33mgd from the UFA after 30 Years

Exhibit 26C



Miami-Dade County
Water and Sewer Department
3071 SW 38 Ave
Miami FL 33146

Figure 6.
South Miami Heights at 24 mgd drawdown

EXHIBIT 26D

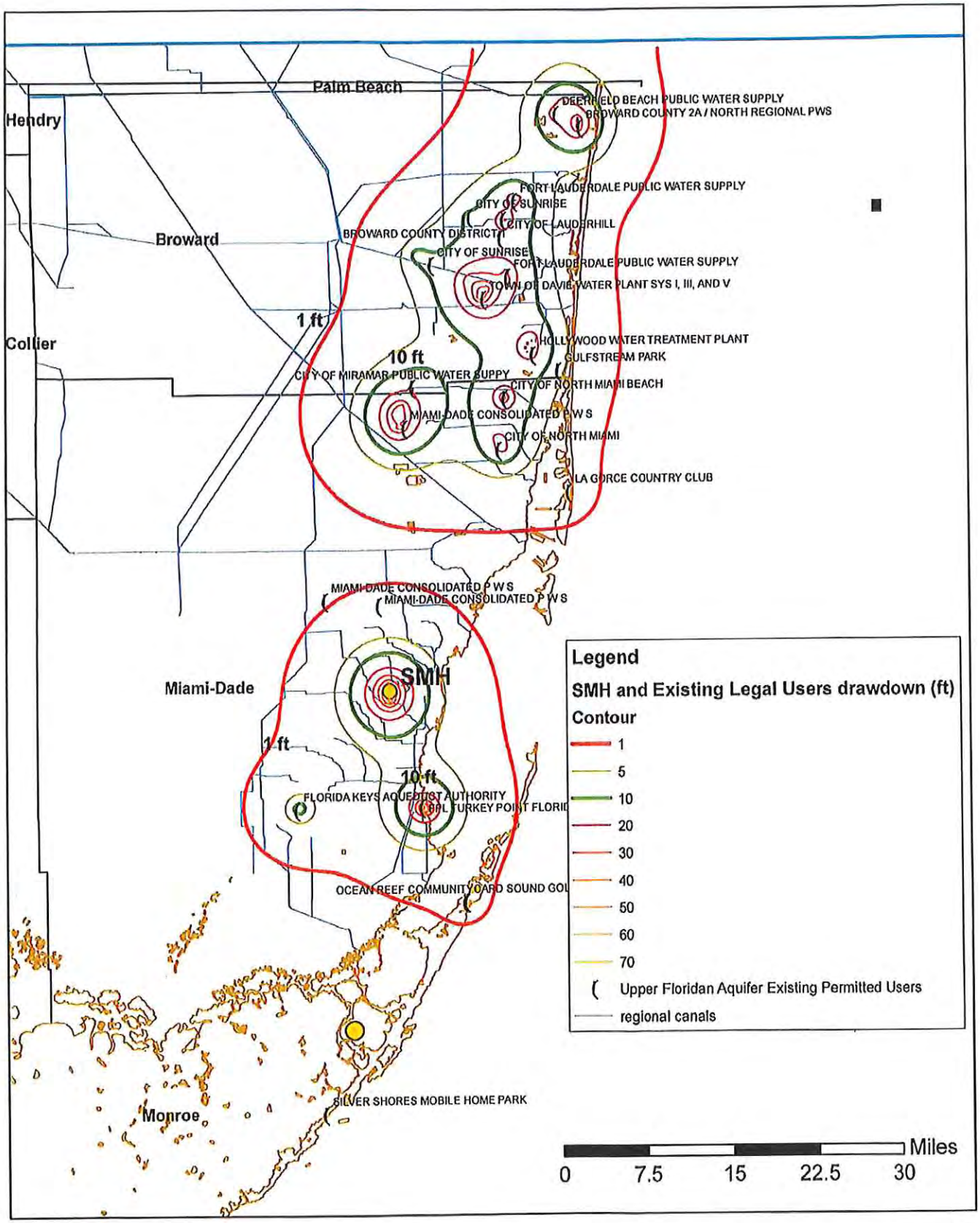
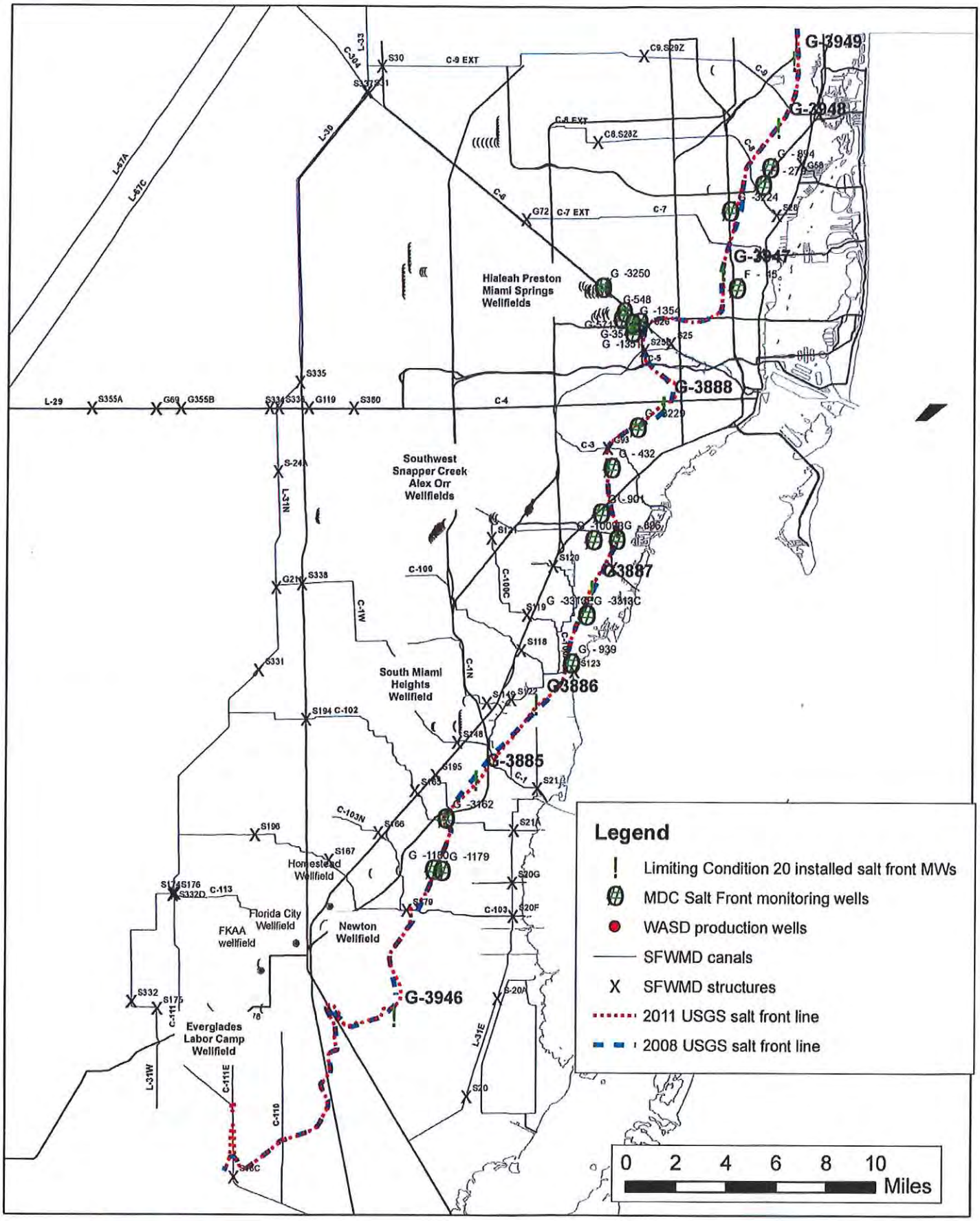


Figure 7.

SMH at 24 mgd
and Existing legal users drawdown
EXHIBIT 26E

Miami-Dade County
Water and Sewer Department
3071 SW 38 Ave
Miami FL 33146



MIAMI-DADE COUNTY

Miami-Dade Water and Sewer Department
3071 SW 38 Ave
Miami FL 33146

Figure 2. 2011 Miami-Dade County
Salt Front Monitoring Network
EXHIBIT 27A

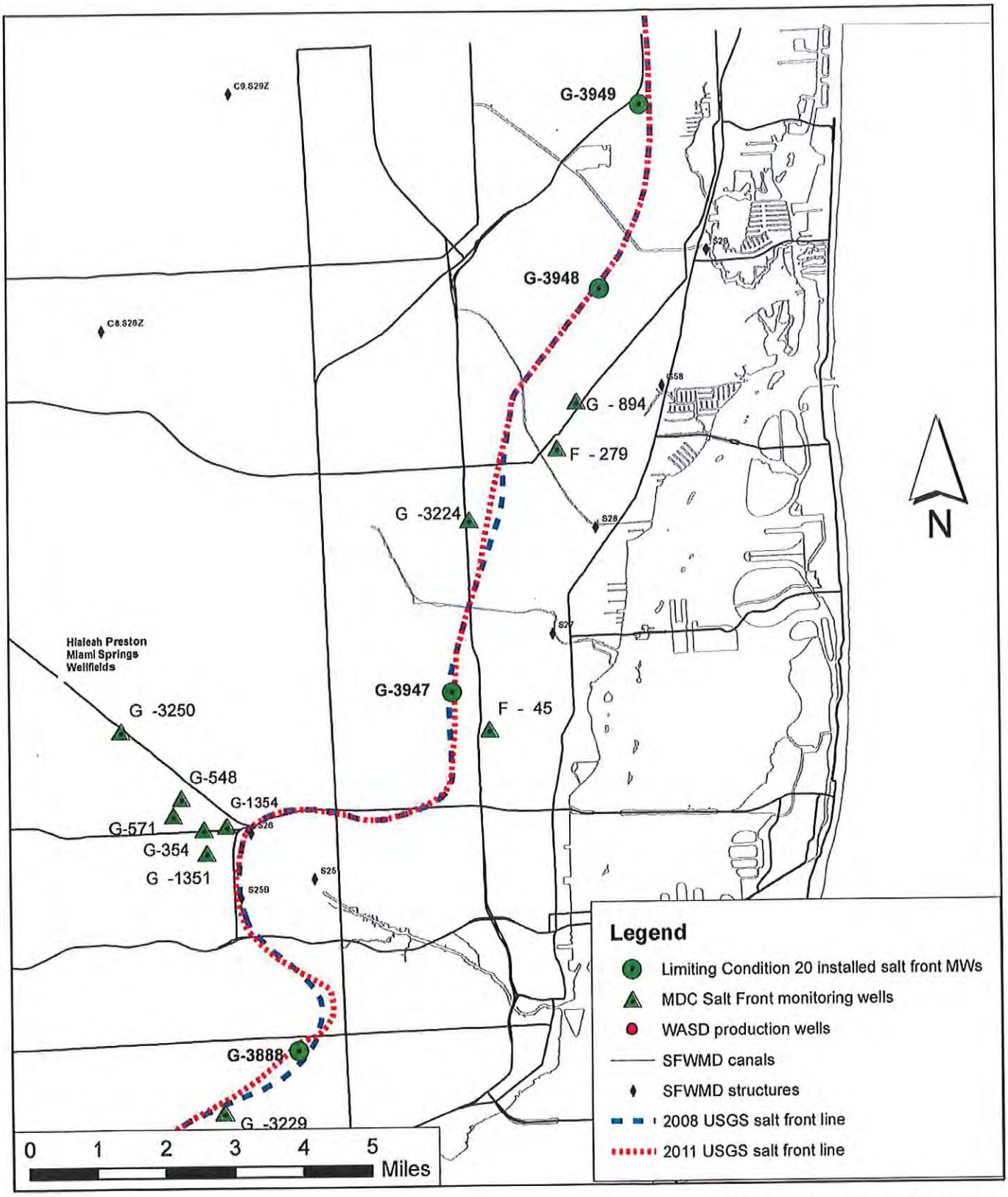


Figure 2. 2015 North Miami-Dade County Salt Front Monitoring Network
1/28/15

MIAMI-DADE COUNTY
Miami-Dade Water and Sewer Department
3071 SW 38 Ave
Miami FL 33146

Exhibit 27B

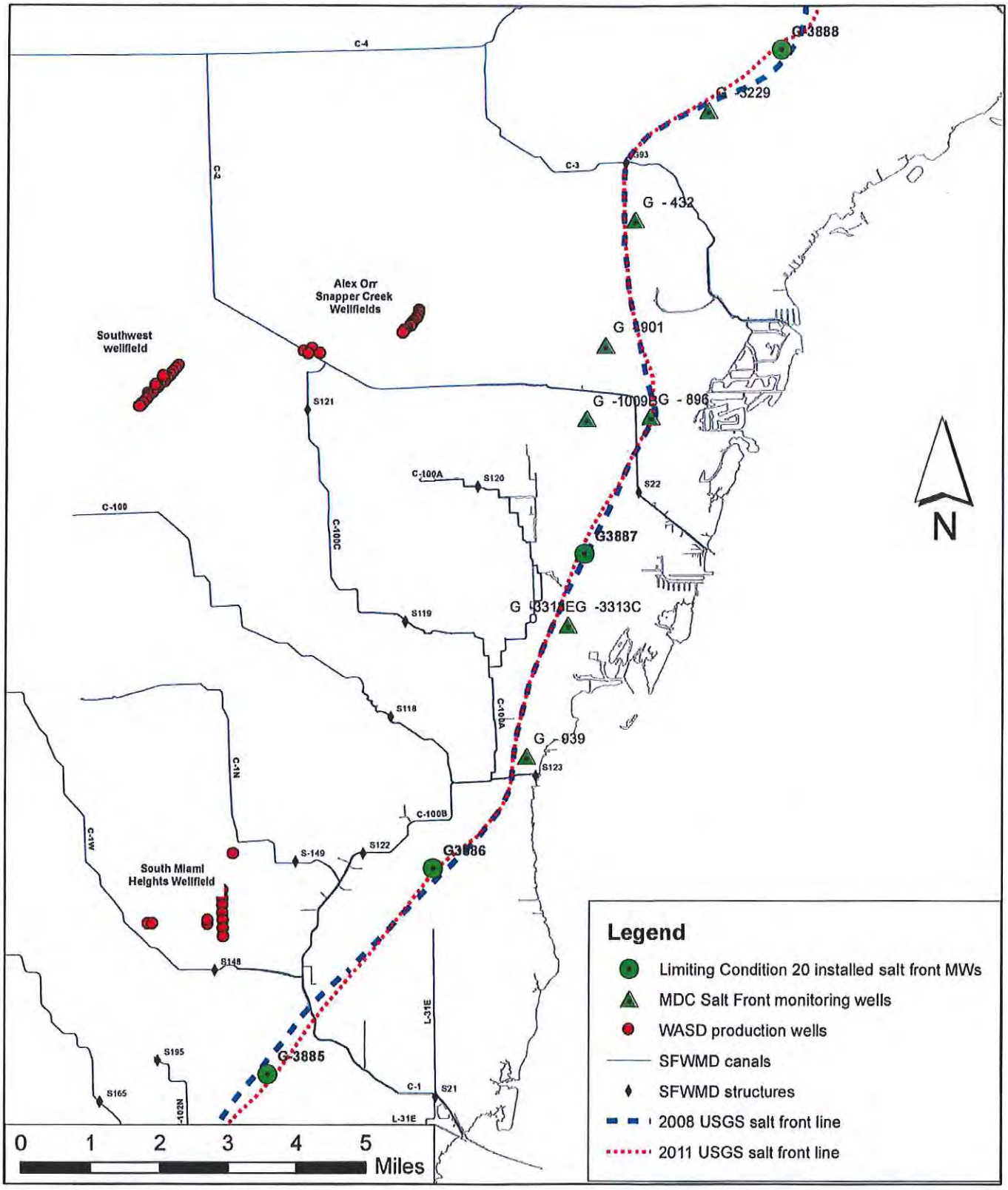


Figure 3. 2015 Central Miami-Dade County Salt Front Monitoring Network
1/28/15

MIAMI-DADE COUNTY
Miami-Dade Water and Sewer Department
3071 SW 38 Ave
Miami FL 33146

Exhibit 27C

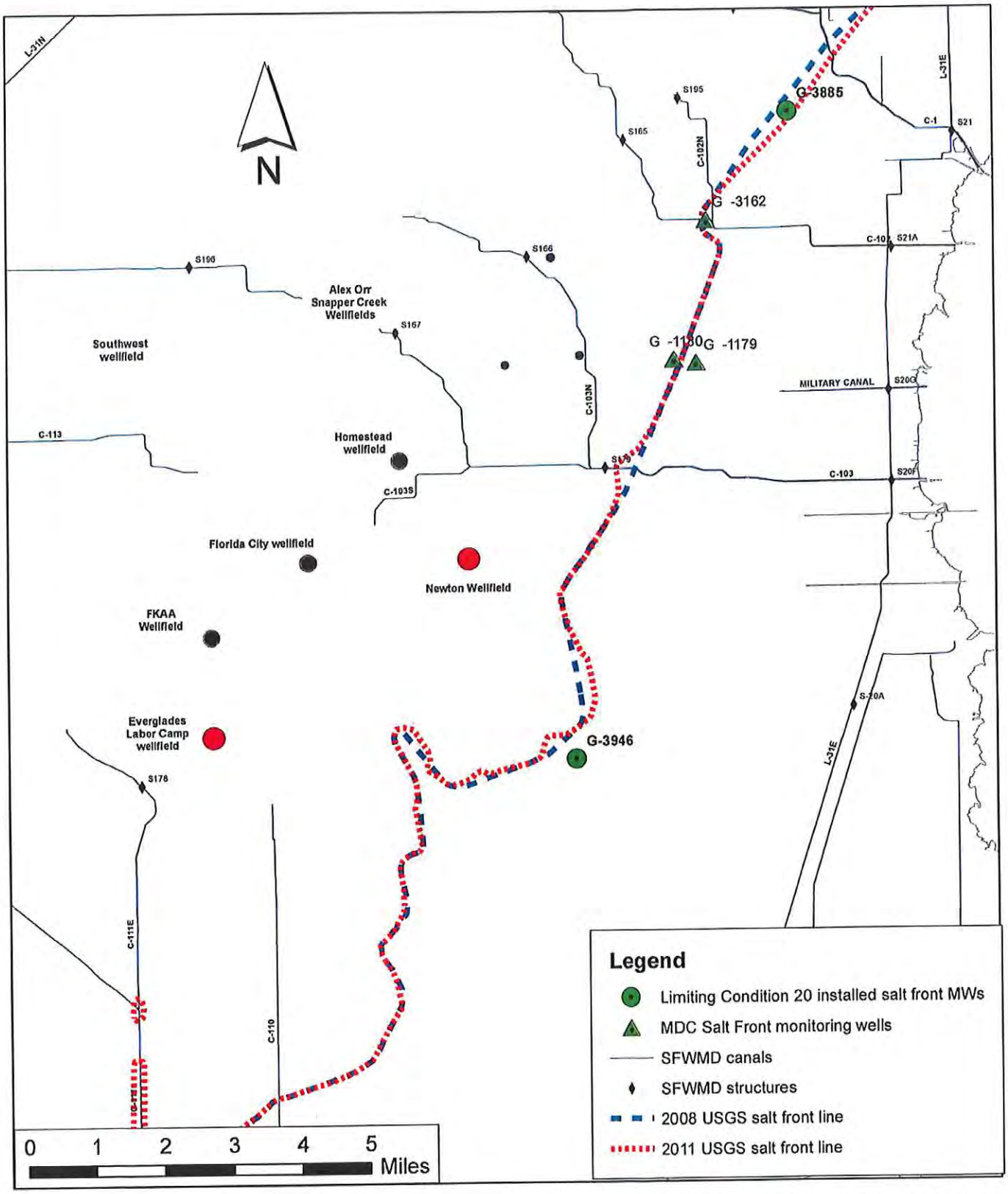


Figure 4. 2015 South Miami-Dade County
Salt Front Monitoring Network
1/28/15

Miami-Dade Water and Sewer Department
3071 SW 38 Ave
Miami FL 33146

Exhibit 27D

Table C-1. Reporting Miami-Dade County Salt Front Monitoring Wells

USGS ID	STATION NAME	LATITUDE	LONGITUDE	SITE USE	HOLE DEPTH (ft)[B]	WELL DEPTH (ft)[B]	CASING DEPTH (ft)[B]	Current GWL measurement Freq.	Current Cl Sampling Freq	Induction Log Done	2007 Chloride (mg/l)	2008 Chloride (mg/l)	2009 Chloride (mg/l)	2010 Chloride (mg/l)	2011 Chloride (mg/l)	2012 Chloride (mg/l)
253831080180204	G -3313E	25 38 34.4	-080 18 04.7	observation/monitoring	114	114	32	quarterly	quarterly	No	5100	5400	1500	713	5800	4600
253831080180204	G -3313C	25 38 35.1	-080 18 04.8	observation/monitoring	110	110	open hole	quarterly	quarterly	No	4000	4200	4250	4400	4717	4351
254946080172601	G -3250	25 49 46	-080 17 26	observation/monitoring	116	116	106	Monthly	Monthly	Yes	68	131	139	176	181	200
254457080160301	G -3229	25 44 57	-080 16 03	observation/monitoring	85	85	A	Monthly	Monthly	No	700	807	900	1217	1606	1883
25522208012300l	G -3224	25 52 22	-080 12 30	observation/monitoring	95.5	95.5	94	Monthly	Monthly	No	44	39	41	41	42	41
253202080232601	G -3162	25 31 32	-080 23 25	observation/monitoring	92	92	82	quarterly	quarterly	No	1140	1208	1284	1303	1280	1267
254833080155801	G -1354	25 48 33	-080 15 58	observation/monitoring	104	104	91	Monthly	quarterly	No	56	53	516	48	49	58
254813080161501	G -1351	25 48 13	-080 16 15	observation/monitoring	103	103	100	Monthly	Monthly	No	540	530	520	503	492	474
252947080235301	G -1180	25 29 47	-080 23 53	observation/monitoring	67	67	open hole	Monthly	Monthly	No	32	30	17	27	25	17
252944080233401	G-1179	25 29 44.9	-80 23 33	observation/monitoring	80	80	open hole	twice a year	twice a year	Yes	3175	2950	2450	2350	2898	2800
254106080174601	G -1009B	25 41 06	-080 17 46	observation/monitoring	100	100	NA	Monthly	Monthly	No	50	59	59	62	60	75
253652080183701	G-939	25 36 53.8	-080 18 35.4	observation/monitoring	61	61	NA	twice a year	twice a year	No	3100	3050	3333	3750	3900	3808
254201080173001	G-901	25 42 03.0	-080 16 54.4	observation/monitoring	96	96	95	twice a year	twice a year	No	2325	2375	2550	2438	2550	2667
253710080184701	G -3611	25 37 10.4	-080 18 45.4	observation/monitoring	100	100	95	quarterly	quarterly	Yes	200	173	172	170	169	165
254107080165201	G - 896	25 41 07	-080 16 52	observation/monitoring	74	74	60	Monthly	Monthly	No	246	247	235	248	245	258
253530080105801	G - 894	25 53 51.7	-080 10 57.2	observation/monitoring	76	76	75	Monthly	Monthly	No	24	21	21	22	23	21
254841080164401	G - 571	25 48 41	-080 16 44	observation/monitoring	94.5	94.5	95	Monthly	Monthly	No	32	32	30	34	35	34
254855080163701	G-548	25 48 55.9	-080 16 36.4	observation/monitoring	97	97	91	Monthly	twice a year	No	41	40	36	34	32	31
254335080170501	G-432	25 43 35.9	-080 17 03.3	observation/monitoring	100	100	98	Monthly	twice a year	No	4000	4150	4500	4775	5142	5467
254828080161501	G - 354	25 48 28	-080 16 15	observation/monitoring	90	90.2	89	quarterly	quarterly	No	54	53	50	49	46	45
255315080111501	F-279	25 53 17.8	-080 11 14.6	observation/monitoring	117	117	NA	Monthly	quarterly	No	3150	3300	3383	3475	3583	3675
254943080121501	F - 45	25 49 43	-080 12 15	observation/monitoring	84.9	84.9	84	Monthly	Monthly	No	104	87	97	97	113	118
253253080221201	G-3885	25 32 53.1	-080 22 12.7	observation/monitoring	91	86	86	Monthly	Monthly	No	NA	NA	NA	NA	36	36
2535270801195400	G-3886	25 35 27.9	-080 19 54.2	observation/monitoring	109	101	101	Monthly	Monthly	No	NA	NA	NA	NA	51	49
253924080174601	G-3887	25 39 24.7	-080 17 46.8	observation/monitoring	134	130	130	Monthly	Monthly	No	NA	NA	NA	NA	2238	2292
254542080145901	G-3888	25 39 2407	-080 14 5908	observation/monitoring	149	144	144	Monthly	Monthly	No	NA	NA	NA	NA	5029	5225
252431080261001	G-3946	25 24 30.7	-080 26 09.7	observation/monitoring	99	98	87	Monthly	Monthly	No	NA	NA	NA	Under con	3717	4158
255011080124501	G-3947	25 50 11.3	-080 12 45.4	observation/monitoring	229	227	200	Monthly	Monthly	No	NA	NA	NA	Under con	28	25
255515080103601	G-3948	25 55 14.9	-080 10 36.2	observation/monitoring	279	277	273	Monthly	Monthly	No	NA	NA	NA	Under con	3992	
255733080195601	G-3949	25 57 33.6	-080 09 56.5	observation/monitoring	349	349	325	Monthly	Monthly	No	NA	NA	NA	Under con	115	121

A. Per USGS, depth of the casing is not precisely known.
B. Feet Below Land Surface (bls)
GWL: groundwater level
Cl: chloride

EXHIBIT 28A

Table 2. Additional USGS Salt Monitoring Wells in Miami-Dade County

updated 01/29/2015

USGS ID	STATION NAME	LATITUDE	LONGITUDE	SITE USE	WELL DEPTH (ft)[A]	CASING DEPTH (ft)[A]	Induction Log Done	2005 Chloride (mg/l)	2010 Chloride (mg/l)	2014 Chloride (mg/l)
255625080094901	G -3705	25 56 25	-080 09 49	observation/monitoring	135	125.0	Yes	1720	1500	3000
254822080125501	G -3704	25 48 22	-080 12 55	observation/monitoring	112	107.0	Yes	4100	5300	6500
253334080213601	G -3702	25 33 34	-080 21 36	observation/monitoring	83	78.0	Yes	980	980	890
253214080224601	G -3701	25 32 14	-080 22 46	observation/monitoring	83	78.0	Yes	30	465	460
253027080234701	G -3700	25 30 27	-080 23 47	observation/monitoring	82.5	77.5	Yes	30	26	20
252652080244301	G -3699	25 26 52	-080 24 43	observation/monitoring	88	83.0	Yes	5700	8800	10758
252814080244101	G -3698	25 28 13.6	-080 24 41	observation/monitoring	85	80.0	Yes	34	26	2575
253024080231001	G -3615	25 30 24	-080 23 10	observation/monitoring	80	75.0	Yes	1120	1640	3900
253457080195501	G -3612	25 34 57	-080 19 55	observation/monitoring	62	56.0	Yes	1380	1220	1300
253819080183201	G -3610	25 38 14	-080 18 32	observation/monitoring	100	95.0	Yes	51	47	47
254005080171601	G -3609	25 40 05	-080 17 16	observation/monitoring	85	80.0	Yes	940	1300	2125
254108080170601	G -3608	25 41 08	-080 17 06	observation/monitoring	100	95.0	Yes	230	122	83
254156080172101	G -3607	25 41 56	-080 17 21	observation/monitoring	120	115.0	Yes	70	62	615
254341080174001	G -3606	25 43 41	-080 17 40	observation/monitoring	120	115.0	No	44	42	37
254629080143101	G -3605	25 46 29	-080 14 31	observation/monitoring	110	105.0	Yes	1460	1800	2275
254722080152201	G -3604	25 47 22	-080 15 22	observation/monitoring	120	115.0	Yes	2800	5000	5900
254908080125201	G -3603	25 49 08	-080 12 52	observation/monitoring	167	162.0	No	66	78	120
255116080120601	G -3602	25 51 16	-080 12 06	observation/monitoring	160	155.0	Yes	3100	3800	4675
255358080114101	G -3601	25 53 58	-080 11 41	observation/monitoring	190	185.0	Yes	1100	1300	1475
254152080282601	G-3898	25 41 52	-80 28 25	observation/monitoring	23	23.0	No		56	46
253948080250701	G-3897	25 39 47	-80 25 08	observation/monitoring	23	22.5	No		41	36
252718080264901	G-3900	25 27 15	-80 26 49	observation/monitoring	22	22.0	No		42	41
252506080300601	G-3901	25 25 06	-80 30 06	observation/monitoring	22	22.3	No			25

A. Feet Below Land Surface (bls)

EXHIBIT 28B

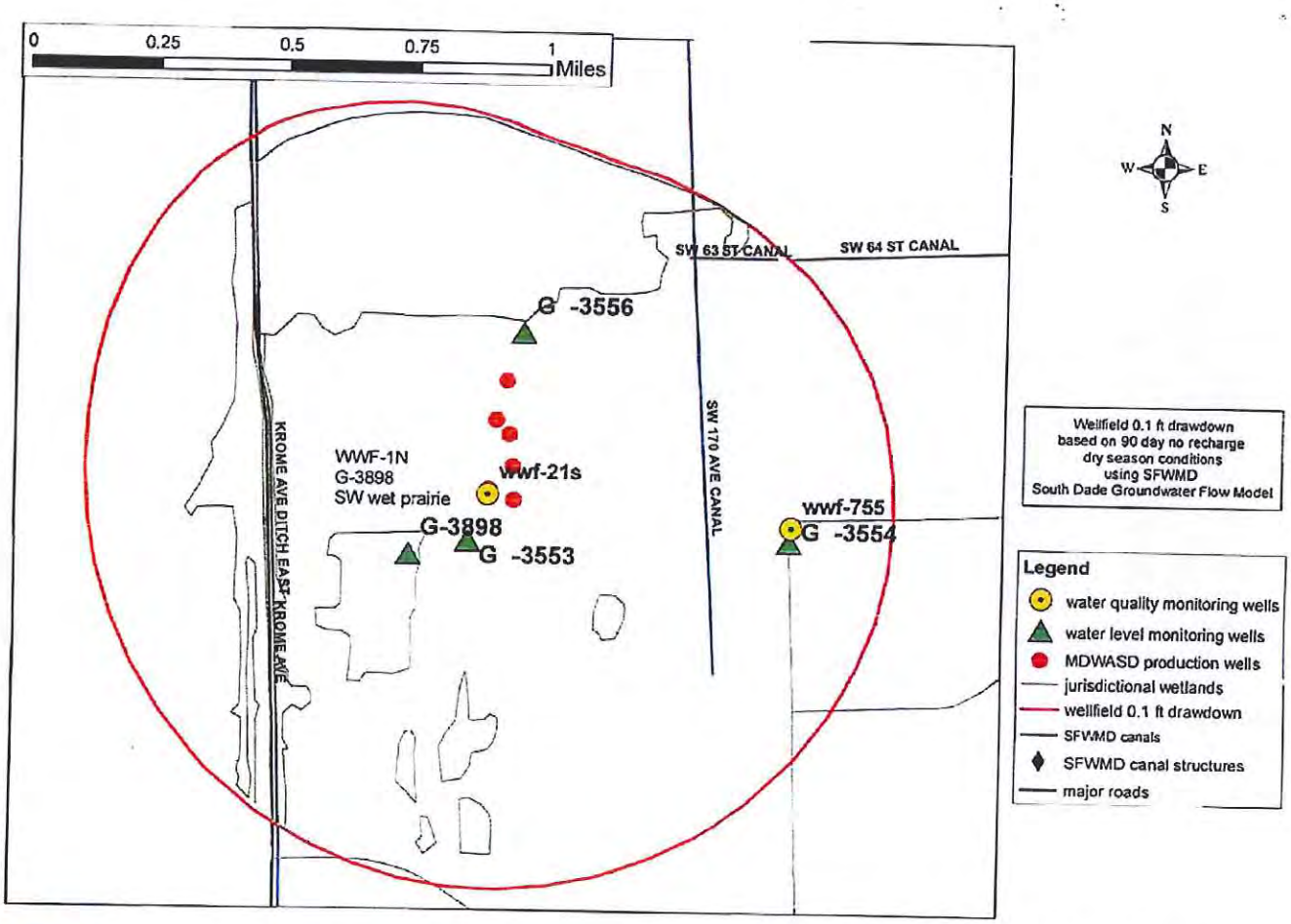


Exhibit 29A

Miami-Dade County Water and Sewer Department
3071 SW 38 Ave
Miami FL 33146

Figure 7. West Wellfield Groundwater Level and Water Quality Monitoring

updated 9/21/10

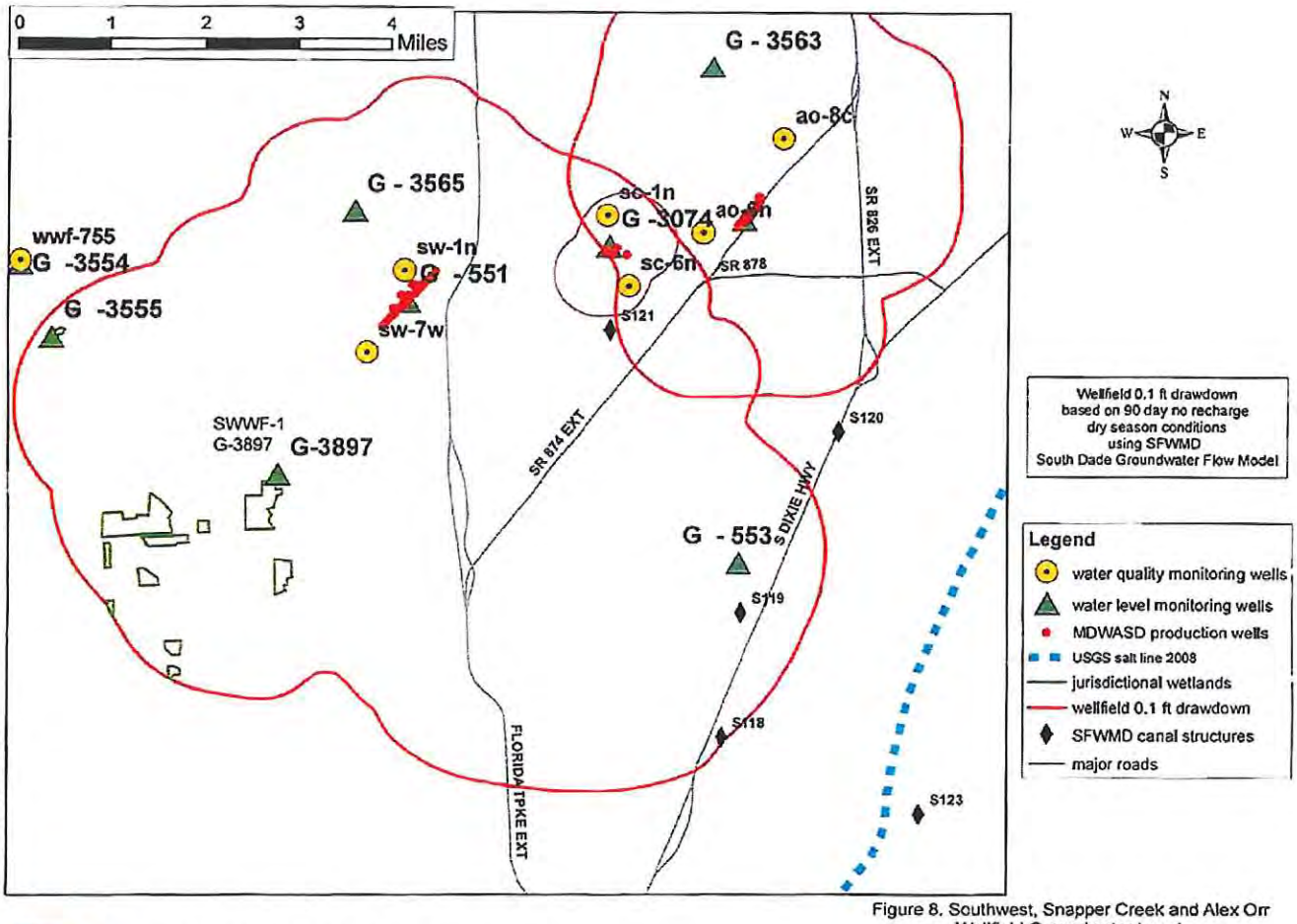


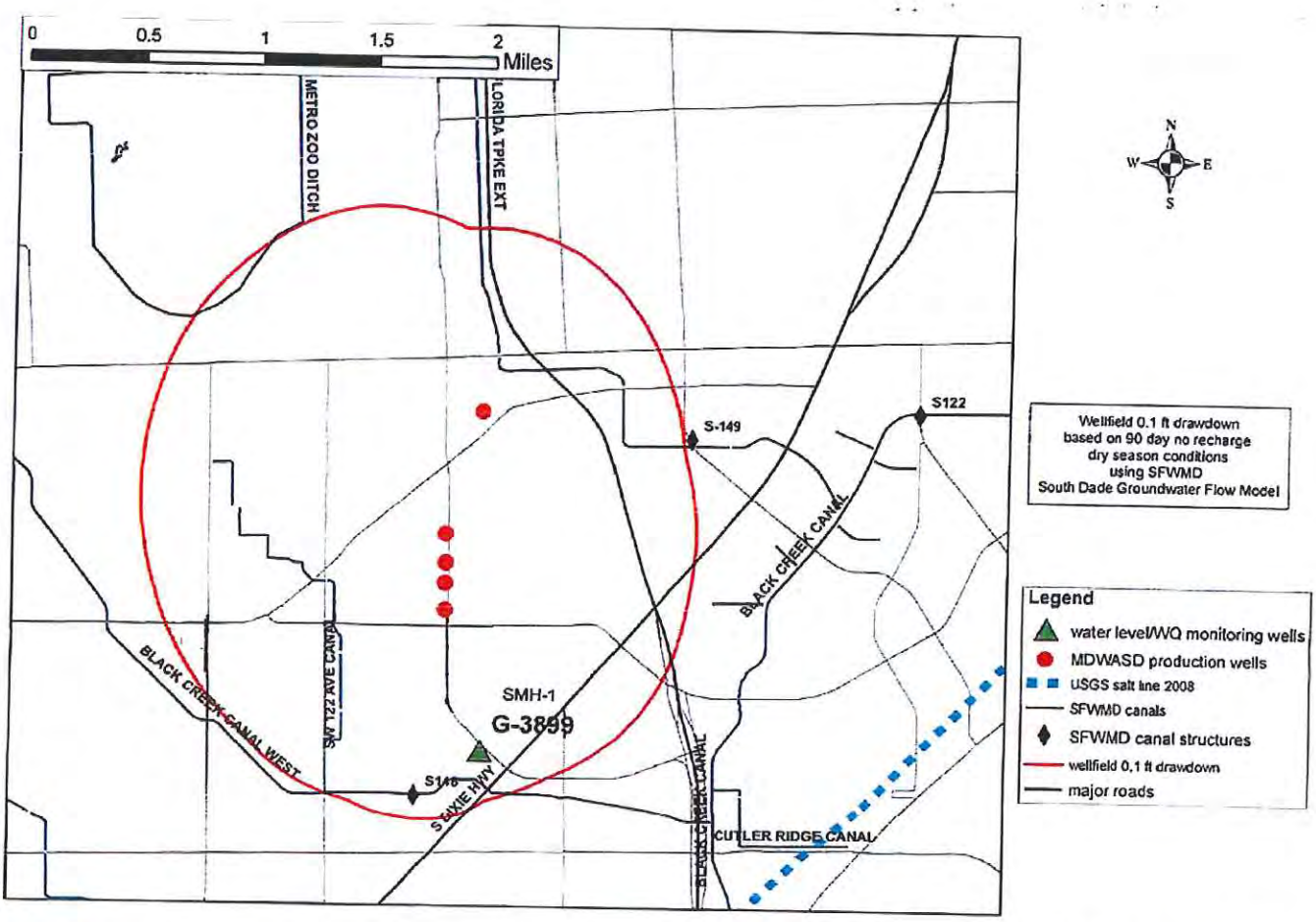
Exhibit 29B

Figure 8. Southwest, Snapper Creek and Alex Orr
Wellfield Groundwater Level
and Water Quality Monitoring

updated 9/21/10

MIAMI-DADE COUNTY
Miami-Dade County Water and Sewer Department
3071 SW 38 Ave
Miami FL 33146

Exhibit 29C



Miami-Dade County Water and Sewer Department
3071 SW38 Ave
Miami FL 33146

Figure 9. South Miami Heights Wellfield Groundwater Level and Water Quality Monitoring

updated 9/7/10

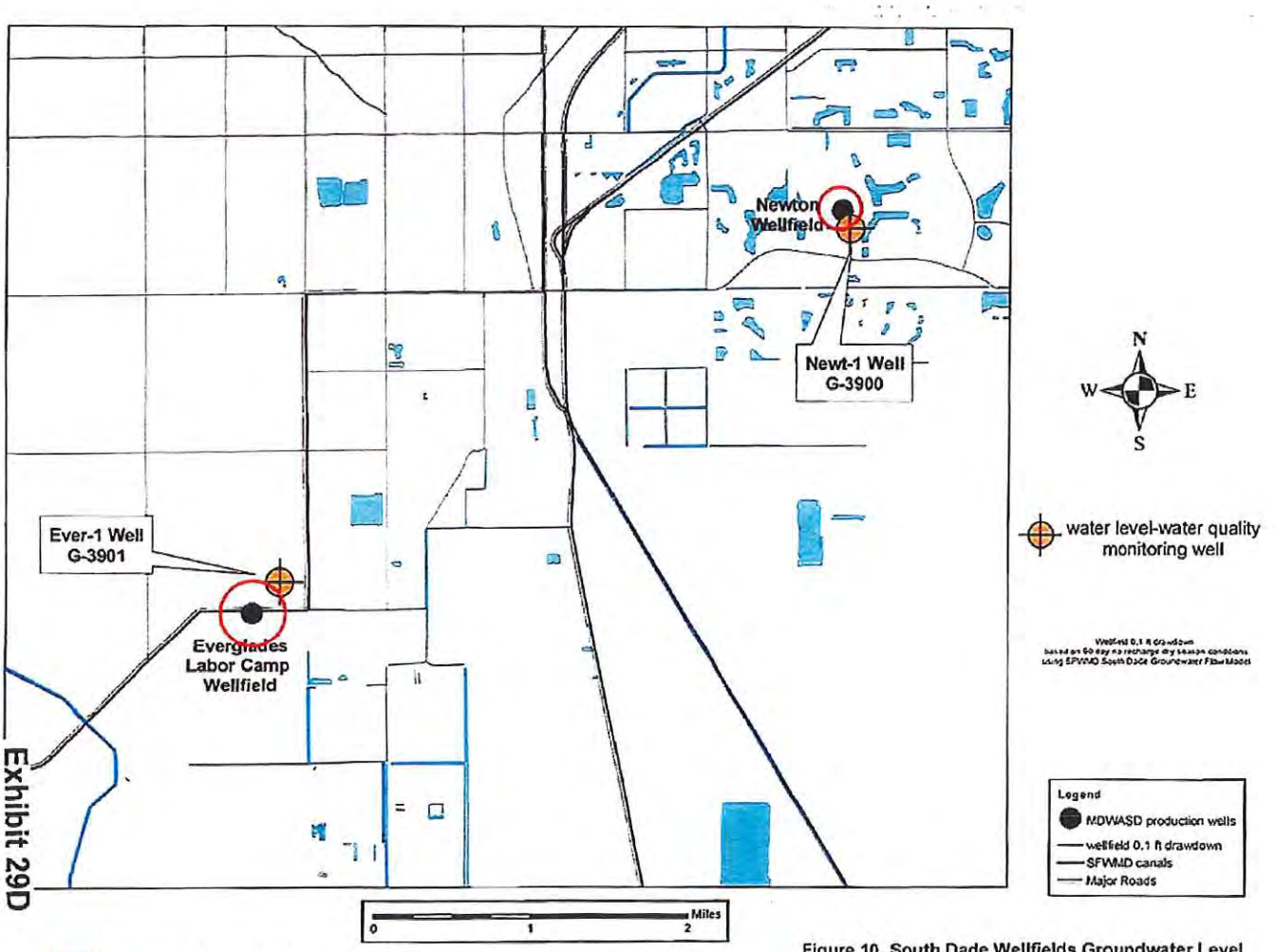


Exhibit 29D

Miami-Dade County Water and Sewer Department
3071 SW 38 Ave
Miami FL 33146

Figure 10. South Dade Wellfields Groundwater Level and Water Quality Monitoring

updated 9/7/2010

Exhibit 29E

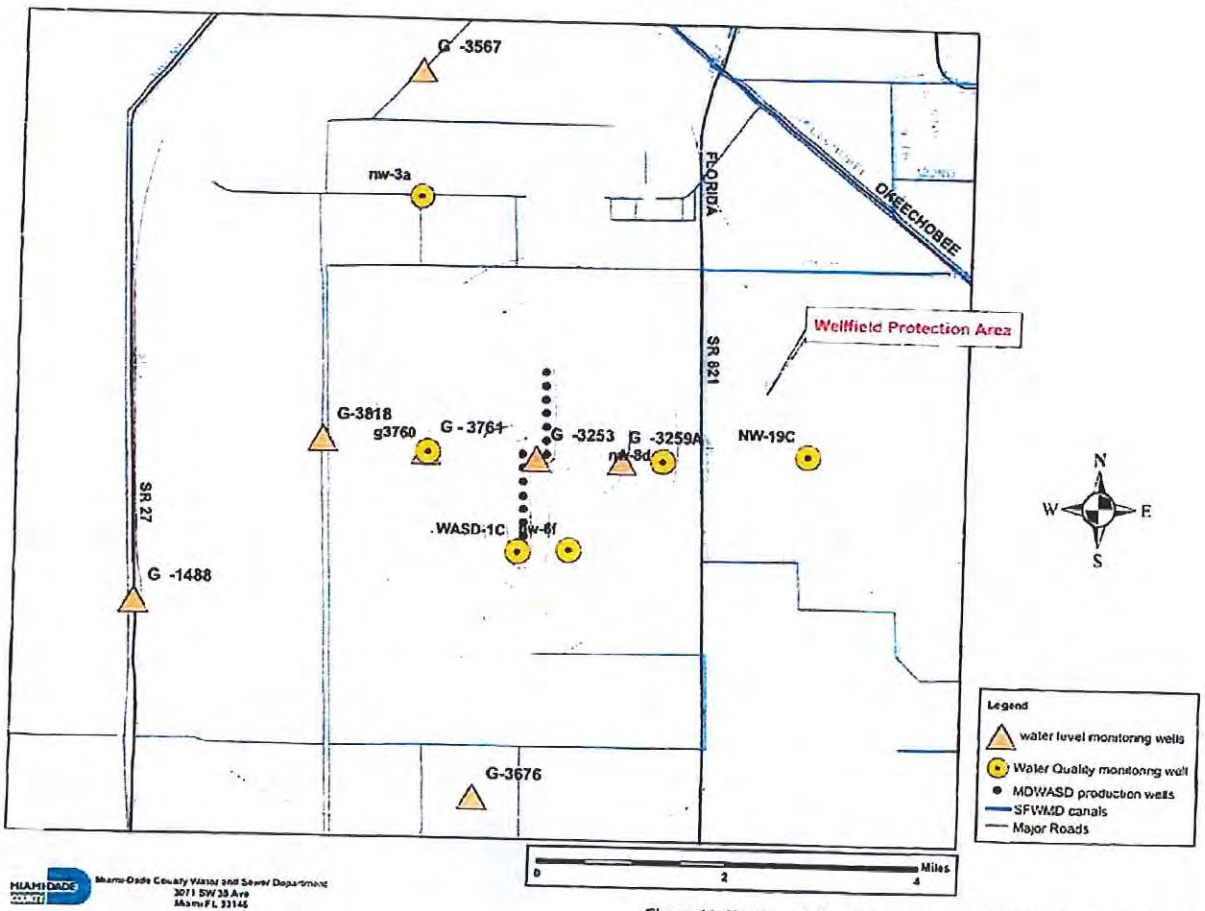


Figure 11. Northwest Groundwater Level and Water Quality Monitoring
11-8-07

Table A. Reporting Water Quality and Water Level Biscayne Monitoring Wells by Wellfield.

01/29/2015

WELL ID	STATION ID	LATITUDE	LONGITUDE	SITE USE	BORE HOLE DEPTH (ft)[1]	CASING DEPTH (ft)[1]	Screen Interval (ft)[1]	WELLFIELD PUMPAGE INTERVERAL (ft)[1]	GROUND WATER LEVEL MONITOR FREQUENCY	WATER QUALITY MONITORING FREQUENCY	WELLFIELD
254130080234501	G-551	25 41 30	-080 23 45	standby supply	80.0	71	29-71	33-108	CONTINUOUS		AO, SC, SWWF
253902080202501	G-553	25 39 02	-080 20 19	observation/monitoring	91.0	79	no screen	33-108	CONTINUOUS		AO, SC, SWWF
254215080201503	G-1074B	25 42 15	-080 20 15	observation/monitoring	39.0	17.0	no screen	33-108	CONTINUOUS		AO, SC, SWWF
	G-3313										
254111080272501	G-3555	25 41 11	-080 27 25	observation/monitoring	19.0	14.0	14-19	33-108	CONTINUOUS		AO, SC, SWWF
254340080203601	G-3563	25 43 40	-080 20 36	observation/monitoring	18.1	13	no screen	33-108	CONTINUOUS		AO, SC, SWWF
254218080241801	G-3565	25 42 18	-080 24 18	observation/monitoring	19.0	14	no screen	33-108	CONTINUOUS		AO, SC, SWWF
DERM Well	AO-6N	25 42 07	-080 20 41	observation/monitoring	60	60	55 - 60	40-100	3xYear	3xYear	AO
DERM Well	AO-8C	25 43 00	-080 19 50	observation/monitoring	60	60	55 - 60	40-100	3xYear	3xYear	AO
DERM Well	SC-1N	25 42 17	-080 21 40	observation/monitoring	60	60	55 - 60	50-108	3xYear	3xYear	SC
DERM Well	SC-6N	25 41 38	-080 21 27	observation/monitoring	60	60	55 - 60	50-108	3xYear	3xYear	SC
DERM Well	SW-2W	25 41 49	-080 24 12	observation/monitoring	60	60	55 - 60	33-104	3xYear	3xYear	SWWF
DERM Well	SW-7W	25 41 01	-080 24 10	observation/monitoring	60	60	55 - 60	33-104	3xYear	3xYear	SWWF
254158080294501	G-3551	25 41 58	-080 29 45	observation/monitoring	18.3	13.3	13.3-18.3	35-70	CONTINUOUS		WWF
254152080282101	G-3553	25 41 52	-080 28 21	observation/monitoring	19.9	14.9	14.9-19.9	35-70	CONTINUOUS		WWF
254152080274501	G-3554	25 41 52	-080 27 45	observation/monitoring	20.0	15.0	15-20	35-70	CONTINUOUS		WWF
254213080281501	G-3556	25 42 13	-080 28 15	observation/monitoring	19.1	14.1	14.1-19.1	35-70	CONTINUOUS		WWF
254207080300201	G-3577	25 42 07	-080 30 02	observation/monitoring	8.0	Open Hole	no screen	35-70	CONTINUOUS		WWF
DERM Well	WWF-21S	25 41 56	-080 28 18	observation/monitoring	48	48	43 - 48	35-70	3xYear	3xYear	WWF
DERM Well	WWF-75S	25 41 53	-080 27 44	observation/monitoring	55	55	50 - 55	35-70	3xYear	3xYear	WWF
253948080250701	G-3897	25 39 47	-080 25 08	observation/monitoring	22.5	22.5	17.5-22.5	33-104	CONTINUOUS		SWWF
254152080282601	G-3898	25 41 52	-080 28 25	observation/monitoring	22.8	22.8	17.8-22.8	35-70	CONTINUOUS		WWF
MDWASD well	G-3899	25°34.322N	80°22.633W	observation/monitoring	20.5	15.5	15.5-20.5	*	CONTINUOUS	3xYear	SWH
MDWASD well	G-3901	25°25.109N	80°30.108W	observation/monitoring	22.3	17	17.3-22.3	45-55	CONTINUOUS	3xYear	EVERGLADES
MDWASD well	G-3900	25°27.252N	80°26.811W	observation/monitoring	22	17	17-22	50-65	CONTINUOUS	3xYear	NEWTON
254830080284201	G-1468	25 49 07	-080 28 57	observation/monitoring	20.0	Open Hole	no screen	46-100	CONTINUOUS		NWWF
255027080245501	G-3253	25 50 27	-080 24 55	observation/monitoring	34.5	18.0	no screen	46-100	CONTINUOUS		NWWF
255026080240302	G-3259A	25 50 26	-080 24 03	observation/monitoring	60.0	Open Hole	no screen	46-100	CONTINUOUS		NWWF
255358080260901	G-3567	25 53 58	-080 26 09	observation/monitoring	18.7	13.7	no screen	46-100	CONTINUOUS		NWWF
255035080265402	G-3761	25 50 29	-080 26 02	observation/monitoring	18.3	Open Hole	no screen	46-100	CONTINUOUS		NWWF
254720080253002	G-3676	25 47 20	-080 25 30	observation/monitoring	33.0	23.0	23-33	46-100	CONTINUOUS		NWWF
255035080270501	G-3818	25 50 36	-080 27 05	observation/monitoring	20.0	15.0	15-20	46-100	CONTINUOUS		NWWF
Derm Well	NW-8D	25 50 26	-080 23 38	observation/monitoring	60	60	55 - 60	46-100	3xYear	3xYear	NWWF
Derm Well	NW-8F (replaced NW6D in 2004)	25 49 37	-080 24 30	observation/monitoring	60	60	55 - 60	46-100	3xYear	3xYear	NWWF
Derm Well	WASD-1C[2]	25 51 18	-080 24 49	observation/monitoring	40	40	35 - 40	46-100	3xYear	3xYear	NWWF
Derm Well	G-3760[3]	25 50 29	-080 26 02	observation/monitoring	72.7	70.7	no screen	46-100	CONTINUOUS	3xYear	NWWF
Derm Well	NW-3AR	26 52 50	-080 26 06	observation/monitoring	90	85	85-90	46-100	3xYear	3xYear	NWWF
Derm Well	NW-19C	25 50 31	-080 22 13	observation/monitoring	60	60	45 - 60	46-100	3xYear	3xYear	NWWF

Notes:
AO=Alex Orr Wellfield Heights WTP

SWWF=Southwest Wellfield
NWWF=Northwest Wellfield

1. Feet Below Land Surface (bls)
2. Located in NWWF compound, just north of pump house #15
3. Located west of NWWF, on FPL easement

** - pending survey TOC and GPS coordinates
* proposed production well interval

1/30/2015

EXHIBIT 30

TABLE B. DERM Ground Water Quality Monitoring Parameter and Frequency Schedule

Parameter Selection in Water	sampling frequency
NUTRIENTS	
NH3	3x
NOxN	3x
T-P	3x
CATIONS	
Ca^{+}	annual
K^{+}	annual
Mg^{+}	annual
Na^{+}	annual
ANIONS	
Cl^{-}	3x
CN^{-}	annual
F^{-}	annual
$SO4^{-}$	annual
PHYSICAL PROPERTIES	
Color	3x
Hardness	annual
Turbidity	3x
TDS	3x
TSS	
METALS (TOTAL)	
Al	annual
As	annual
Ag	annual
Ba	annual
Cd	annual
Cr	annual
Cr^{6+} (hexavalent)	annual
Cu	annual
Fe	annual
Hg	annual
Mn	annual
Ni	annual
Pb	annual
Se	annual
Zn	annual
AGGREGATE ORGANICS	
Phenols	annual
TOC	annual
TKN	annual
INDIVIDUAL ORGANICS	
8081 - Chlorinated Pest.	annual
- Chlorinated Herbicide	annual
8021/B - Volitile Organics	3x
8270 - Semivolatiles	annual
Organophosphorous SW 8141	annual
507 - Triazines	annual
531 - Carbamates	annual
547 - Glyphosate	annual
Fecal Coliform	3x
Total Coliform	3x

EXHIBIT 31

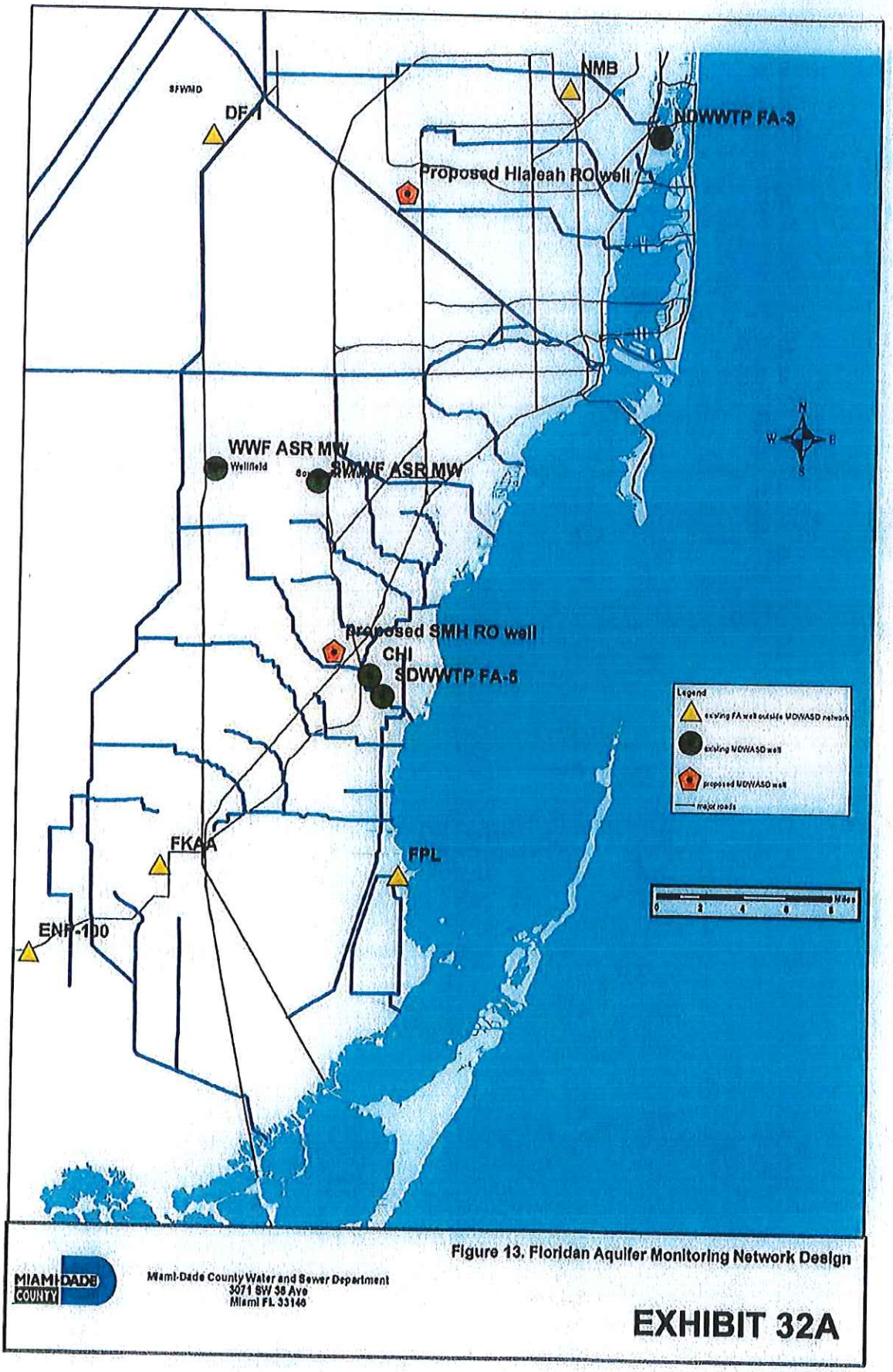


Figure 13. Floridan Aquifer Monitoring Network Design

MIAMI-DADE COUNTY

Miami-Dade County Water and Sewer Department
3071 SW 38 Ave
Miami FL 33146

EXHIBIT 32A

Table C. Floridan Aquifer Monitoring Wells

WELL ID	LOCATION	LATITUDE	LONGITUDE	BORE HOLE DEPTH (ft) [2]	CASING DEPTH (ft) [2]	MONITORING INTERVAL (ft) [2]	PRESSURE LEVEL MONITOR FREQUENCY	WATER QUALITY MONITOR FREQUENCY
DF-1 [1]	N. Krome Ave	25 54 35.831	80 28 06.935	1800	TZ	516-620, 1140-1230, 1700-1800	Maintained by SFWMD	
ENP-100 [1]	Everglades National Park	25 22 57.096	80 36 10.71	1333	620	620-1333	Maintained by USGS	
FKAA [1]	Florida City	25 26 36	80 30 31	1500	1067	880-1353	Maintained by FKAA	
FPL [1]	FPL Property	25 21 01.416	80 24 28.204	2304	TZ	1120-1330, 1535-1920, 2100-2304	Maintained by FPL	
NMB [1]	NMB	25 56 58.44	80 12 54.909	1900	1020		Maintained by NMB	
NDWWTP FA-3N	NDWWTP	25 55 05.037	80 08 49.465	1510	1410	1410-1510	Continuous	Monthly
SDWWTP FA-1	SDWWTP	25 33 04.976	80 20 49.073	1890	DZ	1890	Continuous	Monthly
ASR MW-1	WWF	25 42 01.374	80 28 29.193	1396	DZ	1396	Continuous	Monthly
SWWF MW-1	SWWF	25 69	80 39	1200	DZ	845-900, 1110-1200	Continuous	Monthly
CHI Monitoring Well	Miami-Dade SW 216th Street	25 33 52.88	80 21 22.07	1900	DZ	1000 - 1100, 1400-1500	Continuous	Monthly
Hialeah RO	Hialeah RO WTP	25 55 27.78	80 22 4.68	2260	DZ	1900 - 1950, 2190 - 2260	Continuous	Monthly

Highlighted wells proposed for MDWASD Floridan Aquifer monitoring network
1. Data for Wells from DBHydro, wells not in MDWASD network.
2. Feet Below Land Surface (bls)
TZ - tri-zone
DZ - dual zone

EXHIBIT 32B

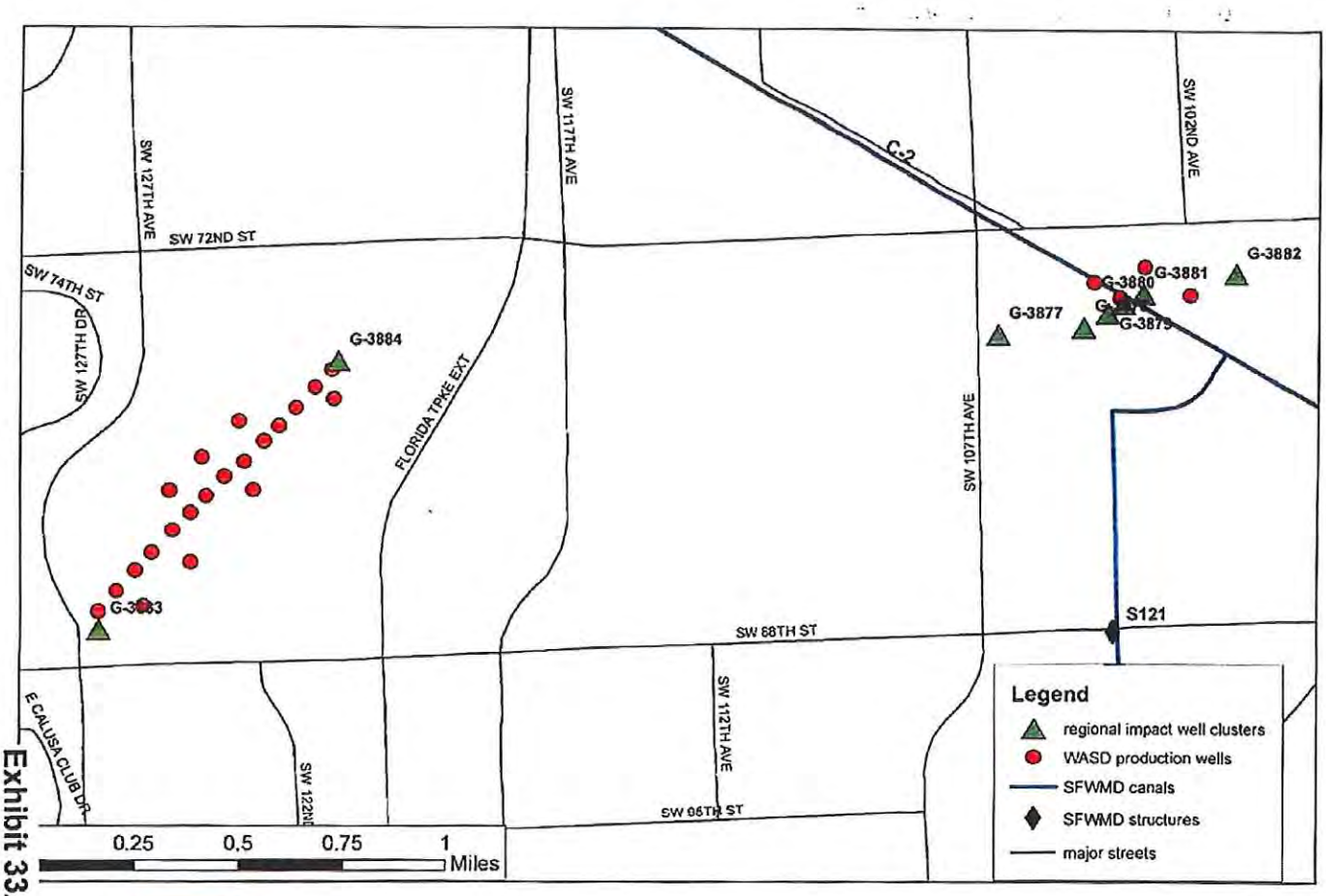


Exhibit 33A

MIAMI-DADE COUNTY

Miami-Dade Water and Sewer Department
3071 SW 38 Ave
Miami FL 33146

N

Figure 12a. Regional Impact well Cluster locations: Southwest and Snapper Creek wellfields

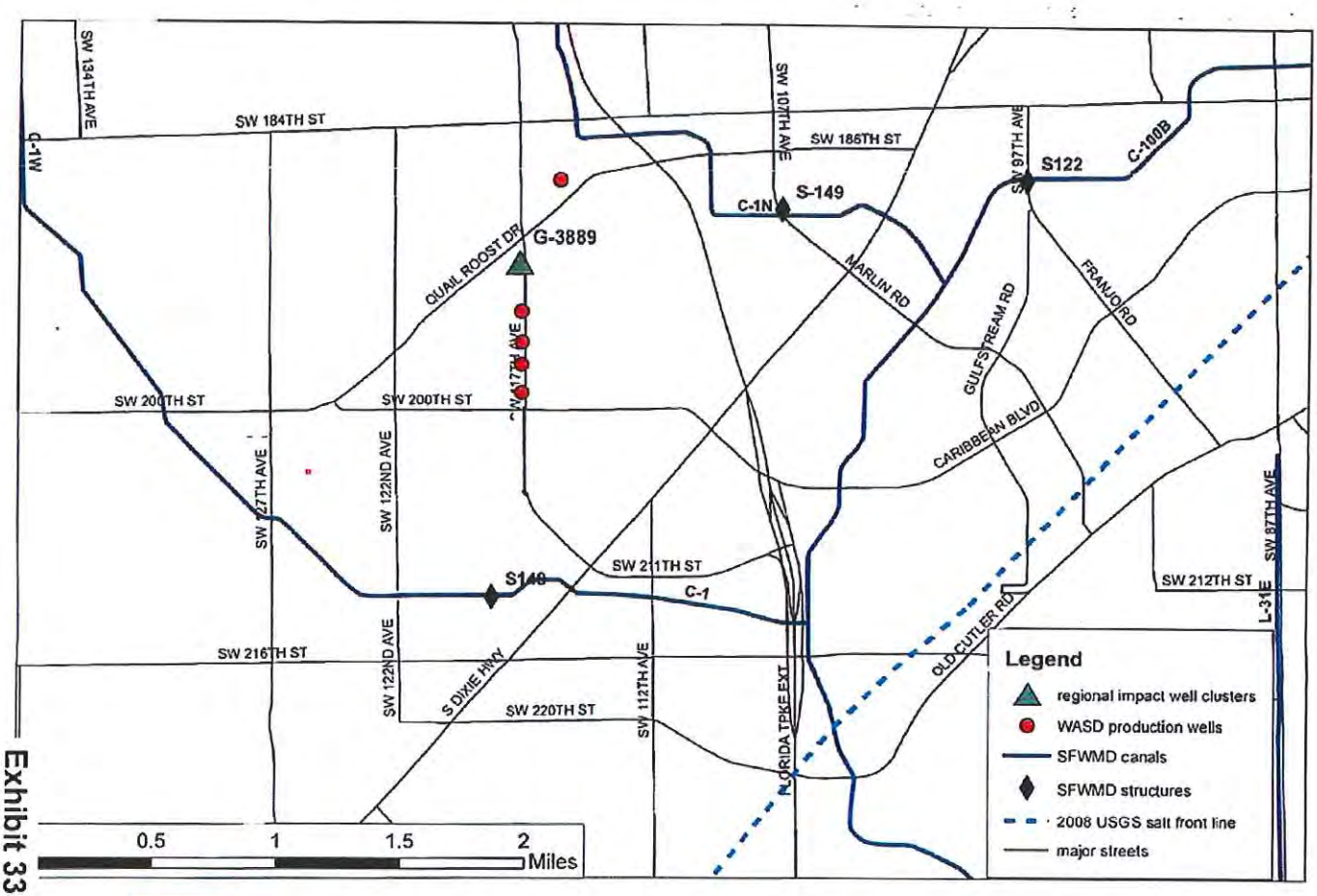


Exhibit 33B

MIAMI-DADE COUNTY

Miami-Dade Water and Sewer Department
3071 SW 38 Ave
Miami FL 33146

N

Figure 12b. Regional Impact well Cluster locations: South Miami Heights wellfield

New Monitoring Well Completion Schedule

WELL ID	SITE USE	NETWORK	DATE WELL INSTALLATION COMPLETION	STATUS
SWWF-1/G-3897	Located near SWWF for water elevation well-wetland monitoring	WQ/WL	Mar-09	Completed
WWF-1N/G-3898	Located NE of West Wellfield for water elevation well-wetland monitoring	WQ/WL	Mar-09	Completed
SMH-1/G-3899	Located near South Miami Heights Wellfield for water elevation well	WQ/WL	Mar-09	Completed
Ever-1/G-3901	Located near Everglades Labor Camp Wellfield for water elevetaion well	WQ/WL	Mar-09	Completed
Newton-1/G-3900	Located near Newton Wellfield for water elevation well	WQ/WL	Mar-09	Completed
Hialeah RO	Located near new City of Hialeah RO Water Treatment Plant	Floridan monitoring	Based on City of Hialeah RO plant construction	Pending
G-3949	North Miami-Dade County near Broward line	Salt Monitoring	Sep-10	Completed
G-3948	North Miami-Dade County	Salt Monitoring	Sep-10	Completed
G-3947	North Miami-Dade County	Salt Monitoring	Jul-10	Completed
G-3888	City of Miami south of C-6 canal	Salt Monitoring	Oct-09	Completed
G-3887	Eastern Miami-Dade County/Pinecrest	Salt Monitoring	Sep-09	Completed
G-3886	Northeast of SMH Wellfield	Salt Monitoring	Oct-09	Completed
G-3885	South of SMH Wellfield	Salt Monitoring	Aug-09	Completed
G-3946	South Miami-Dade County Model Lands	Salt Monitoring	Jul-09	Completed
G-3877	Snapper Creek Wellfield	Regional Impact	Mar-10	Completed
G-3878	Snapper Creek Wellfield	Regional Impact	Mar-10	Completed
G-3879	Snapper Creek Wellfield	Regional Impact	Mar-10	Completed
G-3880	Snapper Creek Wellfield	Regional Impact	Mar-10	Completed
G-3881	Snapper Creek Wellfield	Regional Impact	Mar-10	Completed
G-3882	Snapper Creek Wellfield	Regional Impact	Mar-10	Completed
G-3889	Located midway between the Proposed SMH Wellfield and the Aquifer Recharge Project	Regional Impact	Mar-10	Completed
G-3884	Southwest Wellfield	Regional Impact	Mar-10	Completed
G-3883	Southwest Wellfield	Regional Impact	Mar-10	Completed
SMH RO	Located near South Miami Heights RO Water Treatment Plant	Floridan monitoring	2014	Pending

EXHIBIT 33C

Exhibit 33C

US Geological Survey Project Timeline

QUANTIFICATION OF GROUND-WATER FLOWS IN SUPPORT OF SIMULATION OF SURFACE- AND GROUNDWATER FLOWS TO BISCAYNE AQUIFER, MIAMI-DADE COUNTY.

Updated 6/21/12

Task	FY08				FY09				FY10				FY11				FY12				FY13			
	ND	JFM	AMJ	JAS	OND	JFM	AMJ	JAS	OND	JFM	AMJ	JAS	OND	JFM	AMJ	JAS	OND	JFM	AMJ	JAS	OND	JFM	AMJ	JAS
1 Test and select best flowmeter type suitable for deployment	XX	XXX	XXX	XXX	-	-	-	-																
2 Drill coreholes, log, and construct monitor wells	-	-	-	-	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX												
3. Construct DCPs and install Flowmeters		-	-	-	-	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX											
4. Begin collection of WQ/WL data	-	-	-	--	-	-	-		XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX						
5 Aquifer Step Testing	-	-	-	-	-	-					XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX		
6. Real-time data collection and dissemination via website	-		-	-	-	-	-	--	-	-	-		XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	
7 Report preparation and publish report	-		--	-	-	-	--	-	-	--	-	-	-			XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX

EXHIBIT 33D

CERP Projects

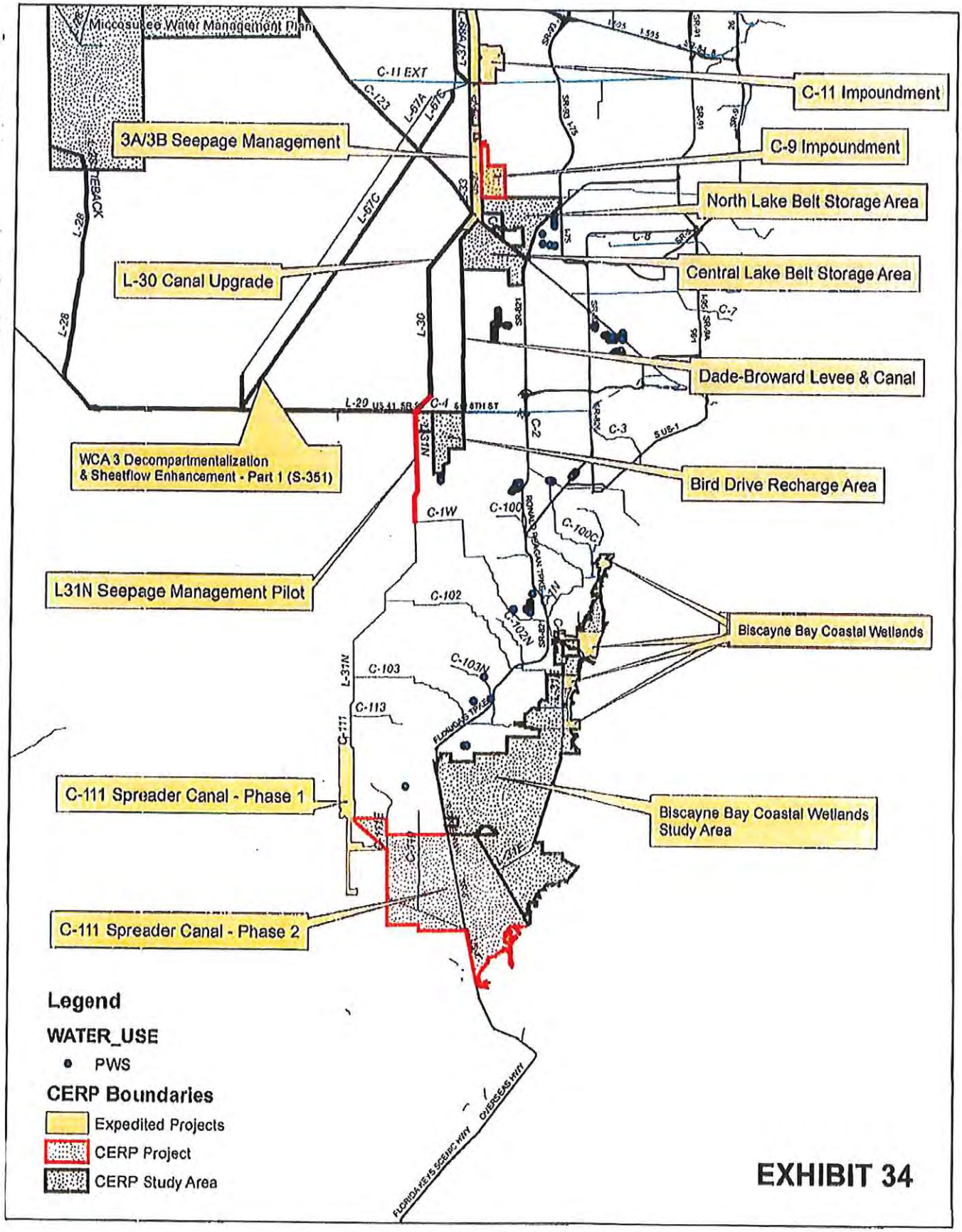


EXHIBIT 35A

MEMORANDUM OF UNDERSTANDING
BETWEEN
THE U.S. DEPARTMENT OF INTERIOR,
THE GOVERNOR OF THE STATE OF FLORIDA,
THE SOUTH FLORIDA WATER MANAGEMENT
DISTRICT AND METROPOLITAN DADE COUNTY

This Memorandum of Understanding (hereinafter sometimes referred to as the "Agreement"), made and entered into this _____ day of _____ 1993, by and between the U.S. Department of the Interior, after called the "SECRETARY", the Governor of the State of Florida, hereinafter called the "GOVERNOR", the South Florida Water Management District, a public corporation of the State of Florida, hereinafter called the "DISTRICT", and Metropolitan Dade County, a political subdivision of the State of Florida, hereinafter referred to as the "COUNTY",

ARTICLE I. BACKGROUND AND OBJECTIVES

WHEREAS, the COUNTY proposes to construct a West Dade Wellfield, hereinafter referred to as the "Wellfield", and has applied to the DISTRICT for a Water Use permit (application #890731-12), requesting in said application to withdraw up to 40 million gallons per day from the Biscayne Aquifer and an allocation from the Floridan Aquifer System consistent with the Water Use permit, and

EXHIBIT 24

WHEREAS, the parties hereto desire to enter into this Agreement in order to provide adequate assurances that, in the event said Water Use permit is issued, withdrawals of water pursuant to said permit shall not cause adverse impacts to the hydrologic resources of the Everglades National Park, and

WHEREAS, the Everglades National Park Protection and Expansion Act of 1989, 16 U.S.C. secs. 410r-5 et seq., hereinafter referred to as the "Act" (Appendix "A"), provides that no Federal license, permit, approval, right of way or assistance shall be granted or issued with respect to the West Dade Wellfield (to be located in the Bird Drive Drainage Basin, as identified in the Comprehensive Development Master Plan for Dade County, Florida) until the SECRETARY, the Governor of the State of Florida, the South Florida Water Management District and Dade County, Florida enter into an agreement providing that any Water Use permit issued by the South Florida Water Management District for the Wellfield must include certain limiting conditions, which limiting conditions are included within this Agreement;

NOW THEREFORE, in consideration of the mutual covenants hereinafter set forth, the parties hereto agree as follows:

ARTICLE II. TERMS AND CONDITIONS

A. The foregoing recitals are true and correct and are incorporated herein by this reference.

B. Conditions to be Incorporated if Water Use Permit is Issued by DISTRICT.

(1) If the DISTRICT issues any Water Use permit for the Wellfield pursuant to Application #890731-12, the Wellfield's peak pumpage shall not exceed the forty (40) million gallons per day from the Biscayne Aquifer. The appropriate allocation from the Floridan Aquifer System will be addressed in the permit based on DISTRICT Water Use Criteria and demonstrated hydraulic characteristics of the Floridan Aquifer System.

(2) Notwithstanding anything to the contrary herein, if the DISTRICT issues any Water Use permit for the Wellfield, the withdrawals authorized by the permit shall be limited to an amount which meets the applicable water use permitting criteria of the DISTRICT in Chapter 373, Florida Statutes, and Chapter 40E-2, F.A.C., which criteria shall in no event be applied to permit an allocation of water which would allow water withdrawals or pumpage rates which exceed the limitations set forth in the Act;

(3) If the DISTRICT issues a Water Use permit for the Wellfield, the permit shall include the following additional

conditions regarding DISTRICT-declared water shortages:

(a) Reasonable, enforceable measures to limit demand on the Wellfield in times of water shortage, which shortage impacts the South Dade Water Use Basin, as defined in Chapter 40E-21, F.A.C., or the Everglades National Park, hereinafter called the "PARK". During such times of water shortage, the District has been authorized to declare areas of critical water supply pursuant to Chapter 373, Florida Statutes, and Chapter 40E-21, F.A.C.

(b) If, during times of a declared water shortage, the DISTRICT fails to limit demand on the Wellfield pursuant to Article II, Sec. B (3)(a) above, or if the DISTRICT limits demand on the Wellfield pursuant to Article II, Sec. B (3)(a) above, but the SECRETARY or the GOVERNOR certifies that operation of the Wellfield is still causing Adverse Impacts (see Article II, Sec. G herein) on the hydrologic resources of the PARK, as determined by the monitoring program described in Appendix "B", the GOVERNOR shall require the DISTRICT to take necessary actions to alleviate the Adverse Impacts, including temporary reduction or cessation in pumpage from the Biscayne Aquifer from the Wellfield, use of alternative sources of water from the Floridan Aquifer System or additional reductions in demand. This certificate issued

EXHIBIT 35B

by the SECRETARY or the GOVERNOR shall specify what temporary corrective measures shall be required in the event of a disagreement regarding Adverse Impacts. In the event of such a disagreement, the COUNTY agrees to implement the corrective measures specified in the certificate pending outcome of the dispute resolution or correction of the Adverse Impacts, whichever occurs first. In the event that the COUNTY does not agree that Adverse Impacts have occurred in a particular case, the dispute mechanism set forth in Article XX. Sec. D of this Agreement shall apply. The term 'Adverse Impacts', as used herein, shall have the meaning set forth in Article II, Sec. G of this Agreement.

(E) Nothing herein shall be construed to limit the ability of the SECRETARY or the GOVERNOR to declare that Adverse Impacts to the hydrologic resources of the PARK have occurred when no water shortage has been declared by the DISTRICT.

C. The COUNTY agrees to comply with all conditions contained in any Water Use permit issued by the DISTRICT for the Wellfield.

D. The COUNTY agrees to operate the Wellfield in a manner which will not result in Adverse Impacts to hydrologic resources of

the PARK. Upon notification by the SECRETARY or the GOVERNOR of Adverse Impacts to PARK hydrologic resources pursuant to the protocol developed in accordance with Article II, Part G herein, the COUNTY shall take necessary actions to alleviate the Adverse Impacts, including temporary reduction or cessation in pumping from the Biscayne Aquifer from the Wellfield, use of alternative sources of water from the Floridan Aquifer System, or additional reductions in demand. In the event that the COUNTY does not agree that Adverse Impacts have occurred, the COUNTY shall only be required to implement the temporary corrective measures indicated in the certificate of Adverse Impacts pending resolution of the dispute pursuant to the dispute resolution procedure set forth in this Section. In the event of such a dispute, the COUNTY shall serve notice of the dispute upon the party which certified the Adverse Impacts. Upon notification of a dispute, the Key Officials indicated in Article IV, shall convene (by whatever communication device is expedient) within seventy-two (72) hours to determine whether Adverse Impacts have occurred. If the Key Officials substantiate that Adverse Impacts have occurred, they shall then decide what final action must be taken to alleviate the Adverse Impacts, and the COUNTY shall be required to take such action. If the Key Officials determine that Adverse Impacts have not occurred, the COUNTY shall not be required to continue corrective actions. If the Key Officials are unable to reach a unanimous resolution of the issue, then the decision of the SECRETARY shall be determinative.

EXHIBIT 35Q

E. If the DISTRICT issues a Water Use permit for the Wellfield, then, prior to the operation of the Wellfield, the COUNTY shall fund development of the following:

(1) the plan entitled, "Hydrologic Monitoring Program for the West Dade Wellfield" (Appendix "B"); and

(2) a stochastic hydrologic model (hereinafter "the model"), which model will be developed in cooperation with the DISTRICT and the PARK, and which will be used to develop an operation schedule for the Wellfield.

F. If the DISTRICT issues a Water Use permit for the Wellfield then, prior to the operation of the Wellfield, the COUNTY shall, with the cooperation of the PARK and the DISTRICT, implement the plan entitled, "Hydrologic Monitoring Program for the West Dade Wellfield" (Appendix "B"). The parties to this Agreement agree that this monitoring plan shall be implemented for a minimum of one (1) calendar year prior to operation of the Wellfield, in order to obtain a sufficient data base to allow for the calibration of the stochastic hydrologic model. All data, models and model output pertaining to the monitoring or determination of impacts related to the planning, development, implementation, or operation of the Wellfield shall be made available to all parties to this Agreement upon request.

G. Upon development and calibration of the model, the SFWMD shall provide a protocol for timely notification to the GOVERNOR, the DISTRICT and the COUNTY when Adverse Impacts to the hydrologic resources of the PARK have occurred. The term "Adverse Impacts", for purposes of this Agreement, shall be defined as negative changes in water levels or flows in the L-31N canal and shall be equal to (a) specified hydrologic unit(s) of measurement which can reliably be detected by the monitoring network, and which can reasonably be linked by the model as being caused by the Wellfield. After collection of the base data as set forth in Article II, Sec. F herein, said unit(s) of measurement shall be determined by agreement of the parties hereto and incorporated as the standard(s) by which said "Adverse Impacts" shall be determined by inclusion in an appendix hereto (Appendix "C"), which appendix, upon approval of all parties to this Agreement, shall automatically be made a part of this Agreement without need for amendment hereto.

H. Nothing herein shall be construed to restrict the DISTRICT from exercising its authority under Chapter 373 of the Florida Statutes, or its implementing rules and permit conditions, to prevent or mitigate any adverse water resource impacts or impacts to existing legal uses and land uses.

EXHIBIT 35D

1. Nothing herein shall be construed to restrict the COUNTY from applying for any other permit(s), or for modifications to any permit(s), if issued, provided, however, that this Agreement, unless amended, shall not pertain to any such application(s). If the COUNTY applies for a modification of (a) permit(s), or (an) additional permit(s) for this Wellfield, then this Agreement shall be modified, or a new agreement shall be entered into between the four parties hereto.

2. The DISTRICT agrees that it shall consider the feasibility of a water control structure in the C-4 canal (which structure would be located near the intersection of the C-4 Canal and the Radar-Broward Levee) as part of the revaluation of the Central and Southern Florida Flood Control Project or the first update of the Lower East Coast Regional Water Supply Plan.

N. Notwithstanding anything to the contrary herein, the DISTRICT does not warrant or guarantee in any way that it shall issue any Water Use permit to the COUNTY.

ARTICLE III. TERM OF AGREEMENT; RENEWAL

A. Initial Term. This Agreement shall become effective upon the issuance of a Water Use permit for the Wellfield and shall have an initial term of fifty (50) years (which is the statutory

maximum period of time for which a consumptive use permit may be issued by the South Florida Water Management District) or that period of time during which the Wellfield remains in operable condition, whichever is less.

B. Renewal Term. In the event that the initial term of this Agreement is fifty (50) years, this Agreement shall be automatically renewed for one (1) additional term of fifty (50) years, unless, prior to ninety (90) days before the expiration of said initial term, any of the parties to this Agreement notifies all other parties of its intent not to renew this Agreement.

C. Effect On Permit(s). Any permit issued by the DISTRICT shall be for the period of time which is stated in the permit, which time period need not coincide with the effective term of this Agreement. Similarly, the failure to renew this Agreement shall not affect the validity of any applicable Water Use permit(s) in existence at the time of said failure to renew.

ARTICLE IV. KEY OFFICIALS

The following key officials (the "Key Officials") are authorized to act on behalf of the parties hereto in all matters undertaken pursuant to the terms of this Agreement:

EXHIBIT 35E

THE U.S. DEPARTMENT OF INTERIOR: The Superintendent of the PARK, or authorized delegate, will provide review and approval of terms of all agreements, will be the authorized representative for service as required herein of all notices on the SECRETARY and participation in the dispute resolution mechanism set forth in Article II, Sec. D herein, and will exercise the authority to approve conduct of cooperative projects with regards to the conditions contained herein. The Assistant Director of the South Florida Research Center shall act as the authorized technical representative for the PARK with regard to the technical scope of this Agreement.

THE GOVERNOR OF THE STATE OF FLORIDA: The Secretary of the State of Florida Department of Environmental Protection (DEP), or authorized delegate, will provide review and approval of terms of all agreements, will be the authorized representative for service as required herein of all notices on the GOVERNOR and participation in the dispute resolution mechanism set forth in Article II, Sec. D herein, and will exercise the authority to approve conduct of cooperative projects with regards to the conditions contained herein. The Chief of the Bureau of Wetland Resource Management shall act as the authorized technical representative for DEP with regard to the technical scope of this Agreement.

THE SOUTH FLORIDA WATER MANAGEMENT DISTRICT: The Executive Director, or authorized delegate, will provide review and approval of terms of all agreements, will be the authorized representative for service as required herein of all notices on the DISTRICT and participation in the dispute resolution mechanism set forth in Article II, Sec. D herein, and will exercise the authority to approve conduct of cooperative projects with regards to the conditions contained herein. The Director of the Water Use Division's Regulation Department shall act as the authorized technical representative for the DISTRICT with regard to the technical scope of this Agreement.

METROPOLITAN DADE COUNTY: The Director of the Miami Dade Water and Sewer Authority Department, or authorized delegate, will provide review and approval of terms of all agreements, will be the authorized representative for service as required herein of all notices on the COUNTY and participation in the dispute resolution mechanism set forth in Article II, Sec. D herein, and will exercise the authority to approve conduct of cooperative projects with regards to the conditions contained herein. The Director of DERM, or authorized delegate, shall act as the authorized technical representative for the COUNTY with regard to the technical scope of this Agreement.

Written notice shall be provided to all parties of any change in Key Officials within four (4) weeks of such change.

EXHIBIT 35F

ARTICLE V. AMENDMENT

This Agreement may be modified by Amendment upon mutual written agreement of all parties.

ARTICLE VI. NOTICES

All notices required or permitted to be given under the terms and provisions of this Agreement by a party to the other parties shall be in writing and shall be sent by registered or certified mail, return receipt requested, to the parties as follows:

Department of the Interior
Richard S. Ring, Superintendent (Attn: Robert F. Doren)
Everglades National Park
40001 State Road 9336
Homestead, FL 33034-6733

The Governor of the State of Florida
c/o Secretary of the Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, Florida 32399-2400
Attn: Chief of the Bureau of Wetland Resource Management

South Florida Water Management District
c/o Executive Director
P.O. Box 24680
West Palm Beach, Florida 33416-4680

Metropolitan Dade County
c/o Director, Miami Dade Water and Sewer Dept
P.O. Box 330316
Miami, Florida 33133

or to such other address as may hereafter be provided by the parties in writing. Notices by registered or certified mail shall be deemed received on the delivery date indicated by the U.S. Postal Service on the return receipt.

ARTICLE VII. VENUE

Any litigation hereunder shall be brought in the appropriate state or federal court in Dade County, Florida.

ARTICLE VIII. HEADINGS

Captions and headings in this Agreement are for ease of reference only and do not constitute a part of this Agreement and

EXHIBIT 35G

shall not affect the meaning or interpretation of any provisions herein.

ARTICLE IX. RIGHTS OF OTHERS

Nothing in this Agreement express or implied is intended to confer upon any person other than the parties hereto any rights or remedies under or by reason of this Agreement.

ARTICLE X. WAIVER

There shall be no waiver of any right related to this Agreement unless in writing signed by the party waiving such right. No delay or failure to exercise a right under this Agreement shall impair such right or shall be construed to be a waiv : thereof. Any waiver shall be limited to the particular right so waived and shall not be deemed a waiver of the same right at a later time, or of any other right under this Agreement.

ARTICLE XI. INVALIDITY OF PROVISIONS

The invalidity of one or more of the phrases, sentences, clauses, or Articles contained in this Agreement shall not affect the validity of the remaining portion of the Agreement, provided that the material purposes of this Agreement can be determined and effectuated.

ARTICLE XII. AUTHORITY OF PARTIES TO ENTER INTO AGREEMENT

A. Authority of the SECRETARY. The SECRETARY represents that (1) this Agreement has been duly authorized, executed and delivered by the Superintendent, Everglades National Park, pursuant to the authority vested in him by 16 U.S.C. secs. 1 and 1a-1 and 16 U.S.C. sec. 410r-6(i), as the duly authorized representative of the U.S. Department of the Interior for purposes of this Agreement, and (2) the U.S. Department of the Interior has the required power and authority to perform this Agreement.

B. Authority of the GOVERNOR. The GOVERNOR represents that (1) this Agreement has been duly authorized, executed and delivered by the Governor of the State of Florida, and (2) he has the required power and authority to perform this Agreement.

C. Authority of the DISTRICT. The DISTRICT represents that (1) this Agreement has been duly authorized, executed and delivered by the Governing Board of the South Florida Water Management District, and (2) it has the required power and authority to perform this Agreement.

D. Authority of the COUNTY. The COUNTY represents that (1) this Agreement has been duly authorized, executed and delivered by

EXHIBIT 35H

the Board of County Commissioners as the governing body of the County, and (2) it has the required power and authority to perform this Agreement.

ARTICLE XIII. ALLOCATION OF NATIONAL PARK SERVICE FUNDS

Nothing in this Agreement shall be construed to require the National Park Service to expend funds that have not been lawfully appropriated and administratively allocated for such purposes.

ARTICLE XIV. NONDISCRIMINATION

During the performance of this Agreement, the participants agree to abide by the terms of Executive Order 11246 on nondiscrimination and will not discriminate against any person because of race, color, religion, sex or national origin. The participants will take affirmative action to ensure that applicants are employed without regard to their race, color, religion, sex or national origin.

ARTICLE XV. CONGRESSIONAL PARTICIPATION RESTRICTION

No member or delegate to Congress, or Resident Commissioner, shall be admitted to any share or part of this Agreement, or to any benefit that may arise therefrom, but this provision shall not be construed to extend to this Agreement if made with a

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corporation for its general benefit.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed by their duly authorized representative(s) on the latest day and year noted below.

WITNESSES:

DEPARTMENT OF THE INTERIOR

By: _____
Superintendent
Everglades National Park

WITNESSES:

THE STATE OF FLORIDA

By: _____
Governor

WITNESSES:

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

By: _____
Chairman, Governing Board

ATTEST:

METROPOLITAN DADE COUNTY

By: _____
Clerk

By: _____
County Manager

Approved as to form and legal sufficiency: _____

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Requirement by Permit Condition Report

App No: 140627-12
Permit No: 13-00017-W
Project Name: MIAMI-DADE CONSOLIDATED PWS

Permit Condition No: 10 **Permit Condition Code:** WURWF009-1

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
PERMIT	Reclaimed water monthly pumpage for PERMIT	Monthly	Semi-Annually	31-AUG-2015

Permit Condition No: 12 **Permit Condition Code:** WUSTD021-2

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
WELL - EVRGL 3	Calibration report for WELL EVRGL 3	Every Five Years	Every Five Years	31-MAR-2018
WELL - LC 2	Calibration report for WELL LC 2	Every Five Years	Every Five Years	31-MAR-2018
WELL - LC 3	Calibration report for WELL LC 3	Every Five Years	Every Five Years	31-MAR-2018
WELL - LC 4	Calibration report for WELL LC 4	Every Five Years	Every Five Years	31-MAR-2018
WELL - LC 5	Calibration report for WELL LC 5	Every Five Years	Every Five Years	31-MAR-2018
WELL - ET 1	Calibration report for WELL ET 1	Every Five Years	Every Five Years	31-MAR-2018
WELL - 4 Orr	Calibration report for WELL 4 Orr	Every Five Years	Every Five Years	28-FEB-2018
WELL - 5 Orr	Calibration report for WELL 5 Orr	Every Five Years	Every Five Years	28-FEB-2018
WELL - 6 Orr	Calibration report for WELL 6 Orr	Every Five Years	Every Five Years	28-FEB-2018
WELL - 7 Orr	Calibration report for WELL 7 Orr	Every Five Years	Every Five Years	28-FEB-2018
WELL - 8 Orr	Calibration report for WELL 8 Orr	Every Five Years	Every Five Years	28-FEB-2018
WELL - 9 Orr	Calibration report for WELL 9 Orr	Every Five Years	Every Five Years	30-MAY-2018
WELL - 10 Orr	Calibration report for WELL 10 Orr	Every Five Years	Every Five Years	30-MAY-2018
WELL - 11 SW	Calibration report for WELL 11 SW	Every Five Years	Every Five Years	28-FEB-2018
WELL - 12 SW	Calibration report for WELL 12 SW	Every Five Years	Every Five Years	28-FEB-2018
WELL - 13 SW	Calibration report for WELL 13 SW	Every Five Years	Every Five Years	28-FEB-2018
WELL - 1 Orr	Calibration report for WELL 1 Orr	Every Five Years	Every Five Years	28-FEB-2018
WELL - 2 Orr	Calibration report for WELL 2 Orr	Every Five Years	Every Five Years	28-FEB-2018
WELL - 3 Orr	Calibration report for WELL 3 Orr	Every Five Years	Every Five Years	28-FEB-2018
WELL - 14 SW	Calibration report for WELL 14 SW	Every Five Years	Every Five Years	28-FEB-2018
WELL - 15 SW	Calibration report for WELL 15 SW	Every Five Years	Every Five Years	31-MAR-2018
WELL - 16 SW	Calibration report for WELL 16 SW	Every Five Years	Every Five Years	31-MAR-2018
WELL - 17 SW	Calibration report for WELL 17 SW	Every Five Years	Every Five Years	31-MAR-2018
WELL - 18 SW	Calibration report for WELL 18 SW	Every Five Years	Every Five Years	31-MAR-2018
WELL - 19 SW	Calibration report for WELL 19 SW	Every Five Years	Every Five Years	31-MAR-2018
WELL - 20 SW	Calibration report for WELL 20 SW	Every Five Years	Every Five Years	30-APR-2018
WELL - 21 SC	Calibration report for WELL 21 SC	Every Five Years	Every Five Years	30-APR-2018
WELL - 22 SC	Calibration report for WELL 22 SC	Every Five Years	Every Five Years	30-APR-2018

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Requirement by Permit Condition Report

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
WELL - 23 SC	Calibration report for WELL 23 SC	Every Five Years	Every Five Years	31-MAR-2018
WELL - 24 SC	Calibration report for WELL 24 SC	Every Five Years	Every Five Years	31-MAR-2018
WELL - 25 SW	Calibration report for WELL 25 SW	Every Five Years	Every Five Years	30-APR-2018
WELL - 26 SW	Calibration report for WELL 26 SW	Every Five Years	Every Five Years	30-APR-2018
WELL - 27 SW	Calibration report for WELL 27 SW	Every Five Years	Every Five Years	30-APR-2018
WELL - 28 SW	Calibration report for WELL 28 SW	Every Five Years	Every Five Years	30-APR-2018
WELL - 29 W	Calibration report for WELL 29 W	Every Five Years	Every Five Years	31-MAY-2018
WELL - 30 W	Calibration report for WELL 30 W	Every Five Years	Every Five Years	31-MAY-2018
WELL - 31 W	Calibration report for WELL 31 W	Every Five Years	Every Five Years	30-APR-2017
WELL - 34 SW	Calibration report for WELL 34 SW	Every Five Years	Every Five Years	30-APR-2017
WELL - 33 SW	Calibration report for WELL 33 SW	Every Five Years	Every Five Years	30-APR-2017
WELL - 32 SW	Calibration report for WELL 32 SW	Every Five Years	Every Five Years	30-APR-2017
WELL - ASR/Blending 1W	Calibration report for WELL ASR/Blending 1W	Every Five Years	Every Five Years	01-AUG-2017
WELL - ASR/Blending 3W	Calibration report for WELL ASR/Blending 3W	Every Five Years	Every Five Years	01-AUG-2017
WELL - ASR/Blending 2W	Calibration report for WELL ASR/Blending 2W	Every Five Years	Every Five Years	01-AUG-2017
WELL - ASR/Blending 4SW	Calibration report for WELL ASR/Blending 4SW	Every Five Years	Every Five Years	01-AUG-2017
WELL - ASR/Blending 5SW	Calibration report for WELL ASR/Blending 5SW	Every Five Years	Every Five Years	01-AUG-2017
WELL - NWTN 1	Calibration report for WELL NWTN 1	Every Five Years	Every Five Years	31-MAR-2018
WELL - NWTN 2	Calibration report for WELL NWTN 2	Every Five Years	Every Five Years	31-MAR-2018
WELL - NJ 1	Calibration report for WELL NJ 1	Every Five Years	Every Five Years	31-MAR-2018
WELL - 1 MS Lower	Calibration report for WELL 1 MS Lower	Every Five Years	Every Five Years	30-APR-2018
WELL - 2 MS Lower	Calibration report for WELL 2 MS Lower	Every Five Years	Every Five Years	30-APR-2018
WELL - 3 MS Lower	Calibration report for WELL 3 MS Lower	Every Five Years	Every Five Years	30-APR-2018
WELL - 4 MS Lower	Calibration report for WELL 4 MS Lower	Every Five Years	Every Five Years	30-APR-2018
WELL - 5 MS Lower	Calibration report for WELL 5 MS Lower	Every Five Years	Every Five Years	30-APR-2018
WELL - 7 MS Lower	Calibration report for WELL 7 MS Lower	Every Five Years	Every Five Years	30-APR-2018
WELL - 8 MS Lower	Calibration report for WELL 8 MS Lower	Every Five Years	Every Five Years	30-APR-2018
WELL - 6 MS Lower	Calibration report for WELL 6 MS Lower	Every Five Years	Every Five Years	30-APR-2018
WELL - 9 MS Upper	Calibration report for WELL 9 MS	Every Five Years	Every Five Years	30-APR-2018

Exhibit No: 36

Requirement by Permit Condition Report

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
WELL - 23 MS Upper	Calibration report for WELL 23 MS Upper	Every Five Years	Every Five Years	30-APR-2018
WELL - 14 MS Upper	Calibration report for WELL 14 MS Upper	Every Five Years	Every Five Years	30-APR-2018
WELL - 15 MS Upper	Calibration report for WELL 15 MS Upper	Every Five Years	Every Five Years	31-MAY-2018
WELL - 16 MS Upper	Calibration report for WELL 16 MS Upper	Every Five Years	Every Five Years	31-MAY-2018
WELL - 17 MS Upper	Calibration report for WELL 17 MS Upper	Every Five Years	Every Five Years	30-APR-2018
WELL - 18 MS Upper	Calibration report for WELL 18 MS Upper	Every Five Years	Every Five Years	31-MAY-2018
WELL - 19 MS Upper	Calibration report for WELL 19 MS Upper	Every Five Years	Every Five Years	31-MAY-2018
WELL - 20 MS Upper	Calibration report for WELL 20 MS Upper	Every Five Years	Every Five Years	30-APR-2018
WELL - 21 MS Upper	Calibration report for WELL 21 MS Upper	Every Five Years	Every Five Years	30-APR-2018
WELL - 22 MS Upper	Calibration report for WELL 22 MS Upper	Every Five Years	Every Five Years	30-APR-2018
WELL - 10 MS Upper	Calibration report for WELL 10 MS Upper	Every Five Years	Every Five Years	30-APR-2018
WELL - 1 Preston	Calibration report for WELL 1 Preston	Every Five Years	Every Five Years	30-APR-2018
WELL - 2 Preston	Calibration report for WELL 2 Preston	Every Five Years	Every Five Years	30-APR-2018
WELL - 3 Preston	Calibration report for WELL 3 Preston	Every Five Years	Every Five Years	30-APR-2018
WELL - 4 Preston	Calibration report for WELL 4 Preston	Every Five Years	Every Five Years	30-APR-2018
WELL - 5 Preston	Calibration report for WELL 5 Preston	Every Five Years	Every Five Years	30-APR-2018
WELL - 6 Preston	Calibration report for WELL 6 Preston	Every Five Years	Every Five Years	30-APR-2018
WELL - 7 Preston	Calibration report for WELL 7 Preston	Every Five Years	Every Five Years	30-APR-2018
WELL - 11 Hialeah	Calibration report for WELL 11 Hialeah	Every Five Years	Every Five Years	30-APR-2018
WELL - 12 Hialeah	Calibration report for WELL 12 Hialeah	Every Five Years	Every Five Years	30-APR-2018
WELL - 13 Hialeah	Calibration report for WELL 13 Hialeah	Every Five Years	Every Five Years	30-APR-2018
WELL - 1 NWWF	Calibration report for WELL 1 NWWF	Every Five Years	Every Five Years	30-APR-2018
WELL - 2 NWWF	Calibration report for WELL 2 NWWF	Every Five Years	Every Five Years	30-APR-2018
WELL - 3 NWWF	Calibration report for WELL 3 NWWF	Every Five Years	Every Five Years	30-APR-2018
WELL - 4 NWWF	Calibration report for WELL 4 NWWF	Every Five Years	Every Five Years	30-APR-2018

Exhibit No: 36

Requirement by Permit Condition Report

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
WELL - 5 NWWF	Calibration report for WELL 5 NWWF	Every Five Years	Every Five Years	30-APR-2018
WELL - 6 NWWF	Calibration report for WELL 6 NWWF	Every Five Years	Every Five Years	30-APR-2018
WELL - 7 NWWF	Calibration report for WELL 7 NWWF	Every Five Years	Every Five Years	30-APR-2018
WELL - 8 NWWF	Calibration report for WELL 8 NWWF	Every Five Years	Every Five Years	30-APR-2018
WELL - 9 NWWF	Calibration report for WELL 9 NWWF	Every Five Years	Every Five Years	30-APR-2018
WELL - 10 NWWF	Calibration report for WELL 10 NWWF	Every Five Years	Every Five Years	30-APR-2018
WELL - 11 NWWF	Calibration report for WELL 11 NWWF	Every Five Years	Every Five Years	30-APR-2018
WELL - 12 NWWF	Calibration report for WELL 12 NWWF	Every Five Years	Every Five Years	30-APR-2018
WELL - 13 NWWF	Calibration report for WELL 13 NWWF	Every Five Years	Every Five Years	30-APR-2018
WELL - 14 NWWF	Calibration report for WELL 14 NWWF	Every Five Years	Every Five Years	30-APR-2018
WELL - 15 NWWF	Calibration report for WELL 15 NWWF	Every Five Years	Every Five Years	30-APR-2018
WELL - EVRGL 1	Calibration report for WELL EVRGL 1	Every Five Years	Every Five Years	31-MAR-2018
WELL - EVRGL 2	Calibration report for WELL EVRGL 2	Every Five Years	Every Five Years	31-MAR-2018
WELL - ET 2	Calibration report for WELL ET 2	Every Five Years	Every Five Years	30-APR-2018
WELL - FP 1	Calibration report for WELL FP 1	Every Five Years	Every Five Years	31-AUG-2015
WELL - RHP 1	Calibration report for WELL RHP 1	Every Five Years	Every Five Years	31-AUG-2015
WELL - RHP 2	Calibration report for WELL RHP 2	Every Five Years	Every Five Years	31-AUG-2015
WELL - RHP 3	Calibration report for WELL RHP 3	Every Five Years	Every Five Years	31-AUG-2015
WELL - RHP 4	Calibration report for WELL RHP 4	Every Five Years	Every Five Years	31-AUG-2015
WELL - 1 Medley	Calibration report for WELL 1 Medley	Every Five Years	Every Five Years	31-JUL-2017
WELL - 2 Medley	Calibration report for WELL 2 Medley	Every Five Years	Every Five Years	31-MAY-2017
WELL - 5 Medley	Calibration report for WELL 5 Medley	Every Five Years	Every Five Years	31-JUL-2017
WELL - 6 Medley	Calibration report for WELL 6 Medley	Every Five Years	Every Five Years	31-MAY-2017
WELL - RO1 Hialeah	Calibration report for WELL RO1 Hialeah	Every Five Years	Every Five Years	30-APR-2018
WELL - RO2 Hialeah	Calibration report for WELL RO2 Hialeah	Every Five Years	Every Five Years	30-APR-2018
WELL - RO3 Hialeah	Calibration report for WELL RO3 Hialeah	Every Five Years	Every Five Years	30-APR-2018
WELL - RO4 Hialeah	Calibration report for WELL RO4	Every Five Years	Every Five Years	30-APR-2018

Exhibit No: 36

Requirement by Permit Condition Report

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
WELL - RO5 Hialeah	Calibration report for WELL RO5 Hialeah	Every Five Years	Every Five Years	31-AUG-2015
WELL - RO6 Hialeah	Calibration report for WELL RO6 Hialeah	Every Five Years	Every Five Years	31-AUG-2015
WELL - RO7 Hialeah	Calibration report for WELL RO7 Hialeah	Every Five Years	Every Five Years	31-AUG-2015
WELL - RO8 Hialeah	Calibration report for WELL RO8 Hialeah	Every Five Years	Every Five Years	31-AUG-2015
WELL - RO9 Hialeah	Calibration report for WELL RO9 Hialeah	Every Five Years	Every Five Years	31-AUG-2015
WELL - RO10 Hialeah	Calibration report for WELL RO10 Hialeah	Every Five Years	Every Five Years	30-APR-2018
WELL - RO11 Hialeah	Calibration report for WELL RO11 Hialeah	Every Five Years	Every Five Years	30-APR-2018
WELL - RO12 Hialeah	Calibration report for WELL RO12 Hialeah	Every Five Years	Every Five Years	31-AUG-2015
WELL - RO13 Hialeah	Calibration report for WELL RO13 Hialeah	Every Five Years	Every Five Years	31-AUG-2015
WELL - RO14 Hialeah	Calibration report for WELL RO14 Hialeah	Every Five Years	Every Five Years	31-AUG-2015
WELL - SMH-F1	Calibration report for WELL SMH-F1	Every Five Years	Every Five Years	31-AUG-2015
WELL - SMH-F2	Calibration report for WELL SMH-F2	Every Five Years	Every Five Years	31-AUG-2015
WELL - SMH-F3	Calibration report for WELL SMH-F3	Every Five Years	Every Five Years	31-AUG-2015
WELL - SMH-F4	Calibration report for WELL SMH-F4	Every Five Years	Every Five Years	31-AUG-2015
WELL - SMH-F5	Calibration report for WELL SMH-F5	Every Five Years	Every Five Years	31-AUG-2015
WELL - SMH-F6	Calibration report for WELL SMH-F6	Every Five Years	Every Five Years	31-AUG-2015
WELL - SMH-F7	Calibration report for WELL SMH-F7	Every Five Years	Every Five Years	31-AUG-2015
WELL - SMH-F8	Calibration report for WELL SMH-F8	Every Five Years	Every Five Years	31-AUG-2015

Permit Condition No: 13 **Permit Condition Code:** WUSTD022-1

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
WELL - EVRGL 3	Monthly withdrawal for WELL EVRGL 3	Monthly	Semi-Annually	31-AUG-2015
WELL - LC 2	Monthly withdrawal for WELL LC 2	Monthly	Semi-Annually	31-AUG-2015
WELL - LC 3	Monthly withdrawal for WELL LC 3	Monthly	Semi-Annually	31-AUG-2015
WELL - LC 4	Monthly withdrawal for WELL LC 4	Monthly	Semi-Annually	31-AUG-2015
WELL - LC 5	Monthly withdrawal for WELL LC 5	Monthly	Semi-Annually	31-AUG-2015
WELL - ET 1	Monthly withdrawal for WELL ET 1	Monthly	Semi-Annually	31-AUG-2015

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Requirement by Permit Condition Report

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
WELL - 4 Orr	Monthly withdrawal for WELL 4 Orr	Monthly	Semi-Annually	31-AUG-2015
WELL - 5 Orr	Monthly withdrawal for WELL 5 Orr	Monthly	Semi-Annually	31-AUG-2015
WELL - 6 Orr	Monthly withdrawal for WELL 6 Orr	Monthly	Semi-Annually	31-AUG-2015
WELL - 7 Orr	Monthly withdrawal for WELL 7 Orr	Monthly	Semi-Annually	31-AUG-2015
WELL - 8 Orr	Monthly withdrawal for WELL 8 Orr	Monthly	Semi-Annually	31-AUG-2015
WELL - 9 Orr	Monthly withdrawal for WELL 9 Orr	Monthly	Semi-Annually	31-AUG-2015
WELL - 10 Orr	Monthly withdrawal for WELL 10 Orr	Monthly	Semi-Annually	31-AUG-2015
WELL - 11 SW	Monthly withdrawal for WELL 11 SW	Monthly	Semi-Annually	31-AUG-2015
WELL - 12 SW	Monthly withdrawal for WELL 12 SW	Monthly	Semi-Annually	31-AUG-2015
WELL - 13 SW	Monthly withdrawal for WELL 13 SW	Monthly	Semi-Annually	31-AUG-2015
WELL - 1 Orr	Monthly withdrawal for WELL 1 Orr	Monthly	Semi-Annually	31-AUG-2015
WELL - 2 Orr	Monthly withdrawal for WELL 2 Orr	Monthly	Semi-Annually	31-AUG-2015
WELL - 3 Orr	Monthly withdrawal for WELL 3 Orr	Monthly	Semi-Annually	31-AUG-2015
WELL - 14 SW	Monthly withdrawal for WELL 14 SW	Monthly	Semi-Annually	31-AUG-2015
WELL - 15 SW	Monthly withdrawal for WELL 15 SW	Monthly	Semi-Annually	31-AUG-2015
WELL - 16 SW	Monthly withdrawal for WELL 16 SW	Monthly	Semi-Annually	31-AUG-2015
WELL - 17 SW	Monthly withdrawal for WELL 17 SW	Monthly	Semi-Annually	31-AUG-2015
WELL - 18 SW	Monthly withdrawal for WELL 18 SW	Monthly	Semi-Annually	31-AUG-2015
WELL - 19 SW	Monthly withdrawal for WELL 19 SW	Monthly	Semi-Annually	31-AUG-2015
WELL - 20 SW	Monthly withdrawal for WELL 20 SW	Monthly	Semi-Annually	31-AUG-2015
WELL - 21 SC	Monthly withdrawal for WELL 21 SC	Monthly	Semi-Annually	31-AUG-2015
WELL - 22 SC	Monthly withdrawal for WELL 22 SC	Monthly	Semi-Annually	31-AUG-2015
WELL - 23 SC	Monthly withdrawal for WELL 23 SC	Monthly	Semi-Annually	31-AUG-2015
WELL - 24 SC	Monthly withdrawal for WELL 24 SC	Monthly	Semi-Annually	31-AUG-2015
WELL - 25 SW	Monthly withdrawal for WELL 25 SW	Monthly	Semi-Annually	31-AUG-2015
WELL - 26 SW	Monthly withdrawal for WELL 26	Monthly	Semi-Annually	31-AUG-2015

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Requirement by Permit Condition Report

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
WELL - 27 SW	Monthly withdrawal for WELL 27 SW	Monthly	Semi-Annually	31-AUG-2015
WELL - 28 SW	Monthly withdrawal for WELL 28 SW	Monthly	Semi-Annually	31-AUG-2015
WELL - 29 W	Monthly withdrawal for WELL 29 W	Monthly	Semi-Annually	31-AUG-2015
WELL - 30 W	Monthly withdrawal for WELL 30 W	Monthly	Semi-Annually	31-AUG-2015
WELL - 31 W	Monthly withdrawal for WELL 31 W	Monthly	Semi-Annually	31-AUG-2015
WELL - 34 SW	Monthly withdrawal for WELL 34 SW	Monthly	Semi-Annually	31-AUG-2015
WELL - 33 SW	Monthly withdrawal for WELL 33 SW	Monthly	Semi-Annually	31-AUG-2015
WELL - 32 SW	Monthly withdrawal for WELL 32 SW	Monthly	Semi-Annually	31-AUG-2015
WELL - ASR/Blending 1W	Monthly withdrawal for WELL ASR/Blending 1W	Monthly	Semi-Annually	31-AUG-2015
WELL - ASR/Blending 3W	Monthly withdrawal for WELL ASR/Blending 3W	Monthly	Semi-Annually	31-AUG-2015
WELL - ASR/Blending 2W	Monthly withdrawal for WELL ASR/Blending 2W	Monthly	Semi-Annually	31-AUG-2015
WELL - ASR/Blending 4SW	Monthly withdrawal for WELL ASR/Blending 4SW	Monthly	Semi-Annually	31-AUG-2015
WELL - ASR/Blending 5SW	Monthly withdrawal for WELL ASR/Blending 5SW	Monthly	Semi-Annually	31-AUG-2015
WELL - NWTN 1	Monthly withdrawal for WELL NWTN 1	Monthly	Semi-Annually	31-AUG-2015
WELL - NWTN 2	Monthly withdrawal for WELL NWTN 2	Monthly	Semi-Annually	31-AUG-2015
WELL - NJ 1	Monthly withdrawal for WELL NJ 1	Monthly	Semi-Annually	31-AUG-2015
WELL - 1 MS Lower	Monthly withdrawal for WELL 1 MS Lower	Monthly	Semi-Annually	31-AUG-2015
WELL - 2 MS Lower	Monthly withdrawal for WELL 2 MS Lower	Monthly	Semi-Annually	31-AUG-2015
WELL - 3 MS Lower	Monthly withdrawal for WELL 3 MS Lower	Monthly	Semi-Annually	31-AUG-2015
WELL - 4 MS Lower	Monthly withdrawal for WELL 4 MS Lower	Monthly	Semi-Annually	31-AUG-2015
WELL - 5 MS Lower	Monthly withdrawal for WELL 5 MS Lower	Monthly	Semi-Annually	31-AUG-2015
WELL - 7 MS Lower	Monthly withdrawal for WELL 7 MS Lower	Monthly	Semi-Annually	31-AUG-2015
WELL - 8 MS Lower	Monthly withdrawal for WELL 8 MS Lower	Monthly	Semi-Annually	31-AUG-2015
WELL - 6 MS Lower	Monthly withdrawal for WELL 6 MS Lower	Monthly	Semi-Annually	31-AUG-2015
WELL - 9 MS Upper	Monthly withdrawal for WELL 9 MS Upper	Monthly	Semi-Annually	31-AUG-2015
WELL - 23 MS Upper	Monthly withdrawal for WELL 23	Monthly	Semi-Annually	31-AUG-2015

Exhibit No: 36

Requirement by Permit Condition Report

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
	MS Upper			
WELL - 14 MS Upper	Monthly withdrawal for WELL 14 MS Upper	Monthly	Semi-Annually	31-AUG-2015
WELL - 15 MS Upper	Monthly withdrawal for WELL 15 MS Upper	Monthly	Semi-Annually	31-AUG-2015
WELL - 16 MS Upper	Monthly withdrawal for WELL 16 MS Upper	Monthly	Semi-Annually	31-AUG-2015
WELL - 17 MS Upper	Monthly withdrawal for WELL 17 MS Upper	Monthly	Semi-Annually	31-AUG-2015
WELL - 18 MS Upper	Monthly withdrawal for WELL 18 MS Upper	Monthly	Semi-Annually	31-AUG-2015
WELL - 19 MS Upper	Monthly withdrawal for WELL 19 MS Upper	Monthly	Semi-Annually	31-AUG-2015
WELL - 20 MS Upper	Monthly withdrawal for WELL 20 MS Upper	Monthly	Semi-Annually	31-AUG-2015
WELL - 21 MS Upper	Monthly withdrawal for WELL 21 MS Upper	Monthly	Semi-Annually	31-AUG-2015
WELL - 22 MS Upper	Monthly withdrawal for WELL 22 MS Upper	Monthly	Semi-Annually	31-AUG-2015
WELL - 10 MS Upper	Monthly withdrawal for WELL 10 MS Upper	Monthly	Semi-Annually	31-AUG-2015
WELL - 1 Preston	Monthly withdrawal for WELL 1 Preston	Monthly	Semi-Annually	31-AUG-2015
WELL - 2 Preston	Monthly withdrawal for WELL 2 Preston	Monthly	Semi-Annually	31-AUG-2015
WELL - 3 Preston	Monthly withdrawal for WELL 3 Preston	Monthly	Semi-Annually	31-AUG-2015
WELL - 4 Preston	Monthly withdrawal for WELL 4 Preston	Monthly	Semi-Annually	31-AUG-2015
WELL - 5 Preston	Monthly withdrawal for WELL 5 Preston	Monthly	Semi-Annually	31-AUG-2015
WELL - 6 Preston	Monthly withdrawal for WELL 6 Preston	Monthly	Semi-Annually	31-AUG-2015
WELL - 7 Preston	Monthly withdrawal for WELL 7 Preston	Monthly	Semi-Annually	31-AUG-2015
WELL - 11 Hialeah	Monthly withdrawal for WELL 11 Hialeah	Monthly	Semi-Annually	31-AUG-2015
WELL - 12 Hialeah	Monthly withdrawal for WELL 12 Hialeah	Monthly	Semi-Annually	31-AUG-2015
WELL - 13 Hialeah	Monthly withdrawal for WELL 13 Hialeah	Monthly	Semi-Annually	31-AUG-2015
WELL - 1 NWWF	Monthly withdrawal for WELL 1 NWWF	Monthly	Semi-Annually	31-AUG-2015
WELL - 2 NWWF	Monthly withdrawal for WELL 2 NWWF	Monthly	Semi-Annually	31-AUG-2015
WELL - 3 NWWF	Monthly withdrawal for WELL 3 NWWF	Monthly	Semi-Annually	31-AUG-2015
WELL - 4 NWWF	Monthly withdrawal for WELL 4 NWWF	Monthly	Semi-Annually	31-AUG-2015
WELL - 5 NWWF	Monthly withdrawal for WELL 5 NWWF	Monthly	Semi-Annually	31-AUG-2015

Exhibit No: 36

Requirement by Permit Condition Report

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
WELL - 6 NWWF	Monthly withdrawal for WELL 6 NWWF	Monthly	Semi-Annually	31-AUG-2015
WELL - 7 NWWF	Monthly withdrawal for WELL 7 NWWF	Monthly	Semi-Annually	31-AUG-2015
WELL - 8 NWWF	Monthly withdrawal for WELL 8 NWWF	Monthly	Semi-Annually	31-AUG-2015
WELL - 9 NWWF	Monthly withdrawal for WELL 9 NWWF	Monthly	Semi-Annually	31-AUG-2015
WELL - 10 NWWF	Monthly withdrawal for WELL 10 NWWF	Monthly	Semi-Annually	31-AUG-2015
WELL - 11 NWWF	Monthly withdrawal for WELL 11 NWWF	Monthly	Semi-Annually	31-AUG-2015
WELL - 12 NWWF	Monthly withdrawal for WELL 12 NWWF	Monthly	Semi-Annually	31-AUG-2015
WELL - 13 NWWF	Monthly withdrawal for WELL 13 NWWF	Monthly	Semi-Annually	31-AUG-2015
WELL - 14 NWWF	Monthly withdrawal for WELL 14 NWWF	Monthly	Semi-Annually	31-AUG-2015
WELL - 15 NWWF	Monthly withdrawal for WELL 15 NWWF	Monthly	Semi-Annually	31-AUG-2015
WELL - EVRGL 1	Monthly withdrawal for WELL EVRGL 1	Monthly	Semi-Annually	31-AUG-2015
WELL - EVRGL 2	Monthly withdrawal for WELL EVRGL 2	Monthly	Semi-Annually	31-AUG-2015
WELL - ET 2	Monthly withdrawal for WELL ET 2	Monthly	Semi-Annually	31-AUG-2015
WELL - FP 1	Monthly withdrawal for WELL FP 1	Monthly	Semi-Annually	31-AUG-2015
WELL - RHP 1	Monthly withdrawal for WELL RHP 1	Monthly	Semi-Annually	31-AUG-2015
WELL - RHP 2	Monthly withdrawal for WELL RHP 2	Monthly	Semi-Annually	31-AUG-2015
WELL - RHP 3	Monthly withdrawal for WELL RHP 3	Monthly	Semi-Annually	31-AUG-2015
WELL - RHP 4	Monthly withdrawal for WELL RHP 4	Monthly	Semi-Annually	31-AUG-2015
WELL - 1 Medley	Monthly withdrawal for WELL 1 Medley	Monthly	Semi-Annually	31-AUG-2015
WELL - 2 Medley	Monthly withdrawal for WELL 2 Medley	Monthly	Semi-Annually	31-AUG-2015
WELL - 5 Medley	Monthly withdrawal for WELL 5 Medley	Monthly	Semi-Annually	31-AUG-2015
WELL - 6 Medley	Monthly withdrawal for WELL 6 Medley	Monthly	Semi-Annually	31-AUG-2015
WELL - RO1 Hialeah	Monthly withdrawal for WELL RO1 Hialeah	Monthly	Semi-Annually	31-AUG-2015
WELL - RO2 Hialeah	Monthly withdrawal for WELL RO2 Hialeah	Monthly	Semi-Annually	31-AUG-2015
WELL - RO3 Hialeah	Monthly withdrawal for WELL RO3 Hialeah	Monthly	Semi-Annually	31-AUG-2015
WELL - RO4 Hialeah	Monthly withdrawal for WELL RO4	Monthly	Semi-Annually	31-AUG-2015

Exhibit No: 36

Requirement by Permit Condition Report

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
	Hialeah			
WELL - RO5 Hialeah	Monthly withdrawal for WELL RO5 Hialeah	Monthly	Semi-Annually	31-AUG-2015
WELL - RO6 Hialeah	Monthly withdrawal for WELL RO6 Hialeah	Monthly	Semi-Annually	31-AUG-2015
WELL - RO7 Hialeah	Monthly withdrawal for WELL RO7 Hialeah	Monthly	Semi-Annually	31-AUG-2015
WELL - RO8 Hialeah	Monthly withdrawal for WELL RO8 Hialeah	Monthly	Semi-Annually	31-AUG-2015
WELL - RO9 Hialeah	Monthly withdrawal for WELL RO9 Hialeah	Monthly	Semi-Annually	31-AUG-2015
WELL - RO10 Hialeah	Monthly withdrawal for WELL RO10 Hialeah	Monthly	Semi-Annually	31-AUG-2015
WELL - RO11 Hialeah	Monthly withdrawal for WELL RO11 Hialeah	Monthly	Semi-Annually	31-AUG-2015
WELL - RO12 Hialeah	Monthly withdrawal for WELL RO12 Hialeah	Monthly	Semi-Annually	31-AUG-2015
WELL - RO13 Hialeah	Monthly withdrawal for WELL RO13 Hialeah	Monthly	Semi-Annually	31-AUG-2015
WELL - RO14 Hialeah	Monthly withdrawal for WELL RO14 Hialeah	Monthly	Semi-Annually	31-AUG-2015
WELL - SMH-F1	Monthly withdrawal for WELL SMH-F1	Monthly	Semi-Annually	31-AUG-2015
WELL - SMH-F2	Monthly withdrawal for WELL SMH-F2	Monthly	Semi-Annually	31-AUG-2015
WELL - SMH-F3	Monthly withdrawal for WELL SMH-F3	Monthly	Semi-Annually	31-AUG-2015
WELL - SMH-F4	Monthly withdrawal for WELL SMH-F4	Monthly	Semi-Annually	31-AUG-2015
WELL - SMH-F5	Monthly withdrawal for WELL SMH-F5	Monthly	Semi-Annually	31-AUG-2015
WELL - SMH-F6	Monthly withdrawal for WELL SMH-F6	Monthly	Semi-Annually	31-AUG-2015
WELL - SMH-F7	Monthly withdrawal for WELL SMH-F7	Monthly	Semi-Annually	31-AUG-2015
WELL - SMH-F8	Monthly withdrawal for WELL SMH-F8	Monthly	Semi-Annually	31-AUG-2015
WELL - ASR/Blending 2W	ASR Injection for Well ASR 2W	Monthly	Quarterly	31-MAY-2015
WELL - ASR/Blending 2W	ASR Biscayne wd from ASR 2W	Monthly	Quarterly	31-MAY-2015
WELL - ASR/Blending 3W	ASR Injection for Well ASR 3W	Monthly	Quarterly	31-MAY-2015
WELL - ASR/Blending 3W	ASR Biscayne wd from ASR 3W	Monthly	Quarterly	31-MAY-2015
WELL - ASR/Blending 4SW	ASR Injection for Well ASR 4SW	Monthly	Quarterly	31-MAY-2015
WELL - ASR/Blending 4SW	ASR Biscayne wd from ASR 4SW	Monthly	Quarterly	31-MAY-2015
WELL - ASR/Blending 5SW	ASR Injection for Well ASR 5SW	Monthly	Quarterly	31-MAY-2015
WELL - ASR/Blending 5SW	ASR Biscayne wd from ASR 5SW	Monthly	Quarterly	31-MAY-2015
WELL - ASR/Blending 1W	ASR Biscayne wd from ASR 1W	Monthly	Quarterly	31-MAY-2015
WELL - ASR/Blending 1W	ASR Injection for Well ASR 1W	Monthly	Quarterly	31-MAY-2015

Exhibit No: 36

Requirement by Permit Condition Report

Permit Condition No: 16	Permit Condition Code: WUPWS004-1			
Facility Name	**Requirement Name**	**Col Freq**	**Sub Freq**	**Due Date**
South Miami Heights	Raw Water Influent Report for South Miami Heights	Monthly	Semi-Annually	31-MAR-2015
Hialeah/Preston WTP	Raw Water Influent Report for Hialeah/Preston WTP	Monthly	Semi-Annually	31-MAR-2015
Alexander Orr WTP	Raw Water Influent Report for Alexander Orr WTP	Monthly	Semi-Annually	31-MAR-2015
Hialeah RO WTP	Raw Water Influent Report for Hialeah RO WTP	Monthly	Semi-Annually	31-MAR-2015
Permit Condition No: 17	**Permit Condition Code:** WUPWS006-1			
Facility Name	**Requirement Name**	**Col Freq**	**Sub Freq**	**Due Date**
PERMIT	Water Conservation Plan annual report	Yearly	Yearly	01-MAY-2015
Permit Condition No: 18	**Permit Condition Code:** WUPWS009-1			
Facility Name	**Requirement Name**	**Col Freq**	**Sub Freq**	**Due Date**
PERMIT	Bulk water delivered to PERMIT	Monthly	Semi-Annually	31-AUG-2015
Permit Condition No: 20	**Permit Condition Code:** WUPWS003-1			
Facility Name	**Requirement Name**	**Col Freq**	**Sub Freq**	**Due Date**
PERMIT	Unaccounted for Distribution Losses for PERMIT	Yearly	Yearly	01-MAY-2015
PERMIT	Annual Water Savings Activities Status Update (Reduction Plan)	Yearly	Yearly	01-MAY-2015
Permit Condition No: 21	**Permit Condition Code:** WURWF007-1			
Facility Name	**Requirement Name**	**Col Freq**	**Sub Freq**	**Due Date**
PERMIT	Annual reclaimed water report for PERMIT	Yearly	Yearly	01-MAY-2015
Permit Condition No: 22	**Permit Condition Code:** WUPWS004-2			
Facility Name	**Requirement Name**	**Col Freq**	**Sub Freq**	**Due Date**
South Miami Heights	Treated Water Outflow Report for South Miami Heights	Monthly	Semi-Annually	31-MAY-2015
Hialeah/Preston WTP	Treated Water Outflow Report for Hialeah/Preston WTP	Monthly	Semi-Annually	31-MAY-2015
Alexander Orr WTP	Treated Water Outflow Report for Alexander Orr WTP	Monthly	Semi-Annually	31-MAY-2015
Hialeah RO WTP	Treated Water Outflow Report for Hialeah RO WTP	Monthly	Semi-Annually	31-MAY-2015
Permit Condition No: 23	**Permit Condition Code:** WUCOMP010-1			
Facility Name	**Requirement Name**	**Col Freq**	**Sub Freq**	**Due Date**
PERMIT	Ten-Year Compliance Report for PERMIT	Every Ten Years	Every Ten Years	16-JUL-2022
Permit Condition No: 24	**Permit Condition Code:** WUASR001-1			
Facility Name	**Requirement Name**	**Col Freq**	**Sub Freq**	**Due Date**
PERMIT	ASR Operations Report for PERMIT	Yearly	Yearly	01-MAY-2015
Permit Condition No: 25	**Permit Condition Code:** WUWC004-1			
Facility Name	**Requirement Name**	**Col Freq**	**Sub Freq**	**Due Date**
WELL - FP 1	Updated Table A for WELL FP 1	One time Only	One time Only	01-SEP-2015
WELL - RHP 1	Updated Table A for WELL RHP 1	One time Only	One time Only	01-SEP-2015
WELL - RHP 3	Updated Table A for WELL RHP 3	One time Only	One time Only	01-SEP-2015

Exhibit No: 36

Requirement by Permit Condition Report

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
WELL - RHP 4	Updated Table A for WELL RHP 4	One time Only	One time Only	01-SEP-2015
WELL - RO8 Hialeah	Updated Table A for WELL RO8 Hialeah	One time Only	One time Only	01-SEP-2015
WELL - RO9 Hialeah	Updated Table A for WELL RO9 Hialeah	One time Only	One time Only	01-SEP-2015
WELL - RO10 Hialeah	Updated Table A for WELL RO10 Hialeah	One time Only	One time Only	01-SEP-2015
WELL - RO11 Hialeah	Updated Table A for WELL RO11 Hialeah	One time Only	One time Only	01-SEP-2015
WELL - RO12 Hialeah	Updated Table A for WELL RO12 Hialeah	One time Only	One time Only	01-SEP-2015
WELL - RO13 Hialeah	Updated Table A for WELL RO13 Hialeah	One time Only	One time Only	01-SEP-2015
WELL - RO14 Hialeah	Updated Table A for WELL RO14 Hialeah	One time Only	One time Only	01-SEP-2015
WELL - SMH-F1	Updated Table A for WELL SMH-F1	One time Only	One time Only	01-SEP-2015
WELL - SMH-F2	Updated Table A for WELL SMH-F2	One time Only	One time Only	01-SEP-2015
WELL - SMH-F3	Updated Table A for WELL SMH-F3	One time Only	One time Only	01-SEP-2015
WELL - SMH-F4	Updated Table A for WELL SMH-F4	One time Only	One time Only	01-SEP-2015
WELL - SMH-F5	Updated Table A for WELL SMH-F5	One time Only	One time Only	01-SEP-2015
WELL - SMH-F6	Updated Table A for WELL SMH-F6	One time Only	One time Only	01-SEP-2015
WELL - RHP 2	Updated Table A (Well) for Well RHP 2	One time Only	One time Only	01-SEP-2015

Permit Condition No: 26 **Permit Condition Code:** WUZZUD002-2

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
PERMIT	L30 Canal Operation monthly flows	Monthly	Semi-Annually	31-AUG-2015
PERMIT	Mid Canal Operation monthly flows	Monthly	Semi-Annually	31-AUG-2015

Permit Condition No: 36 **Permit Condition Code:** WUZZUD001

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
WELL - G-551	Ground water level for WELL G-551	Monthly	Quarterly	31-MAY-2015
WELL - G-1074B	Ground water level for WELL G-1074B	Monthly	Quarterly	31-MAY-2015
WELL - G-3555	Ground water level for WELL G-3555	Monthly	Quarterly	31-MAY-2015
WELL - G-3563	Ground water level for WELL G-3563	Monthly	Quarterly	31-MAY-2015
WELL - G-3565	Ground water level for WELL G-3565	Monthly	Quarterly	31-MAY-2015
WELL - AO-6N	Ground water level for WELL AO-6N	Every Four months	Every Four months	31-MAY-2015
WELL - AO-8C	Ground water level for WELL AO-8C	Every Four months	Every Four months	31-MAY-2015

Exhibit No: 36

Requirement by Permit Condition Report

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
WELL - SC-6N	Ground water level for WELL SC-6N	Every Four months	Every Four months	31-MAY-2015
WELL - SW-7W	Ground water level for WELL SW-7W	Every Four months	Every Four months	31-MAY-2015
WELL - G-3551	Ground water level for WELL G-3551	Monthly	Quarterly	31-MAY-2015
WELL - G-3553	Ground water level for WELL G-3553	Monthly	Quarterly	31-MAY-2015
WELL - G-3554	Ground water level for WELL G-3554	Monthly	Quarterly	31-MAY-2015
WELL - G-3556	Ground water level for WELL G-3556	Monthly	Quarterly	31-MAY-2015
WELL - G-3577	Ground water level for WELL G-3577	Monthly	Quarterly	31-MAY-2015
WELL - WWF-21S	Ground water level for WELL WWF-21S	Every Four months	Every Four months	31-MAY-2015
WELL - WWF-755	Ground water level for WELL WWF-755	Every Four months	Every Four months	31-MAY-2015
WELL - G-3253	Ground water level for WELL G-3253	Monthly	Quarterly	31-MAY-2015
WELL - G-3259A	Ground water level for WELL G-3259A	Monthly	Quarterly	31-MAY-2015
WELL - G-3567	Ground water level for WELL G-3567	Monthly	Quarterly	31-MAY-2015
WELL - G-3676	Ground water level for WELL G-3676	Monthly	Quarterly	31-MAY-2015
WELL - G-3818	Ground water level for WELL G-3818	Monthly	Quarterly	31-MAY-2015
WELL - NW-8D	Ground water level for WELL NW-8D	Every Four months	Every Four months	31-MAY-2015
WELL - NW-6F	Ground water level for WELL NW-6F	Every Four months	Every Four months	31-MAY-2015
WELL - WASD-1C	Ground water level for WELL WASD-1C	Every Four months	Every Four months	31-MAY-2015
WELL - G-3760	Ground water level for WELL G-3760	Monthly	Quarterly	31-MAY-2015
WELL - NW-19C	Ground water level for WELL NW-19C	Every Four months	Every Four months	31-MAY-2015
WELL - G-3897	Ground water level for WELL G-3897	Monthly	Quarterly	31-MAY-2015
WELL - G-3898	Ground water level for WELL G-3898	Monthly	Quarterly	31-MAY-2015
WELL - G-3899	Ground water level for WELL G-3899	Monthly	Quarterly	31-MAY-2015
WELL - G-3901	Ground water level for WELL G-3901	Monthly	Quarterly	31-MAY-2015
WELL - G-3900	Ground water level for WELL G-3900	Monthly	Quarterly	31-MAY-2015
WELL - G-3761	Ground water level for WELL G-3761	Monthly	Quarterly	31-MAY-2015
WELL - G-553	Ground water level for WELL G-	Monthly	Quarterly	31-MAY-2015

Exhibit No: 36

Requirement by Permit Condition Report

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
	553			
WELL - SW-2W	Ground water level for WELL SW-2W	Every Four months	Every Four months	31-MAY-2015
WELL - G-1488	Ground water level for WELL G-1488	Monthly	Quarterly	31-MAY-2015
WELL - SMH-F3	Ground water level for SMH-F3	Monthly	Quarterly	31-MAY-2015
WELL - G-3913	Ground water level for WELL G-3913	Monthly	Quarterly	31-MAY-2015
WELL - NW-3AR (replaces NW-3A)	Ground Water Level for Well NW-3AR (replaces NW-3A)	Every Four months	Every Four months	31-MAY-2015

Permit Condition No: 37 **Permit Condition Code:** WUZZUD001

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
WELL - F-45	Chloride for WELL F-45	Monthly	Quarterly	31-MAY-2015
WELL - G-1180	Chloride for WELL G-1180	Monthly	Quarterly	31-MAY-2015
WELL - G-1351	Chloride for WELL G-1351	Monthly	Quarterly	31-MAY-2015
WELL - G-1354	Chloride for WELL G-1354	Monthly	Quarterly	31-MAY-2015
WELL - G-3162	Chloride for WELL G-3162	Monthly	Quarterly	31-MAY-2015
WELL - G-3229	Chloride for WELL G-3229	Monthly	Quarterly	31-MAY-2015
WELL - G-3250	Chloride for WELL G-3250	Monthly	Quarterly	31-MAY-2015
WELL - G-894	Chloride for WELL G-894	Monthly	Quarterly	31-MAY-2015
WELL - G-896	Chloride for WELL G-896	Monthly	Quarterly	31-MAY-2015
WELL - G-3313E	Chloride for WELL G-3313E	Monthly	Quarterly	31-MAY-2015
WELL - G-3224	Chloride for WELL G-3224	Monthly	Quarterly	31-MAY-2015
WELL - G-1009B	Chloride for WELL G-1009B	Monthly	Quarterly	31-MAY-2015
WELL - FA-3N NDWWTP	Chloride for WELL FA-3N NDWWTP	Monthly	Quarterly	31-MAY-2015
WELL - FA-1 (Replaces FA-5)	Chloride for WELL FA-1	Monthly	Quarterly	31-MAY-2015
WELL - ASR MW-1 (WEST)	Chloride for WELL ASR MW-1 (WEST)	Monthly	Quarterly	31-MAY-2015
WELL - ASR MW-1 (SW)	Chloride for WELL ASR MW-1 (SW)	Monthly	Quarterly	31-MAY-2015
WELL - CHI SDWWTP	Chloride for WELL CHI SDWWTP	Monthly	Quarterly	31-MAY-2015
WELL - G-3313C	Chloride for WELL G-3313C	Monthly	Quarterly	31-MAY-2015
WELL - G-939	Chloride for WELL G-939	Monthly	Quarterly	31-MAY-2015
WELL - G-901	Chloride for WELL G-901	Monthly	Quarterly	31-MAY-2015
WELL - G-571	Chloride for WELL G-571	Monthly	Quarterly	31-MAY-2015
WELL - G-548	Chloride for WELL G-548	Monthly	Quarterly	31-MAY-2015
WELL - G-432	Chloride for WELL G-432	Monthly	Quarterly	31-MAY-2015
WELL - G-354	Chloride for WELL G-354	Monthly	Quarterly	31-MAY-2015
WELL - F-279	Chloride for WELL F-279	Monthly	Quarterly	31-MAY-2015
WELL - G-3885	Chloride for WELL G-3885	Monthly	Quarterly	31-MAY-2015
WELL - G-3886	Chloride for WELL G-3886	Monthly	Quarterly	31-MAY-2015
WELL - G-3887	Chloride for WELL G-3887	Monthly	Quarterly	31-MAY-2015
WELL - G-3888	Chloride for WELL G-3888	Monthly	Quarterly	31-MAY-2015
WELL - G-3946	Chloride for WELL G-3946	Monthly	Quarterly	31-MAY-2015
WELL - G-3947	Chloride for WELL G-3947	Monthly	Quarterly	31-MAY-2015

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Requirement by Permit Condition Report

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
WELL - G-3948	Chloride for WELL G-3948	Monthly	Quarterly	31-MAY-2015
WELL - G-3949	Chloride for WELL G-3949	Monthly	Quarterly	31-MAY-2015
WELL - SMH-F3	Chloride for WELL SMH-F3	Monthly	Quarterly	31-MAY-2015
PERMIT	Annual Water Quality Summary Report	Yearly	Yearly	29-FEB-2016
WELL - RO1 Hialeah	Chloride for WELL RO1 Hialeah (use this well instead of RO7 Feb 2014)	Monthly	Quarterly	31-MAY-2015

Permit Condition No: 38 **Permit Condition Code:** WUZZUD001-2

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
PERMIT	Large User Agreement with Hialeah	One time Only	One time Only	01-SEP-2015

Permit Condition No: 39 **Permit Condition Code:** WUZZUD001-3

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
PERMIT	Reuse Information Update	Yearly	Yearly	30-APR-2015

Permit Condition No: 42 **Permit Condition Code:** WUZZUD004-1

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
PERMIT	Alternate Reuse project proposal- if feasibility agreement was not made	One time Only	One time Only	01-MAY-2015
PERMIT	BBCW Reuse Project Water Quality Required & feasibility determination	One time Only	One time Only	01-MAY-2015

Exhibit No: 36

STAFF REPORT DISTRIBUTION LIST

MIAMI-DADE CONSOLIDATED PWS

Application No: 140627-12

Permit No: 13-00017-W

INTERNAL DISTRIBUTION

X John A. Lockwood, P.G.
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EXTERNAL DISTRIBUTION

X Permittee - Miami-Dade Water And Sewer Department
X Agent - Miami-Dade Water And Sewer Department

GOVERNMENT AGENCIES

X Biscayne National Park
X City of Hialeah Dept of Water and Sewer
X City of Homestead
X Dept of Environmental Protection - West Palm Beach
X Everglades National Park
X Miami-Dade County Engineer Public Works Department

OTHER INTERESTED PARTIES

X Audubon of Florida
X Marcy I. LaHart
X Miccosukee Tribe
X Natural Resources Defense Council

Exhibit No:37

APPENDIX B

2020 – 2026 Multi-Year Capital Plan

Miami-Dade Water and Sewer Department
PROPOSED 2020-2029 CAPITAL BUDGET AND MULTI-YEAR CAPITAL PLAN
Projection by Project Sub-Project by Year - Water
As of: 9/30/2019

Version 5 - Adopted MYCIP FY20-26 - After OMB Adjustments
Active and Future projects

Proj	Sub-Project		Current Bond/Fund Allocation	Expenditures As of 9/30//2019	Remaining Bond/Fund Allocation	PROJECTIONS 2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026	2026-2027	2027-2028	2028-2029	Future	Total
1050	101711	HIALEAH/PRESTON WTP - DESIGN AND ENGINEERING ON REDUNDANT 72-INCH WATER MAIN	17,694,282	636,418	17,057,864	400,000	7,552,000	4,745,719	2,860,145	1,500,000	0	0	0	0	0	0	17,057,864
	102104	FILTER BACKWASH ELEVATED TANK REPLACEMENT SYSTEM FOR HIALEAH WTP	3,000,000	0	3,000,000	3,000,000	0	0	0	0	0	0	0	0	0	0	3,000,000
	102106	HYPOCHLORITE FEED/STORAGE AT PRESTON/HIALEAH WTP	6,054,178	554,178	5,500,000	2,500,000	3,000,000	0	0	0	0	0	0	0	0	0	5,500,000
	102110	HIALEAH/PRESTON REPLACEMENT OF UNDERDRAIN FILTERS	3,200,000	0	3,200,000	3,200,000	0	0	0	0	0	0	0	0	0	0	3,200,000
	102127	REPLACEMENT/UPGRADE OF LIME FEED SYSTEM	4,967,242	1,096,072	3,871,170	3,871,170	0	0	0	0	0	0	0	0	0	0	3,871,170
	102134	PURCHASE OF LAKE PROPERTY ADJACENT TO NORTHWEST WELLFIELD	7,604,457	5,545,906	2,058,551	2,058,551	0	0	0	0	0	0	0	0	0	0	2,058,551
	102170	HIALEAH/PRESTON WTP FEEDER/MOTOR EAST & WEST CONTROL CENTER	2,000,000	0	2,000,000	2,000,000	0	0	0	0	0	0	0	0	0	0	2,000,000
	102171	HIALEAH/PRESTON WTP TRANSFORMER	1,500,000	0	1,500,000	0	0	489,208	1,010,792	0	0	0	0	0	0	0	1,500,000
	102173	PRESTON WTP HS PUMP ROOM SWITCHGEAR	12,819,000	0	12,819,000	900,000	600,000	4,527,600	6,791,400	0	0	0	0	0	0	0	12,819,000
		TOTAL - 1050	**58,839,159**	**7,832,574**	**51,006,585**	**17,929,721**	**11,152,000**	**9,762,527**	**10,662,337**	**1,500,000**	**0**	**0**	**0**	**0**	**0**	**0**	**51,006,585**
1051	101577	ORR WTP - 48" FINISHED WATER LINE (AREA M)	64,218,739	247,935	63,970,804	0	2,521,160	2,790,046	10,818,804	24,902,747	22,938,047	0	0	0	0	0	63,970,804
	101579	ORR WTP - PUMPING UNIT No. 6 HIGH SERVICE PUMP - EAST PUMP ROOM	11,161,990	1,896,826	9,265,164	5,765,164	2,000,000	1,500,000	0	0	0	0	0	0	0	0	9,265,164
	101694	ORR WTP - SWITCHGEAR BUILDING AND DUCT BANK W830 PHASE 1 AND PHASE 2	14,310,516	13,441,087	869,429	803,929	65,500	0	0	0	0	0	0	0	0	0	869,429
	101882	4 LIME SLAKERS FOR ALEXANDER ORR, JR. WTP	18,103,746	381,746	17,722,000	300,000	400,000	6,808,800	10,213,200	0	0	0	0	0	0	0	17,722,000
	101883	ALEXANDER ORR, JR. LIME PLANT REHABILITATION	846,054	345,427	500,627	500,627	0	0	0	0	0	0	0	0	0	0	500,627
	101945	HIGH SERVICE PUMP AND MOTOR IMPROVEMENTS WEST ROOM - VFD	11,256,345	0	11,256,345	700,000	300,000	4,102,538	6,153,807	0	0	0	0	0	0	0	11,256,345

Miami-Dade Water and Sewer Department
PROPOSED 2020-2029 CAPITAL BUDGET AND MULTI-YEAR CAPITAL PLAN
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Version 5 - Adopted MYCIP FY20-26 - After OMB Adjustments
Active and Future projects

Proj	Sub-Project		Current Bond/Fund Allocation	Expenditures As of 9/30//2019	Remaining Bond/Fund Allocation	PROJECTIONS 2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026	2026-2027	2027-2028	2028-2029	Future	Total
	101946	HYDROTREATOR DRIVES ASSEMBLES AND MOTORS	1,500,000	584,413	915,587	915,587	0	0	0	0	0	0	0	0	0	0	915,587
	102107	HYPOCHLORITE FEED/STORAGE AT ORR WTP	7,054,655	127,655	6,927,000	500,000	300,000	2,450,800	3,676,200	0	0	0	0	0	0	0	6,927,000
	102167	A. ORR WTP LIME KILN SWITCH GEAR BUILDING AND FEEDERS	8,400,000	390,903	8,009,097	5,755,284	2,253,813	0	0	0	0	0	0	0	0	0	8,009,097
	102169	A. ORR WTP PUMP ROOM FOR SOFTENER CLUSTERS 1-8 AND 11-14	700,000	330,042	369,958	369,958	0	0	0	0	0	0	0	0	0	0	369,958
	102175	ALEXANDER ORR WATER TESTING LABORATORY	10,858,453	304,694	10,553,759	2,972,710	4,452,992	3,128,057	0	0	0	0	0	0	0	0	10,553,759
		TOTAL - 1051	**148,410,498**	**18,050,728**	**130,359,770**	**18,583,259**	**12,293,465**	**20,780,241**	**30,862,011**	**24,902,747**	**22,938,047**	**0**	**0**	**0**	**0**	**0**	**130,359,770**
1053	102116	20-INCH WATER MAIN - BISCAYNE BLVD - AREA L	1,006,056	59,931	946,125	0	0	0	8,138	551,494	386,493	0	0	0	0	0	946,125
	102197	PORT OF MIAMI WATER SUPPLY LINE	29,311,465	21,957,974	7,353,491	5,000,000	2,353,491	0	0	0	0	0	0	0	0	0	7,353,491
	102227	INSTALL OF 54-INCH WM ALONG RED ROAD (W 4TH AVE), FROM W 21ST ST TO W 53RD ST	42,599,093	580,956	42,018,137	445,000	1,183,515	5,246,219	7,143,403	14,000,000	9,000,000	5,000,000	0	0	0	0	42,018,137
	103004	REPLACEMENT OF 6,000 LF OF CORRODED 8", 12", 16" WM ALONG NE 36 CT / TURNBERRY WAY FROM WILLIAM LEHMAN	2,845,528	78,708	2,766,820	350,000	751,000	1,665,820	0	0	0	0	0	0	0	0	2,766,820
		TOTAL - 1053	**75,762,142**	**22,677,569**	**53,084,573**	**5,795,000**	**4,288,006**	**6,912,039**	**7,151,541**	**14,551,494**	**9,386,493**	**5,000,000**	**0**	**0**	**0**	**0**	**53,084,573**
1054	101441	54" REPLACEMENT OF LOW PRESSURE WATER MAIN IN NW 62 ST (NW 37 AVE - 10 AVE)	10,710,779	265,636	10,445,143	0	0	254,069	699,823	1,000,000	4,219,985	4,271,266	0	0	0	0	10,445,143
		TOTAL - 1054	**10,710,779**	**265,636**	**10,445,143**	**0**	**0**	**254,069**	**699,823**	**1,000,000**	**4,219,985**	**4,271,266**	**0**	**0**	**0**	**0**	**10,445,143**
1055	102016	VARIOUS WATER TRANSMISSION MAINS (20 AND 24 INCHES)	5,163,420	0	5,163,420	450,000	829,328	3,735,428	148,664	0	0	0	0	0	0	0	5,163,420
		TOTAL - 1055	**5,163,420**	**0**	**5,163,420**	**450,000**	**829,328**	**3,735,428**	**148,664**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5,163,420**
1056	101474	SPECIAL CONSTRUCTION - WATER IMPROVEMENTS - LOCKER ROOMS	4,057,774	557,774	3,500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	0	0	0	0	3,500,000
		TOTAL - 1056	**4,057,774**	**557,774**	**3,500,000**	**500,000**	**500,000**	**500,000**	**500,000**	**500,000**	**500,000**	**500,000**	**0**	**0**	**0**	**0**	**3,500,000**

Miami-Dade Water and Sewer Department
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Active and Future projects

Proj	Sub-Project		Current Bond/Fund Allocation	Expenditures As of 9/30//2019	Remaining Bond/Fund Allocation	PROJECTIONS 2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026	2026-2027	2027-2028	2028-2029	Future	Total
1059	101084	MIAMI SERVICE FACILITY (PHASE 1)	1,064,685	0	1,064,685	0	0	0	0	0	0	0	0	1,064,685	0	0	1,064,685
	101505	SOUTH MAINTENANCE CENTER	23,721,660	395,575	23,326,085	0	0	0	0	0	0	0	0	23,326,085	0	0	23,326,085
	101507	NORTH MAINTENANCE CENTER	10,116,520	0	10,116,520	0	0	0	0	0	0	0	250,000	9,866,520	0	0	10,116,520
	101547	MIAMI SERVICE FACILITY (PHASE 2)	12,210,998	0	12,210,998	0	0	0	0	0	0	0	9,281,747	2,929,251	0	0	12,210,998
	101888	MIAMI GARDENS (CAROL CITY YARD) - MODULAR / STEEL BUILDING	1,300,000	0	1,300,000	0	0	0	0	0	0	0	135,000	1,165,000	0	0	1,300,000
		TOTAL - 1059	**48,413,863**	**395,575**	**48,018,288**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**9,666,747**	**38,351,541**	**0**	**0**	**48,018,288**
1060	100786	WATER DISTRIBUTION SYSTEM EXTENSION	55,368,190	8,776,040	46,592,150	3,432,043	9,160,107	9,000,000	5,000,000	5,000,000	5,000,000	5,000,000	5,000,000	0	0	0	46,592,150
	101734	WATER DISTRIBUTION SYSTEM EXTENSION FOR JPA"s	70,628,952	33,415,887	37,213,065	12,530,198	3,350,944	7,035,279	6,296,644	2,000,000	2,000,000	2,500,000	1,500,000	0	0	0	37,213,065
	102111	12/16 INCH WATER MAINS IN S. MIAMI-DADE AREA E	4,862,026	0	4,862,026	0	2,862,026	2,000,000	0	0	0	0	0	0	0	0	4,862,026
	102140	FURNISH AND INSTALL 48-INCH WATER MAIN IN SW 117 AVE, SW 72 ST, SW 127 AVE FROM SW 68 ST. TO SW 152 ST. (AREA N)	49,153,848	20,896,793	28,257,055	15,200,000	7,000,000	5,057,055	1,000,000	0	0	0	0	0	0	0	28,257,055
		TOTAL - 1060	**180,013,016**	**63,088,721**	**116,924,295**	**31,162,241**	**22,373,077**	**23,092,334**	**12,296,644**	**7,000,000**	**7,000,000**	**7,500,000**	**6,500,000**	**0**	**0**	**0**	**116,924,296**
1063	100789	FIRE HYDRANT INSTALLATION AND RELATED SYSTEM BETTERMENTS	22,634,907	2,634,907	20,000,000	2,500,000	2,500,000	2,500,000	2,500,000	2,500,000	2,500,000	2,500,000	2,500,000	0	0	0	20,000,000
		TOTAL - 1063	**22,634,907**	**2,634,907**	**20,000,000**	**2,500,000**	**2,500,000**	**2,500,000**	**2,500,000**	**2,500,000**	**2,500,000**	**2,500,000**	**2,500,000**	**0**	**0**	**0**	**20,000,000**
1064	100790	MISCELLANEOUS TOOLS AND EQUIPMENT	22,091,862	6,275,115	15,816,747	2,273,622	1,543,125	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	0	0	0	15,816,747
	101724	HEAVY CONSTRUCTION EQUIPMENT	39,197,329	9,169,885	30,027,444	4,331,038	4,196,406	4,000,000	3,500,000	3,500,000	3,500,000	3,500,000	3,500,000	0	0	0	30,027,444
	101725	VEHICLES/TRANSPORTATION EQUIPMENT	27,297,582	8,975,995	18,321,587	2,194,478	1,127,109	2,500,000	2,500,000	2,500,000	2,500,000	2,500,000	2,500,000	0	0	0	18,321,587
	102027	AUTOMATED METER READING (AMR)	120,288,814	288,814	120,000,000	1,500,000	2,500,000	3,500,000	3,500,000	3,500,000	3,500,000	3,500,000	3,500,000	95,000,000	0	0	120,000,000
		TOTAL - 1064	**208,875,587**	**24,709,809**	**184,165,778**	**10,299,138**	**9,366,640**	**12,000,000**	**11,500,000**	**11,500,000**	**11,500,000**	**11,500,000**	**11,500,000**	**95,000,000**	**0**	**0**	**184,165,778**
1066	100792	WATER PLANTS REHABILITATION	53,562,683	9,334,440	44,228,243	17,930,743	9,297,500	9,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	0	0	0	44,228,243
	101714	SECURITY PROJECTS	3,517,220	742,803	2,774,417	0	545,104	229,313	1,000,000	1,000,000	0	0	0	0	0	0	2,774,417
		TOTAL - 1066	**57,079,903**	**10,077,243**	**47,002,660**	**17,930,743**	**9,842,604**	**9,729,313**	**2,500,000**	**2,500,000**	**1,500,000**	**1,500,000**	**1,500,000**	**0**	**0**	**0**	**47,002,660**

Miami-Dade Water and Sewer Department
PROPOSED 2020-2029 CAPITAL BUDGET AND MULTI-YEAR CAPITAL PLAN
Projection by Project Sub-Project by Year - Water
As of: 9/30/2019

Version 5 - Adopted MYCIP FY20-26 - After OMB Adjustments
Active and Future projects

Proj	Sub-Project		Current Bond/Fund Allocation	Expenditures As of 9/30//2019	Remaining Bond/Fund Allocation	PROJECTIONS 2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026	2026-2027	2027-2028	2028-2029	Future	Total
1067	100793	WATER SYSTEM UPGRADES	177,243,086	14,671,337	162,571,749	18,185,500	23,494,750	20,891,499	20,000,000	20,000,000	20,000,000	20,000,000	20,000,000	0	0	0	162,571,749
		TOTAL - 1067	**177,243,086**	**14,671,337**	**162,571,749**	**18,185,500**	**23,494,750**	**20,891,499**	**20,000,000**	**20,000,000**	**20,000,000**	**20,000,000**	**20,000,000**	**0**	**0**	**0**	**162,571,749**
1070	101470	WATER TREATMENT PLANTS AND WELLFIELDS - SCADA SYSTEM	2,246,784	817,709	1,429,075	400,000	1,029,075	0	0	0	0	0	0	0	0	0	1,429,075
		TOTAL - 1070	**2,246,784**	**817,709**	**1,429,075**	**400,000**	**1,029,075**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1,429,075**
1075	101891	NEW NWWF HIGH SERVICE PUMP STATION	43,250,000	0	43,250,000	0	0	0	0	0	0	0	43,250,000	0	0	0	43,250,000
	102135	MIAMI SPRINGS WELLFIELD REHABILITATION - PHASE 1-3	36,180,996	4,175,742	32,005,254	5,218,254	6,487,000	8,200,000	7,100,000	3,500,000	1,500,000	0	0	0	0	0	32,005,254
	102176	MONITORING WELL INSTALLATION	1,164,456	264,456	900,000	350,000	275,000	275,000	0	0	0	0	0	0	0	0	900,000
	103026	C51- Reservoir 15 MGD Alternative Water Supply	69,000,000	0	69,000,000	0	0	0	69,000,000	0	0	0	0	0	0	0	69,000,000
		TOTAL - 1075	**149,595,452**	**4,440,198**	**145,155,254**	**5,568,254**	**6,762,000**	**8,475,000**	**76,100,000**	**3,500,000**	**1,500,000**	**0**	**43,250,000**	**0**	**0**	**0**	**145,155,254**
1077	102021	SOUTH MIAMI HEIGHTS - FA WELLS AND HYDROGEOLOGIC TEST PLAN	48,627,857	28,325,074	20,302,783	5,827,700	1,100,000	1,075,083	1,000,000	1,000,000	10,300,000	0	0	0	0	0	20,302,783
		TOTAL - 1077	**48,627,857**	**28,325,074**	**20,302,783**	**5,827,700**	**1,100,000**	**1,075,083**	**1,000,000**	**1,000,000**	**10,300,000**	**0**	**0**	**0**	**0**	**0**	**20,302,783**
1078	101368	TELEMETERING SYSTEM - WATER	8,381,144	1,004,767	7,376,377	141,000	898,300	1,337,077	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	0	0	0	7,376,377
		TOTAL - 1078	**8,381,144**	**1,004,767**	**7,376,377**	**141,000**	**898,300**	**1,337,077**	**1,000,000**	**1,000,000**	**1,000,000**	**1,000,000**	**1,000,000**	**0**	**0**	**0**	**7,376,377**
1080	101879	INSTALLATION OF 36 INCH DI WATER MAIN IN NW 87TH AVE. FROM NW 170 ST. TO 102 AVE.	5,818,628	4,630,186	1,188,442	1,188,442	0	0	0	0	0	0	0	0	0	0	1,188,442
	102182	CONSTRUCTION OF 4 ADDITIONAL WELLS FOR HIALEAH RO WTP	2,446,877	0	2,446,877	646,877	1,000,000	800,000	0	0	0	0	0	0	0	0	2,446,877
		TOTAL - 1080	**8,265,505**	**4,630,186**	**3,635,319**	**1,835,319**	**1,000,000**	**800,000**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3,635,319**
1081	101966	INSTALLATION OF 12-INCH DIWM ON EAST DRIVE FROM NW 36 ST. TO LABARON DR.	13,910,870	9,358,024	4,552,846	3,952,846	600,000	0	0	0	0	0	0	0	0	0	4,552,846
		TOTAL - 1081	**13,910,870**	**9,358,024**	**4,552,846**	**3,952,846**	**600,000**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4,552,846**
1082	101969	WATER - PIPES AND INFRASTRUCTURE PROJECTS	84,135,668	54,135,668	30,000,000	9,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	0	0	0	30,000,000
	102178	36-INCH WATER MAIN NW 106 STREET	12,573,467	877,467	11,696,000	2,760,000	7,150,000	1,786,000	0	0	0	0	0	0	0	0	11,696,000

Proj	Sub-Project		Current Bond/Fund Allocation	Expenditures As of 9/30//2019	Remaining Bond/Fund Allocation	PROJECTIONS 2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026	2026-2027	2027-2028	2028-2029	Future	Total
	102179	36-INCH WATER MAIN NW 135 STREET	15,486,255	785,732	14,700,523	6,739,001	7,961,522	0	0	0	0	0	0	0	0	0	14,700,523
		TOTAL - 1082	**112,195,390**	**55,798,867**	**56,396,523**	**18,499,001**	**18,111,522**	**4,786,000**	**3,000,000**	**3,000,000**	**3,000,000**	**3,000,000**	**3,000,000**	**0**	**0**	**0**	**56,396,523**
1084	101678	SMALL DIAMETER WATER MAINS ENHANCEMENTS PROGRAM	25,813,824	6,046,437	19,767,387	3,113,061	4,467,399	2,664,129	2,000,000	1,757,798	1,500,000	3,200,000	1,065,000	0	0	0	19,767,387
	102136	REPLACEMENT OF 82,612 LF OF WATER MAINS IN SHENANDOAH AREA - PHASE A	15,482,652	12,502,255	2,980,397	2,980,397	0	0	0	0	0	0	0	0	0	0	2,980,397
	102137	SOUTH MIAMI HEIGHTS AREA WATER MAIN REPLACEMENT & SERVICE CONVERSIONS PROJECT - PHASE A	34,129,397	28,355,474	5,773,923	5,773,923	0	0	0	0	0	0	0	0	0	0	5,773,923
	102139	INSTALLATION OF 8-INCH DUCTILE IRON WATER MAIN PHASE I IN SW 147th AVE AND SW 157th AVE BETWEEN SW 288th ST & SW 297th ST	5,473,488	1,962,350	3,511,138	3,511,138	0	0	0	0	0	0	0	0	0	0	3,511,138
	102141	REPLACEMENT OF 82,612 LF OF WATER MAINS IN SHENANDOAH AREA - PHASE B	15,955,062	10,001,710	5,953,352	5,953,352	0	0	0	0	0	0	0	0	0	0	5,953,352
	102142	SOUTH MIAMI HEIGHTS AREA WATER MAIN REPLACEMENT & SERVICE CONVERSIONS PROJECT - PHASE B	37,899,267	20,285,975	17,613,292	4,500,000	1,000,000	6,000,000	6,113,292	0	0	0	0	0	0	0	17,613,292
	102143	REPLACE UNDERSIZED WATER MAINS DOUGHNUT HOLE	12,393,516	1,758,755	10,634,761	10,100,000	534,761	0	0	0	0	0	0	0	0	0	10,634,761
	102144	WATER COMMERCIAL CORRIDORS ECONOMIC DEVELOPMENT - REPLACEMENT OF SMALL DIAMETER PIPE PHASE 1	4,000,000	0	4,000,000	0	0	0	0	1,000,000	1,000,000	1,000,000	1,000,000	0	0	0	4,000,000
	102193	WATER MASTER PLAN	3,886,527	586,527	3,300,000	104,343	793,007	1,085,168	430,955	886,527	0	0	0	0	0	0	3,300,000
	102198	INSTALLATION OF 8-INCH DUCTILE IRON WATER MAIN PHASE II IN SW 147th AVE AND SW 152nd AVE BETWEEN SW 288th ST & SW 296th ST	2,959,573	0	2,959,573	2,959,573	0	0	0	0	0	0	0	0	0	0	2,959,573

Proj	Sub-Project	Current Bond/Fund Allocation	Expenditures As of 9/30//2019	Remaining Bond/Fund Allocation	PROJECTIONS 2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026	2026-2027	2027-2028	2028-2029	Future	Total
102243	WATER COMMERCIAL CORRIDORS ECONOMIC DEVELOPMENT - PHASE 1	96,115,934	945,146	95,170,788	5,308,057	4,163,823	7,676,395	12,814,030	17,107,714	15,000,000	13,500,000	12,600,000	7,000,769	0	0	95,170,788
102244	LEAK DETECTION PROGRAM	40,000,000	573,425	39,426,575	5,000,000	5,000,000	4,426,575	5,000,000	5,000,000	5,000,000	5,000,000	5,000,000	0	0	0	39,426,575
103013	CONSUMER LINE RELOCATION PROJECTS	15,000,000	5,000,000	10,000,000	2,000,000	2,500,000	5,000,000	500,000	0	0	0	0	0	0	0	10,000,000
	TOTAL - 1084	**309,109,240**	**88,018,054**	**221,091,186**	**51,303,844**	**18,458,990**	**26,852,267**	**26,858,277**	**25,752,039**	**22,500,000**	**22,700,000**	**19,665,000**	**7,000,769**	**0**	**0**	**221,091,186**
	GRAND TOTAL	**1,649,536,376**	**357,354,751**	**1,292,181,625**	**210,863,566**	**144,599,757**	**153,482,877**	**206,779,297**	**120,206,280**	**117,844,525**	**79,471,266**	**118,581,747**	**140,352,310**	**0**	**0**	**1,292,181,625**

Miami-Dade Water and Sewer Department
PROPOSED 2020-2029 CAPITAL BUDGET AND MULTI-YEAR CAPITAL PLAN
Projection by Project Sub-Project by Year - Wastewater
As of: 9/30/2019

Version 5 - Adopted MYCIP FY20-26 - After OMB Adjustments
Active and Future projects

Proj	Sub-Project		Current Bond/Fund Allocation	Expenditures As of 9/30//2019	Remaining Bond/Fund Allocation	PROJECTIONS 2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026	2026-2027	2027-2028	2028-2029	Future	Total
1002	101638	NDWWTP - INJECTION WELLS PS UPGRADE	6,273,826	6,007,607	266,219	266,219	0	0	0	0	0	0	0	0	0	0	266,219
	101947	NDWWTP FA MONITORING WELLS TO MEET FDEP REQ.	8,957,308	16,890	8,940,418	1,504,579	1,500,000	1,500,000	1,500,000	1,135,838	1,800,001	0	0	0	0	0	8,940,418
	102220	NT-3C - NDWWTP - EDB # 3 (Replacement Electrical Bldg.)(WIFIA 2)	120,584,269	875,190	119,709,079	1,393,542	3,555,420	913,066	12,551,759	33,715,622	29,308,677	25,270,993	13,000,000	0	0	0	119,709,079
	102221	NDWWTP - COMPLETE REPLACEMENT OF 4160 VOLT AND 480 VOLT SWITCHGEAR AND MCCs. REPLACE OUTDATED INEFFICIENT MAGNETIC DRIVES WITH VFDs NDWWTP	22,219,188	0	22,219,188	0	1,219,188	10,000,000	11,000,000	0	0	0	0	0	0	0	22,219,188
		TOTAL - 1002	**158,034,591**	**6,899,688**	**151,134,903**	**3,164,340**	**6,274,608**	**12,413,066**	**25,051,759**	**34,851,460**	**31,108,678**	**25,270,993**	**13,000,000**	**0**	**0**	**0**	**151,134,904**
1003	101991	CDWWTP STRUVITE CONTROL PROCESS IMPLEMENTATION	8,500,000	0	8,500,000	0	0	0	0	0	0	1,985,641	1,385,028	5,129,331	0	0	8,500,000
	102205	2.21.02 PS 1 SEAWALL AND HARDENING PROJECT (FEMA)	14,070,727	130,270	13,940,457	636,319	993,868	2,476,396	3,326,668	2,500,000	4,007,206	0	0	0	0	0	13,940,457
	102206	CD2.22.02 - PS 2 BEAUTIFICATION AND HARDENING CITY OF MIAMI (FEMA)	5,330,100	0	5,330,100	718,868	605,630	1,836,234	1,000,000	987,714	181,654	0	0	0	0	0	5,330,100
	102223	CDWWTP - STORM HARDENING OF NEW HYPOCHLORITE BUILDING. MWH PLANS ALREADY AT 90% READY FOR PERMITTING	6,000,000	0	6,000,000	250,000	2,500,000	1,550,000	1,000,000	700,000	0	0	0	0	0	0	6,000,000
	102224	CDWWTP - ENCLOSE AND STORM HARDEN OUTDOOR ELECTRICAL SUBSTATIONS 19 AND 20, 19A AND 20A	500,000	0	500,000	0	0	0	0	0	500,000	0	0	0	0	0	500,000
	103016	CT-3C.2 - CDWWTP EDB #3 (REPLACEMENT) (WIFIA 2)	151,492,400	0	151,492,400	3,118,892	2,221,336	20,186,913	57,354,017	17,431,722	14,131,921	20,283,756	16,763,843	0	0	0	151,492,400
	103024	CT-4 - CDWWTP - New Materials Management Building	16,763,813	0	16,763,813	0	300,000	572,000	5,500,000	7,800,000	2,591,813	0	0	0	0	0	16,763,813
		TOTAL - 1003	**202,657,040**	**130,270**	**202,526,770**	**4,724,079**	**6,620,834**	**26,621,543**	**68,180,685**	**29,419,436**	**21,412,594**	**22,269,397**	**18,148,871**	**5,129,331**	**0**	**0**	**202,526,770**
1006	102102	SDWWTP FA MONITORING WELL REPLACEMENT	8,777,982	731,424	8,046,558	606,267	4,966,350	2,473,941	0	0	0	0	0	0	0	0	8,046,558
		TOTAL - 1006	**8,777,982**	**731,424**	**8,046,558**	**606,267**	**4,966,350**	**2,473,941**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**8,046,558**

Proj	Sub-Project		Current Bond/Fund Allocation	Expenditures As of 9/30//2019	Remaining Bond/Fund Allocation	PROJECTIONS 2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026	2026-2027	2027-2028	2028-2029	Future	Total
1007	101994	SDWWTP STRUVITE CONTROL PROCESS IMPLEMENTATION - 8870	7,500,000	0	7,500,000	0	0	0	0	0	0	1,056,765	2,413,235	4,030,000	0	0	7,500,000
	101995	SDWWTP SUSTAINABILITY CARBON DIOXIDE SEQUESTERING WITH EFFLUENT REUSE - 7880 - (CPCS)	21,677,688	0	21,677,688	0	0	0	0	0	0	700,000	16,947,688	4,030,000	0	0	21,677,688
	102184	SDWWTP FOG RECOVERY STATION	30,243,400	571,400	29,672,000	500,661	1,500,000	6,301,402	8,301,402	11,068,535	2,000,000	0	0	0	0	0	29,672,000
	102218	SDWWTP - RECONFIGURE 13,200 VOLT DUAL FEEDER SYSTEM TO SUBSTATION 33 AND 34, 31 AND 32, 31A AND 32A, 21 AND 22, 27AND 28, 23 AND 24, 25 AND 26	5,000,000	0	5,000,000	0	0	0	0	0	0	0	0	5,000,000	0	0	5,000,000
		TOTAL - 1007	**64,421,088**	**571,400**	**63,849,688**	**500,661**	**1,500,000**	**6,301,402**	**8,301,402**	**11,068,535**	**2,000,000**	**1,756,765**	**19,360,923**	**13,060,000**	**0**	**0**	**63,849,688**
1008	101768	WASD SERVICE AREA WEST OF I-75 AND NORTH OF NW 170 ST. (ADM AREA)	15,227,620	556,707	14,670,913	750,000	2,591,048	6,032,203	2,070,042	750,000	2,477,620	0	0	0	0	0	14,670,913
	101924	INSTALLATION OF A REDUNDANT SEWER FM FROM WEST SIDE OF INTERCOASTAL WATERWAY AT NE 163 ST TO NDWWTP	15,000,000	0	15,000,000	2,500,000	3,500,000	4,250,000	3,750,000	1,000,000	0	0	0	0	0	0	15,000,000
	101985	LEHAM CAUSEWAY	21,533,315	0	21,533,315	650,000	3,259,989	2,901,660	4,221,666	4,500,000	4,000,000	2,000,000	0	0	0	0	21,533,315
	102065	24-INCH FORCE MAIN EXTENSION IN NW 167 ST FROM NW 58 AVE TO NW 49 AVE THEN SOUTH TO NW 156 ST - (CPCS)	6,120,000	0	6,120,000	0	0	0	0	0	0	0	6,120,000	0	0	0	6,120,000
	102072	NL-1A TO PHASE 1 & 2: 60" FM FROM BISCAYNE BLVD. TO N. MIAMI AVE. Phase 1 & 2	77,571,663	1,774,629	75,797,034	247,373	5,700,000	9,821,271	15,000,000	17,000,000	15,000,000	9,500,000	2,449,590	1,078,800	0	0	75,797,034
	102153	60-INCH WEST MIAMI-DADE FORCE MAIN - NORTH - (CPCS)	28,307,403	0	28,307,403	0	0	0	0	0	0	0	28,307,403	0	0	0	28,307,403
	102245	OJUS SANITARY SEWER WITHIN THE OJUS URBAN AREA DISTRICT (DIRECTOR)	10,594,000	0	10,594,000	354,902	2,237,802	4,500,000	3,501,296	0	0	0	0	0	0	0	10,594,000
	103018	REPLACE 18" DIP FM FROM PS 499 NORTH ON ISLAND BLVD TO PS 471	8,690,718	0	8,690,718	1,924,929	4,825,789	1,940,000	0	0	0	0	0	0	0	0	8,690,718
		TOTAL - 1008	**183,044,719**	**2,331,336**	**180,713,383**	**6,427,204**	**22,114,628**	**29,445,134**	**28,543,004**	**23,250,000**	**21,477,620**	**11,500,000**	**36,876,993**	**1,078,800**	**0**	**0**	**180,713,383**
1009	102200	BISCAYNE BASIN PROJECTS RELATED TO CL-1	26,165,092	16,763,282	9,401,810	2,000,000	2,900,000	3,501,810	1,000,000	0	0	0	0	0	0	0	9,401,810

Proj	Sub-Project		Current Bond/Fund Allocation	Expenditures As of 9/30//2019	Remaining Bond/Fund Allocation	PROJECTIONS 2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026	2026-2027	2027-2028	2028-2029	Future	Total
		TOTAL - 1009	**26,165,092**	**16,763,282**	**9,401,810**	**2,000,000**	**2,900,000**	**3,501,810**	**1,000,000**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**9,401,810**
1010	102208	CD12241 - 4.05 (2) REHAB OF 2.5 MILES OF 54-INCH IN PCCP FM	20,520,688	0	20,520,688	50,000	100,000	2,299,302	7,500,000	10,571,386	0	0	0	0	0	0	20,520,688
		TOTAL - 1010	**20,520,688**	**0**	**20,520,688**	**50,000**	**100,000**	**2,299,302**	**7,500,000**	**10,571,386**	**0**	**0**	**0**	**0**	**0**	**0**	**20,520,688**
1011	100050	REHABILITATION OF SEWER MAINS DUE TO I/I - SECTIONAL LINING	16,563,110	3,563,110	13,000,000	1,800,000	1,200,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	0	0	0	0	13,000,000
	100890	REHABILITATION OF SEWER MAINS DUE TO I/I - CURED-IN-PLACE LINING	23,650,000	0	23,650,000	3,450,000	3,500,000	3,500,000	3,500,000	3,500,000	3,000,000	3,200,000	0	0	0	0	23,650,000
	101865	PEAK FLOW MANAGEMENT - PUMP STATION OPTIMIZATION PLAN (PSOP)	288,882	268,882	20,000	20,000	0	0	0	0	0	0	0	0	0	0	20,000
	102246	COUNTYWIDE CAPACITY AND FLOW REDUCTION (DIRECTOR)	191,164,026	0	191,164,026	1,500,000	2,000,000	3,000,000	4,000,000	4,000,000	4,000,000	4,000,000	4,000,000	164,664,026	0	0	191,164,026
	102800	Rehabilitation of Sewer Mains - Dig and Replace, (Previously called Collection System I/I Repairs)	68,375,010	46,375,010	22,000,000	2,900,000	4,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,100,000	0	0	0	0	22,000,000
	103019	Rehabilitation of Sewer Mains - CIPP for WPO	8,400,000	0	8,400,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	0	0	0	0	8,400,000
	103020	Rehabilitation of Sewer Mains - Basin 1 - All Technologies	6,900,000	0	6,900,000	0	0	1,500,000	1,800,000	1,800,000	1,800,000	0	0	0	0	0	6,900,000
		TOTAL - 1011	**315,341,028**	**50,207,002**	**265,134,026**	**10,870,000**	**11,900,000**	**14,200,000**	**15,500,000**	**15,500,000**	**15,000,000**	**13,500,000**	**4,000,000**	**164,664,026**	**0**	**0**	**265,134,026**
1012	100055	SPECIAL CONSTRUCTION - SANITARY SEWER IMPROVEMENTS	3,542,927	42,927	3,500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	0	0	0	0	3,500,000
	102228	DESIGN BUILD REPLACEMENT OF GRAVITY MAIN IN SHENANDOAH AREA - PHASE A	7,102,680	5,516,978	1,585,702	400,000	1,185,702	0	0	0	0	0	0	0	0	0	1,585,702
		TOTAL - 1012	**10,645,607**	**5,559,905**	**5,085,702**	**900,000**	**1,685,702**	**500,000**	**500,000**	**500,000**	**500,000**	**500,000**	**0**	**0**	**0**	**0**	**5,085,702**
1013	101108	MIAMI SERVICE FACILITY - PHASE 2	21,537,853	164,790	21,373,063	0	0	0	0	0	0	0	1,575,000	19,798,063	0	0	21,373,063
	101461	NORTH MAINTENANCE CENTER	12,174,912	0	12,174,912	0	0	0	0	0	0	0	750,000	11,424,912	0	0	12,174,912
	101506	SOUTH MAINTENANCE CENTER	23,671,471	32,010	23,639,461	0	0	0	0	0	0	0	23,639,461	0	0	0	23,639,461
	101653	11TH STREET DISTRIBUTION FACILITY RENOVATION	3,599,510	0	3,599,510	0	0	0	0	0	0	0	0	3,599,510	0	0	3,599,510
	101654	WESTWOOD LAKES FACILITY ELEVATOR RENOVATION	1,500,000	0	1,500,000	0	0	0	0	0	0	0	0	1,500,000	0	0	1,500,000

Proj	Sub-Project		Current Bond/Fund Allocation	Expenditures As of 9/30//2019	Remaining Bond/Fund Allocation	PROJECTIONS 2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026	2026-2027	2027-2028	2028-2029	Future	Total
	101999	WEST MAINTENANCE CENTER	41,000,000	0	41,000,000	0	0	0	0	0	0	0	41,000,000	0	0	0	41,000,000
	102000	GENERAL MAINTENANCE LAND ACQUISITION - SEWER	3,500,000	0	3,500,000	0	0	0	0	0	0	0	750,000	2,750,000	0	0	3,500,000
	102001	LEJEUNE ROAD OFFICE EXPANSION - PHASE 2	5,000,000	0	5,000,000	0	0	0	0	0	0	0	850,000	4,150,000	0	0	5,000,000
	102030	EMERGENCY PREPAREDNESS/RECOVERY PROJECTS - (CPCS)	9,100,616	0	9,100,616	250,000	300,000	300,000	2,500,000	3,000,000	2,750,616	0	0	0	0	0	9,100,616
	102052	MAINTENANCE & STORAGE BUILDING FOR THE PUMP STATION DIVISION	2,698,547	0	2,698,547	0	0	0	0	0	0	0	350,000	2,348,547	0	0	2,698,547
	103005	SOUTH MIAMI HEIGHTS TRAILER INSTALLATION AND SITE DEVELOPMENT	4,565,977	388,443	4,177,534	2,568,288	1,609,246	0	0	0	0	0	0	0	0	0	4,177,534
		TOTAL - 1013	**128,348,886**	**585,243**	**127,763,643**	**2,818,288**	**1,909,246**	**300,000**	**2,500,000**	**3,000,000**	**2,750,616**	**0**	**68,914,461**	**45,571,032**	**0**	**0**	**127,763,643**
1015	101454	PUMP STATION IMPROVEMENT PROGRAM	155,797,342	87,438,577	68,358,765	18,136,525	13,983,316	5,862,992	569,162	0	0	0	29,806,770	0	0	0	68,358,765
		TOTAL - 1015	**155,797,342**	**87,438,577**	**68,358,765**	**18,136,525**	**13,983,316**	**5,862,992**	**569,162**	**0**	**0**	**0**	**29,806,770**	**0**	**0**	**0**	**68,358,765**
1018	101774	Force Main in Doral 36-Inch Diameter Sanitary Sewer FM: in 107 Avenue - from NW 7 St. to NW 25 Street	10,030,690	395,389	9,635,301	3,245,290	4,373,154	2,016,857	0	0	0	0	0	0	0	0	9,635,301
	102194	WASTEWATER MASTER PLAN	5,598,900	0	5,598,900	0	0	0	0	0	0	0	5,598,900	0	0	0	5,598,900
	103023	SDWWTP STORMWATER MASTER PLAN	3,730,000	0	3,730,000	0	0	600,000	1,000,000	2,130,000	0	0	0	0	0	0	3,730,000
		TOTAL - 1018	**19,359,590**	**395,389**	**18,964,201**	**3,245,290**	**4,373,154**	**2,616,857**	**1,000,000**	**2,130,000**	**0**	**0**	**5,598,900**	**0**	**0**	**0**	**18,964,201**
1019	100877	SANITARY SEWER SYSTEM EXTENSION	43,082,509	8,187,052	34,895,457	10,157,612	4,237,845	3,000,000	3,500,000	3,500,000	3,500,000	3,500,000	3,500,000	0	0	0	34,895,457
	101733	SANITARY SEWER SYSTEM EXTENSION FOR JPA"s	5,242,480	2,932,480	2,310,000	0	2,310,000	0	0	0	0	0	0	0	0	0	2,310,000
		TOTAL - 1019	**48,324,989**	**11,119,532**	**37,205,457**	**10,157,612**	**6,547,845**	**3,000,000**	**3,500,000**	**3,500,000**	**3,500,000**	**3,500,000**	**3,500,000**	**0**	**0**	**0**	**37,205,457**
1021	102164	REPLACEMENT OF CONE VALVES AT PS# 1310	4,048,776	1,586,262	2,462,514	96,347	966,167	750,000	650,000	0	0	0	0	0	0	0	2,462,514
	102165	REPLACEMENT OF OBSOLETE GENERATORS	6,861,725	0	6,861,725	100,000	638,440	688,440	940,270	1,100,000	1,644,575	1,750,000	0	0	0	0	6,861,725

Proj	Sub-Project		Current Bond/Fund Allocation	Expenditures As of 9/30//2019	Remaining Bond/Fund Allocation	PROJECTIONS 2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026	2026-2027	2027-2028	2028-2029	Future	Total
	103021	Hardening of 10 Pump Stations (PS 54,112,300,311,348,536,683,1043,1044 , 1310) (FEMA)	16,569,604	0	16,569,604	563,862	1,475,024	2,017,679	3,212,099	4,500,000	3,400,940	1,100,000	300,000	0	0	0	16,569,604
		TOTAL - 1021	**27,480,105**	**1,586,262**	**25,893,843**	**760,209**	**3,079,631**	**3,456,119**	**4,802,369**	**5,600,000**	**5,045,515**	**2,850,000**	**300,000**	**0**	**0**	**0**	**25,893,843**
1023	100621	TELEMETERING SYSTEM - WASTEWATER	7,611,816	571,516	7,040,300	121,000	798,300	1,121,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	0	0	0	7,040,300
		TOTAL - 1023	**7,611,816**	**571,516**	**7,040,300**	**121,000**	**798,300**	**1,121,000**	**1,000,000**	**1,000,000**	**1,000,000**	**1,000,000**	**1,000,000**	**0**	**0**	**0**	**7,040,300**
1024	100622	WASTEWATER SYSTEM UPGRADES	173,550,380	16,928,130	156,622,250	22,377,000	21,745,250	22,500,000	20,000,000	20,000,000	20,000,000	15,000,000	15,000,000	0	0	0	156,622,250
		TOTAL - 1024	**173,550,380**	**16,928,130**	**156,622,250**	**22,377,000**	**21,745,250**	**22,500,000**	**20,000,000**	**20,000,000**	**20,000,000**	**15,000,000**	**15,000,000**	**0**	**0**	**0**	**156,622,250**
1025	100623	LIFT STATION STRUCTURAL MAINTENANCE & UPGRADES	32,242,238	4,148,103	28,094,135	4,453,166	2,640,969	3,500,000	3,500,000	3,500,000	3,500,000	3,500,000	3,500,000	0	0	0	28,094,135
		TOTAL - 1025	**32,242,238**	**4,148,103**	**28,094,135**	**4,453,166**	**2,640,969**	**3,500,000**	**3,500,000**	**3,500,000**	**3,500,000**	**3,500,000**	**3,500,000**	**0**	**0**	**0**	**28,094,135**
1027	100625	MISCELLANEOUS TOOLS AND EQUIPMENT	39,713,696	7,399,851	32,313,845	1,073,720	1,240,125	5,000,000	5,000,000	5,000,000	5,000,000	5,000,000	5,000,000	0	0	0	32,313,845
	101729	VEHICLES/TRANSPORTATION EQUIPMENT	65,599,177	18,273,906	47,325,271	4,315,410	3,547,776	9,462,085	6,000,000	6,000,000	6,000,000	6,000,000	6,000,000	0	0	0	47,325,271
	101730	HEAVY CONSTRUCTION EQUIPMENT	46,015,603	9,586,603	36,429,000	4,184,000	7,245,000	5,000,000	4,000,000	4,000,000	4,000,000	4,000,000	4,000,000	0	0	0	36,429,000
		TOTAL - 1027	**151,328,476**	**35,260,360**	**116,068,116**	**9,573,130**	**12,032,901**	**19,462,085**	**15,000,000**	**15,000,000**	**15,000,000**	**15,000,000**	**15,000,000**	**0**	**0**	**0**	**116,068,116**
1029	100627	WASTEWATER TREATMENT PLANTS REHABILITATION	127,254,220	29,503,869	97,750,351	14,085,072	20,493,045	18,172,234	9,000,000	9,000,000	9,000,000	9,000,000	9,000,000	0	0	0	97,750,351
	101732	SECURITY PROJECTS	92,553	92,553	0	0	0	0	0	0	0	0	0	0	0	0	0
		TOTAL - 1029	**127,346,773**	**29,596,422**	**97,750,351**	**14,085,072**	**20,493,045**	**18,172,234**	**9,000,000**	**9,000,000**	**9,000,000**	**9,000,000**	**9,000,000**	**0**	**0**	**0**	**97,750,351**
1032	101885	WWTP - VIDEO SURVEILANCE SYSTEM	4,641,916	0	4,641,916	1,481,736	2,160,180	1,000,000	0	0	0	0	0	0	0	0	4,641,916
		TOTAL - 1032	**4,641,916**	**0**	**4,641,916**	**1,481,736**	**2,160,180**	**1,000,000**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4,641,916**
1040	101867	CT-2A - CDWWTP - HLD Improvements & Filtration Pilot Test	258,019,993	1,325,029	256,694,964	0	2,679,635	6,565,088	12,970,750	50,373,884	74,873,316	46,044,041	37,188,250	26,000,000	0	0	256,694,964
	102006	NT-2C - NDWWTP - HLD Facilities	152,016,889	0	152,016,889	1,497,913	4,936,144	1,330,492	2,500,000	20,196,721	40,838,731	35,701,601	23,515,287	21,500,000	0	0	152,016,889
	102007	NE-2 - NDWWTP - Municipal Injection Wells (WIFIA 1)	69,832,044	464,266	69,367,778	441,889	15,638,604	20,229,505	13,884,121	9,173,659	7,500,000	2,500,000	0	0	0	0	69,367,778

Proj	Sub-Project		Current Bond/Fund Allocation	Expenditures As of 9/30//2019	Remaining Bond/Fund Allocation	PROJECTIONS 2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026	2026-2027	2027-2028	2028-2029	Future	Total
	102008	NE-1 - NDWWTP - Municipal Injection Well PS	83,605,072	0	83,605,072	788,827	2,607,926	1,138,204	3,500,000	10,709,702	22,170,042	19,190,371	17,500,000	6,000,000	0	0	83,605,072
	102009	CE-1 - CDWWTP - Municipal Injection Well PS	116,861,929	0	116,861,929	2,769,236	95,528	1,500,000	4,377,930	30,340,635	35,009,294	25,258,290	17,511,016	0	0	0	116,861,929
	102010	CE-2 - CDWWTP - Municipal Injection Wells (WIFIA 1)	130,616,355	1,585,676	129,030,679	17,091,146	25,968,356	24,318,142	21,080,372	18,415,910	15,156,753	7,000,000	0	0	0	0	129,030,679
	102080	NT-3 - NDWWTP - EDB # 2 (Electrical Bldg. for HLD)(WIFIA 2)	59,987,792	0	59,987,792	614,136	2,123,349	629,775	15,835	6,077,809	24,383,080	15,207,681	10,936,127	0	0	0	59,987,792
	102096	CDWWTP PUMP STATION FOR CENTRATE WELL (CE-3)	40,011,285	37,889,178	2,122,107	2,035,858	86,249	0	0	0	0	0	0	0	0	0	2,122,107
	102138	OWNERS REPRESENTATIVE SERVICES FOR OOL PROGRAM AND WASTEWATER SYSTEM	103,304,254	18,644,122	84,660,132	10,955,383	12,998,460	14,191,413	13,888,419	12,450,698	10,034,259	7,908,001	2,233,499	0	0	0	84,660,132
	102222	CT-3C.1 - CDWWTP - EDB #2 (HLD) (WIFIA 2)	152,495,703	1,003,303	151,492,400	2,118,892	3,521,366	15,758,913	22,854,017	30,231,722	46,723,734	25,283,756	5,000,000	0	0	0	151,492,400
	103006	CDWWTP - Preliminary Site Preparation (CT-2B)	12,426,784	0	12,426,784	422,828	286,710	10,059,464	1,657,782	0	0	0	0	0	0	0	12,426,784
	103007	CT-3B - CDWWTP - O2 Train and Secondary Clarifiers	152,665,428	0	152,665,428	2,279,440	1,709,580	10,121,570	22,574,472	38,189,147	37,248,269	25,542,950	15,000,000	0	0	0	152,665,428
	103014	NT-2B- NDWWTP - Site Prep & Stormwater	22,632,322	0	22,632,322	262,897	3,061,001	165,915	9,898,863	6,298,720	2,944,926	0	0	0	0	0	22,632,322
		TOTAL - 1040	**1,354,475,850**	**60,911,574**	**1,293,564,276**	**41,278,445**	**75,712,908**	**106,008,481**	**129,202,561**	**232,458,607**	**316,882,404**	**209,636,691**	**128,884,179**	**53,500,000**	**0**	**0**	**1,293,564,276**
1041	101796	UPGRADE OF MIAMI SPRINGS PUMP STATION AND CONTRACT SPECIFICATIONS	838,000	733,000	105,000	0	75,000	25,000	5,000	0	0	0	0	0	0	0	105,000
		TOTAL - 1041	**838,000**	**733,000**	**105,000**	**0**	**75,000**	**25,000**	**5,000**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**105,000**
1042	101967	WASTEWATER - PIPES AND INFRASTRUCTURE PROJECTS	26,666,466	2,666,466	24,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	0	0	0	24,000,000
		TOTAL - 1042	**26,666,466**	**2,666,466**	**24,000,000**	**3,000,000**	**3,000,000**	**3,000,000**	**3,000,000**	**3,000,000**	**3,000,000**	**3,000,000**	**3,000,000**	**0**	**0**	**0**	**24,000,000**
1044	102500	SDWWTP - Headworks	2,379,293	287,066	2,092,227	2,092,227	0	0	0	0	0	0	0	0	0	0	2,092,227
	102501	SDWWTP - Oxygen Production	18,597,391	4,885,296	13,712,095	6,711,011	4,243,246	2,757,838	0	0	0	0	0	0	0	0	13,712,095
	102502	SDWWTP - Oxygenation Trains	5,767,010	2,409,995	3,357,015	270,283	1,295,862	1,446,802	344,068	0	0	0	0	0	0	0	3,357,015
	102503	SDWWTP - Chlorine Building	2,473,750	126,908	2,346,842	30,733	503,598	1,627,101	185,410	0	0	0	0	0	0	0	2,346,842
	102504	SDWWTP - Effluent Pump Station	36,906,167	3,416,200	33,489,967	9,504,762	15,401,172	8,584,033	0	0	0	0	0	0	0	0	33,489,967
	102506	SDWWTP - Digesters and Control Buildings	127,474,921	39,469,227	88,005,694	31,519,555	24,712,749	15,473,596	9,299,794	7,000,000	0	0	0	0	0	0	88,005,694

Miami-Dade Water and Sewer Department
PROPOSED 2020-2029 CAPITAL BUDGET AND MULTI-YEAR CAPITAL PLAN
Projection by Project Sub-Project by Year - Wastewater
As of: 9/30/2019

Version 5 - Adopted MYCIP FY20-26 - After OMB Adjustments
Active and Future projects

Proj	Sub-Project	Current Bond/Fund Allocation	Expenditures As of 9/30//2019	Remaining Bond/Fund Allocation	PROJECTIONS 2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026	2026-2027	2027-2028	2028-2029	Future	Total
102507	SDWWTP - Dewatering Facility	98,150,408	2,281,483	95,868,925	461,514	13,832,774	25,977,189	20,597,448	17,000,000	12,000,000	6,000,000	0	0	0	0	95,868,925
102508	SDWWTP - FOG Removal Facility	8,194,768	7,558,274	636,494	636,494	0	0	0	0	0	0	0	0	0	0	636,494
102509	SDWWTP - Odor Control	17,054,896	612,077	16,442,819	693,191	3,495,612	10,136,614	2,117,402	0	0	0	0	0	0	0	16,442,819
102510	SDWWTP - General Electrical	14,460,701	1,073,177	13,387,524	2,057,719	5,970,617	5,359,188	0	0	0	0	0	0	0	0	13,387,524
102511	SDWWTP - Chlorine Contact Chamber Structural	5,189,149	2,330,395	2,858,754	1,722,794	1,135,960	0	0	0	0	0	0	0	0	0	2,858,754
102600	CDWWTP - Electrical Improvements	16,746,895	3,512,303	13,234,592	2,697,144	8,977,053	1,560,395	0	0	0	0	0	0	0	0	13,234,592
102601	CDWWTP - Building improvements	4,403,590	3,700,567	703,023	693,412	9,611	0	0	0	0	0	0	0	0	0	703,023
102602	Headworks Plant 1	18,884,148	17,406,055	1,478,093	1,478,093	0	0	0	0	0	0	0	0	0	0	1,478,093
102603	CDWWTP - Headworks Plant 2	9,205,763	8,561,977	643,786	613,724	30,062	0	0	0	0	0	0	0	0	0	643,786
102604	CDWWTP - Oxygenation Trains Plant 1	2,276,304	2,153,130	123,174	75,616	47,559	0	0	0	0	0	0	0	0	0	123,175
102605	CDWWTP - Oxygenation Trains Plant 2	11,224,861	6,750,134	4,474,728	1,410,693	3,064,035	0	0	0	0	0	0	0	0	0	4,474,728
102606	CDWWTP - Secondary Clarifiers Plant 1	13,108,405	74,694	13,033,711	227,938	2,171,511	4,698,411	4,576,378	1,223,069	125,590	10,814	0	0	0	0	13,033,711
102607	CDWWTP - Secondary Clarifiers Plant 2	16,234,244	2,080,304	14,153,940	2,376,955	3,719,380	4,764,898	2,429,396	863,311	0	0	0	0	0	0	14,153,940
102608	CDWWTP - RS Pump Stations Plant 1	22,437,473	799,537	21,637,936	335,715	648,263	2,819,311	6,333,150	6,448,641	4,663,725	389,131	0	0	0	0	21,637,936
102609	CDWWTP - RS Pump Stations Plant 2	32,920,375	7,271,984	25,648,391	3,840,162	6,548,430	7,174,624	4,433,845	3,651,330	0	0	0	0	0	0	25,648,391
102610	CDWWTP - Effluent Pump Station	29,129,485	1,799,451	27,330,034	15,217,969	8,112,065	4,000,000	0	0	0	0	0	0	0	0	27,330,034
102613	CDWWTP - Digesters Plant 1	7,908,367	293,416	7,614,951	212,134	217,183	1,316,916	3,888,706	1,875,667	104,345	0	0	0	0	0	7,614,951
102614	CDWWTP - Digesters Plant 2	117,431,313	54,774,305	62,657,008	11,173,991	12,328,071	17,891,568	9,263,378	6,500,000	3,500,000	2,000,000	0	0	0	0	62,657,008
102615	CDWWTP - Dewatering Building	151,528,271	2,954,141	148,574,130	921,512	17,009,410	24,392,148	30,809,247	28,441,814	22,500,000	16,500,000	8,000,000	0	0	0	148,574,131
102616	CDWWTP - Chlorination Facilities	25,670,660	22,764,583	2,906,077	2,903,920	2,157	0	0	0	0	0	0	0	0	0	2,906,077
102618	CDWWTP - Co-Gen Facility	53,808,631	42,030,309	11,778,322	6,794,567	4,983,755	0	0	0	0	0	0	0	0	0	11,778,322
102620	CDWWTP - Pump Station 1	8,342,164	6,143,450	2,198,714	2,198,715	0	0	0	0	0	0	0	0	0	0	2,198,715
102621	CDWWTP - Pump Station 2	9,809,838	5,502,872	4,306,966	3,890,719	416,246	0	0	0	0	0	0	0	0	0	4,306,965
102624	CDWWTP -Ventilation Improvements	975,379	517,698	457,681	416,540	41,141	0	0	0	0	0	0	0	0	0	457,681
102625	CDWWTP - REHABILITATION OF WALKWAYS AND STAIRWAYS	2,270,462	0	2,270,462	420,316	457,957	422,412	353,996	243,112	164,643	128,612	79,414	0	0	0	2,270,462
102626	CDWWTP - Oxygen Production	74,516,741	8,852,622	65,664,119	10,607,331	15,679,627	17,146,210	12,230,951	7,500,000	2,500,000	0	0	0	0	0	65,664,119
102628	CONSENT DECREE PROGRAM MANAGEMENT & CONSTRUCTION MANAGEMENT	111,044,019	20,635,706	90,408,313	17,997,357	18,084,176	16,112,145	14,955,622	7,544,897	5,779,072	4,890,404	4,681,269	363,371	0	0	90,408,313
102700	NDWWTP - Headworks and Sludge Degritting Transfer	33,253,560	30,699,222	2,554,338	2,554,339	0	0	0	0	0	0	0	0	0	0	2,554,339
102701	NDWWTP - Primary Clarifiers and Odor Control	71,282,548	17,664,171	53,618,377	14,834,541	18,463,271	13,320,565	7,000,000	0	0	0	0	0	0	0	53,618,377
102702	NDWWTP - Oxygenation Trains	66,342,898	848,964	65,493,934	2,248,340	3,028,864	6,144,768	18,412,905	22,780,574	12,878,484	0	0	0	0	0	65,493,935
102703	NDWWTP - Oxygen Production	47,436,650	671,343	46,765,307	1,285,485	1,661,251	4,473,625	14,478,558	15,928,058	8,938,130	0	0	0	0	0	46,765,307

Proj	Sub-Project		Current Bond/Fund Allocation	Expenditures As of 9/30//2019	Remaining Bond/Fund Allocation	PROJECTIONS 2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026	2026-2027	2027-2028	2028-2029	Future	Total
	102704	NDWWTP - Secondary Clarifiers	33,076,952	6,813,887	26,263,065	6,108,261	8,029,142	6,711,054	2,772,423	1,857,513	784,672	0	0	0	0	0	26,263,065
	102705	NDWWTP - Disinfection	17,839,232	3,738,788	14,100,444	7,834,869	5,265,574	1,000,000	0	0	0	0	0	0	0	0	14,100,443
	102706	NDWWTP - Effluent Disposal	1,895,472	1,773,187	122,285	101,856	20,430	0	0	0	0	0	0	0	0	0	122,286
	102707	NDWWTP - Plant Wide Electrical	2,642,756	224,443	2,418,313	161,241	1,336,412	920,660	0	0	0	0	0	0	0	0	2,418,313
		TOTAL - 1044	**1,350,295,910**	**345,463,339**	**1,004,832,571**	**177,333,738**	**210,944,226**	**206,232,271**	**164,482,677**	**128,857,986**	**73,938,661**	**29,918,961**	**12,760,683**	**363,371**	**0**	**0**	**1,004,832,574**
1045	102804	South Dade 54 inch PCCP FM Rehabilitation	41,489,019	41,267,018	222,001	222,001	0	0	0	0	0	0	0	0	0	0	222,001
	102807	Rehabilitation of 54 inch PCCP FM in the City of Miami	18,290,628	18,189,396	101,232	101,231	0	0	0	0	0	0	0	0	0	0	101,231
	102808	Replace Approximately 25 miles of AC force mains	25,255,322	16,381,457	8,873,865	8,536,228	337,637	0	0	0	0	0	0	0	0	0	8,873,865
	102809	Opa-Locka Airport 48" PCCP force main replacement	23,968,169	18,907,782	5,060,387	1,865,716	243,311	500,000	1,040,608	1,410,751	0	0	0	0	0	0	5,060,386
		TOTAL - 1045	**109,003,138**	**94,745,653**	**14,257,485**	**10,725,176**	**580,948**	**500,000**	**1,040,608**	**1,410,751**	**0**	**0**	**0**	**0**	**0**	**0**	**14,257,483**
1046	102900	DORAL BASIN - UPGRADE SEWAGE PS No. 418	12,478,072	11,556,660	921,412	921,413	0	0	0	0	0	0	0	0	0	0	921,413
	102902	Upgrade of PS#0692	18,419,865	7,875,769	10,544,096	9,123,317	1,420,779	0	0	0	0	0	0	0	0	0	10,544,096
	102903	Replacement of Switchgear PS#0414	8,174,133	7,141,547	1,032,586	975,974	56,611	0	0	0	0	0	0	0	0	0	1,032,585
	102904	Replacement of Switchgear and Rehabilitation of Wet well PS#0415	9,422,999	8,022,927	1,400,072	1,400,072	0	0	0	0	0	0	0	0	0	0	1,400,072
	102905	Replacement of Switchgear PS#0416	7,949,431	6,837,679	1,111,752	1,111,753	0	0	0	0	0	0	0	0	0	0	1,111,753
	102906	Replacement of Switchgear and Rehabilitation of Wet well PS#0417	8,152,525	2,526,554	5,625,971	5,159,149	466,822	0	0	0	0	0	0	0	0	0	5,625,971
	102908	Replacement of Plumbing and Electrical Equipment at PS#0301	12,960,074	1,396,988	11,563,086	2,560,962	6,981,337	2,020,788	0	0	0	0	0	0	0	0	11,563,087
	102909	Upgrade of PS#0488	800,925	783,210	17,715	15,355	2,360	0	0	0	0	0	0	0	0	0	17,715
	102910	Installation of 60 inch FM from Kendall Dr to PS#0536	2,012,814	1,848,544	164,270	164,269	0	0	0	0	0	0	0	0	0	0	164,269
	102911	Replacement of Switchgear at PS#0187	14,084,254	12,384,649	1,699,605	1,699,605	0	0	0	0	0	0	0	0	0	0	1,699,605
	102914	Upgrade of PS #0065, 0201, 0334, 0374, 0607	2,428,449	2,179,992	248,457	219,810	28,647	0	0	0	0	0	0	0	0	0	248,457
	102915	Upgrade of PS #00198, 0437, 0466, 0680	3,581,217	3,457,999	123,218	123,218	0	0	0	0	0	0	0	0	0	0	123,218
	102916	Upgrade of PS #0037, 0351, 0370, 0403	5,822,362	4,991,568	830,794	826,414	4,380	0	0	0	0	0	0	0	0	0	830,794
	102917	Upgrade of PS #0441, 0491, 0710, 0827, 0852, 1236	6,720,134	5,234,845	1,485,289	1,485,289	0	0	0	0	0	0	0	0	0	0	1,485,289

Proj	Sub-Project		Current Bond/Fund Allocation	Expenditures As of 9/30//2019	Remaining Bond/Fund Allocation	PROJECTIONS 2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026	2026-2027	2027-2028	2028-2029	Future	Total
		TOTAL - 1046	**113,007,254**	**76,238,931**	**36,768,323**	**25,786,600**	**8,960,936**	**2,020,788**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**36,768,324**
1047	103000	WASTEWATER COMMERCIAL CORRIDORS ECONOMIC DEVELOPMENT - GRAVITY AND FORCE MAINS	100,800,000	4,474,720	96,325,280	8,721,440	13,374,640	25,854,880	27,140,880	14,201,440	5,312,000	1,720,000	0	0	0	0	96,325,280
	103001	WASTEWATER COMMERCIAL CORRIDORS ECONOMIC DEVELOPMENT - PUMP STATIONS	25,200,000	1,118,680	24,081,320	2,180,360	3,343,660	6,463,720	6,785,220	3,550,360	1,328,000	430,000	0	0	0	0	24,081,320
		TOTAL - 1047	**126,000,000**	**5,593,400**	**120,406,600**	**10,901,800**	**16,718,300**	**32,318,600**	**33,926,100**	**17,751,800**	**6,640,000**	**2,150,000**	**0**	**0**	**0**	**0**	**120,406,600**
1048	101757	CL-1 - Downtown Transmission FM Extension	37,324,750	29,819,966	7,504,784	6,500,000	502,392	502,392	0	0	0	0	0	0	0	0	7,504,784
	102034	LAND ACQUISITION FOR WDWWTP (WDWRRF) (WT-1L)	25,304,471	8,921,202	16,383,270	0	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	4,383,270	0	0	0	16,383,270
	102055	ST-1B - SDWWTP - Step Feed & Oxygenation Train Rehab	126,389,406	10,138,857	116,250,549	1,780,388	2,125,255	13,930,599	20,259,839	24,310,893	18,433,395	18,410,180	17,000,000	0	0	0	116,250,549
	102056	ST-2A SDWWTP - Headworks and Oxygenation Train	88,161,724	9,187,093	78,974,631	1,643,613	6,879,450	13,587,273	19,978,354	15,885,941	13,500,000	7,500,000	0	0	0	0	78,974,631
	102150	SE-2 - SDWWTP - Municipal Injection Wells (WIFIA 1)	37,528,973	464,793	37,064,180	14,865,667	10,325,791	6,926,233	4,946,489	0	0	0	0	0	0	0	37,064,180
	103008	SDWWTP - Filter Backwash (ST-1C)	14,381,156	0	14,381,156	450,490	62,220	750,000	750,000	750,000	750,000	4,000,000	4,000,000	2,868,446	0	0	14,381,156
	103009	SDWWTP - Chlorine Contact & Wells PS (ST-2C)	81,265,218	0	81,265,218	963,956	2,180,520	6,798,696	8,197,017	7,125,029	7,500,000	12,500,000	26,000,000	10,000,000	0	0	81,265,218
	103010	SDWWTP - Clarifiers and HLD (ST-2B)	96,523,468	0	96,523,468	956,728	4,761,112	6,173,487	6,794,370	6,228,098	6,000,000	22,500,000	26,000,000	17,109,673	0	0	96,523,468
	103011	SDWWTP - Electrical Building (ST-2D) (WIFIA 2)	138,087,058	5,248,305	132,838,753	4,871,965	3,237,499	12,976,227	15,766,272	20,801,431	35,185,358	23,000,000	17,000,000	0	0	0	132,838,752
	103015	ST- 2E - SDWWTP - RAS Piping	6,243,600	0	6,243,600	1,248,720	4,370,520	624,360	0	0	0	0	0	0	0	0	6,243,600
		TOTAL - 1048	**651,209,825**	**63,780,216**	**587,429,609**	**33,281,527**	**36,444,759**	**64,269,267**	**78,692,341**	**77,101,392**	**83,368,753**	**89,910,180**	**94,383,270**	**29,978,119**	**0**	**0**	**587,429,608**
1049	100984	REFURBISH STRUCTURES IN PUMP STATIONS	2,315,688	15,688	2,300,000	600,000	400,000	400,000	300,000	300,000	300,000	0	0	0	0	0	2,300,000
	101816	INSTALLATION OF ODOR CONTROL UNITS AT PUMP STATIONS (VAPE)	1,400,000	0	1,400,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	0	0	0	0	1,400,000
	101823	INSTALLATION OF REMOTE SYSTEM MONITORING VIDEO EQUIPMENT AT PUMP STATIONS	1,000,000	0	1,000,000	200,000	200,000	200,000	200,000	200,000	0	0	0	0	0	0	1,000,000

Proj	Sub-Project	Current Bond/Fund Allocation	Expenditures As of 9/30//2019	Remaining Bond/Fund Allocation	PROJECTIONS 2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026	2026-2027	2027-2028	2028-2029	Future	Total
101837	REPLACEMENT OF MOTOR CONTROL CENTERS AND SWITCHGEAR AT REGIONAL PUMP STATIONS	12,260,000	0	12,260,000	1,301,230	1,002,500	1,315,000	2,527,000	3,750,000	1,200,700	1,163,570	0	0	0	0	12,260,000
101840	REPLACEMENT OF ANVIC DRIVES AND SWITCHGEAR AT PS#0536	2,102,514	1,298,988	803,526	803,526	0	0	0	0	0	0	0	0	0	0	803,526
101930	REPLACEMENT OF MECHANICAL EQUIPMENT IN REGIONAL PUMP STATIONS	7,587,130	887,130	6,700,000	500,000	500,000	700,000	2,500,000	2,500,000	0	0	0	0	0	0	6,700,000
101933	REPLACEMENT OF SUBMERSIBLE PUMPING EQUIPMENT	750,000	0	750,000	575,000	175,000	0	0	0	0	0	0	0	0	0	750,000
101934	REPLACEMENT OF VARIABLE REQUENCY DRIVES (VFD)	2,514,908	197,350	2,317,558	827,558	620,000	550,000	320,000	0	0	0	0	0	0	0	2,317,558
102042	DORAL BASIN UPGRADE - LOCAL PUMP STATION UPGRADES	16,500,000	0	16,500,000	644,120	847,922	1,815,917	2,000,000	4,000,000	2,000,000	1,700,000	2,000,000	1,492,041	0	0	16,500,000
102045	P.S. 2 BASIN UPGRADE - PHASE 1 LOCAL	9,394,783	313,464	9,081,319	300,000	1,200,000	2,750,000	3,150,000	1,681,319	0	0	0	0	0	0	9,081,319
102126	RELOCATION OF 20 PUMP STATIONS	13,732,297	352,297	13,380,000	250,000	430,000	1,850,000	2,750,000	2,500,000	3,000,000	2,000,000	600,000	0	0	0	13,380,000
102160	CONVERSION OF CAN PUMP STATIONS TO SUBMERSIBLE	20,000,000	0	20,000,000	1,325,000	1,000,000	1,100,000	3,400,980	4,050,000	5,345,906	1,578,114	1,250,000	950,000	0	0	20,000,000
102161	CONVERSTION OF SELF PRIMING PUMP STATIONS TO SUBMERSIBLE	18,000,000	0	18,000,000	700,000	1,850,000	2,750,000	3,100,000	2,700,000	3,000,000	2,500,000	1,400,000	0	0	0	18,000,000
102163	PS NO. 0559 - REPLACEMENT OF MECH & ELECTRICAL EQUIPMENT	18,563,218	0	18,563,218	350,000	600,000	1,650,000	3,000,000	4,431,609	4,431,609	4,100,000	0	0	0	0	18,563,218
102192	OUT OF COMPLIANCE PUMP STATIONS	67,087,499	1,587,499	65,500,000	1,150,000	3,550,000	4,550,000	6,750,000	7,000,000	7,000,000	11,000,000	12,500,000	12,000,000	0	0	65,500,000
102201	PS#0300 - REPLACEMENT OF MECHANICAL & ELECTRICAL EQUIPMENT	16,000,000	0	16,000,000	490,000	665,000	700,000	1,050,000	8,295,000	4,800,000	0	0	0	0	0	16,000,000
102202	PS# 425 FEMA - REPLACEMENT OF ELECTRICAL AND MECHANICAL EQUIPMENT (previously for PS# 306)	7,000,000	0	7,000,000	50,000	350,000	200,000	1,050,000	3,000,000	2,350,000	0	0	0	0	0	7,000,000
102213	CD5.16.03P2 - UPGRADE OF PUMP STATION 466 PHASE 2	25,193,698	0	25,193,698	713,004	887,600	1,050,000	1,225,000	3,759,000	7,558,109	10,000,985	0	0	0	0	25,193,698
102225	PS #1 (4ST.) REPLACE ELECTRICAL SWITCHGEAR AND MCCs	1,500,000	0	1,500,000	250,000	500,000	750,000	0	0	0	0	0	0	0	0	1,500,000
103022	Pump Station Upgrades due to Aging Infrastructure	30,000,000	0	30,000,000	300,000	750,000	2,500,000	5,000,000	8,000,000	9,500,000	3,950,000	0	0	0	0	30,000,000

Proj	Sub-Project	Current Bond/Fund Allocation	Expenditures As of 9/30//2019	Remaining Bond/Fund Allocation	PROJECTIONS											
					2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026	2026-2027	2027-2028	2028-2029	Future	Total
	TOTAL - 1049	272,901,735	4,652,416	268,249,319	11,529,438	15,728,022	25,030,917	38,522,980	56,366,928	50,686,324	38,192,669	17,750,000	14,442,041	0	0	268,249,319
	GRAND TOTAL	5,870,038,524	925,608,837	4,944,429,687	430,288,303	515,991,058	618,152,809	664,320,648	704,838,281	685,811,165	497,455,656	499,785,050	327,786,720	0	0	4,944,429,690

APPENDIX C

Municipal Population and Demand Projections

Exhibit C-1

Water Suppliers for Local Governments

Miami-Dade Water and Sewer Department (WASD) Wholesale Customers	
Municipality	% Population Served by WASD
Bal Harbour	100%
Bay Harbour Island	100%
Hialeah	100%
Hialeah Gardens	100%
Homestead	3 MGD Max
Indian Creek	100%
Medley	100%
Miami Beach	100%
North Bay Village	100%
North Miami[2]	30%
North Miami Beach[3]	as needed only
Opa Locka	100%
Surfside	100%
Virginia Gardens	100%
West Miami	100%

Miami-Dade Water and Sewer Department (WASD) Retail Municipal Customers	
Municipality	% Population Served by WASD
Aventura[1]	72%
Coral Gables	100%
Cutley Bay	100%
Doral	100%
El Portal	100%
Key Biscayne	100%
Miami	100%
Miami Lakes	100%
Miami Shores[4]	97%
Miami Springs	100%
Palmetto Bay	100%
Pinecrest	100%
South Miami	100%
Sweetwater	100%
Miami Gardens[5]	58%
Unincorporated	See Exhibit C-6

Other Utilities - North Miami Beach (NMB)	
Municipality	% Population Served by NMB
Aventura[1]	28%
Golden Beach	100%
Miami Gardens[5]	40%
Sunny Isles	100%
North Miami Beach	100%
Unincorporated	See Exhibit C-6

Other Utilities - North Miami (NM)	
Municipality	% Population Served by NM
North Miami[2]	65%
Biscayne Park	100%
Miami Shores[4]	3%
Unincorporated	See Exhibit C-6

Other Utilities - Homestead	
Municipality	% Population Served by Homestead
Homestead[6]	96%
Unincorporated	See Exhibit C-6

Other Utilities - Florida City	
Municipality	% Population Served by Fl City
Florida City	100%

Note:

[1] Aventura is supplied by WASD(68%), North Miami Beach, and City of Opa Locka (3% of population)

[2] 30% of North Miami's demand is supplied by MDWASD. Seventy percent (70%) is supplied by North Miami

[3] North Miami Beach is supplied by WASD on an as needed basis only

[4] Miami Shores is supplied by WASD and North Miami

[5] Miami Gardens is supplied by WASD, North Miami Beach, and Opa Locka. Opa Locka is a wholesale customer of WASD

[6] 4% of Homestead's population is within WASD's service area

Exhibit C-2
Municipal Per Capita - Water Supplied by Miami-Dade Water and Sewer Department

Retail Municipal Customer	2018 Consumption Per Capita (GPD)
Aventura*	183.62
Coral Gables	167.82
Cutler Bay	68.03
Doral	126.94
El Portal	61.49
Key Biscayne	220.28
Miami	97.54
Miami Gardens*	67.69
Miami Lakes	92.33
Miami Shores*	81.62
Miami Springs	93.79
Palmetto Bay	88.67
Pinecrest	82.91
South Miami	115.40
Sweetwater	62.78

Note:

* Represents the per capita for the area supplied by Miami-Dade WASD

Wholesale Customer	2018 Wholesale Per Capita Consumption (GPD)
Bal Harbour	358.53
Bay Harbor Islands	149.59
Hialeah	76.90
Hialeah Gardens	83.59
Indian Creek Village	4,996.44
Medley	1,229.29
Miami Beach	241.60
North Bay Village	145.41
North Miami*	453.57
Opa-Locka	120.26
Surfside	172.34
Virginia Gardens	117.33
West Miami	133.06

Note:

* Represents the per capita for the area supplied by Miami Dade WASD(30% of total service area population).

Exhibit C-3

WASD Wholesale Customers - Water Service Area Population by Utility Served

			2020	2025	2030	2035	2040
Service Area Bal Harbor	Municipality	Bal Harbor					
	Water By Utility	WASD	3,442	3,558	3,675	3,792	3,909
		North Miami					
		NMB					
		Homestead					
		Florida City					
		Total	3,442	3,558	3,675	3,792	3,909
Service Area Bay Harbor Islands	Municipality	Bay Harbor Islands					
	Water By Utility	WASD	6,398	6,709	7,019	7,330	7,641
		North Miami					
		NMB					
		Homestead					
		Florida City					
		Total	6,398	6,709	7,019	7,330	7,641
Service Area Hialeah	Municipality	Hialeah					
	Water By Utility	WASD	237,721	243,796	249,870	255,944	262,018
		North Miami					
		NMB					
		Homestead					
		Florida City					
		Total	237,721	243,796	249,870	255,944	262,018
	Unincorporated within Hialeah's Service Area						
	Water By Utility	WASD	2,553	2,641	2,728	2,816	2,904
		North Miami					
		NMB					
		Homestead					
		Florida City					
		Total	2,553	2,641	2,728	2,816	2,904
	Total Hialeah Munical Population		237,721	243,796	249,870	255,944	262,018
	Total Hialeah Service Area Population		240,274	246,436	252,598	258,760	264,922
Service Area Hialeah Gardens	Municipality	Hialeah Gardens					
	Water By Utility	WASD	23,556	24,265	24,974	25,682	26,391
		North Miami					
		NMB					
		Homestead					
		Florida City					
		Total	23,556	24,265	24,974	25,682	26,391
Service Area Indian Creek Village	Municipality	Indian Creek Village					
	Water By Utility	WASD	92	96	99	103	106
		North Miami					
		NMB					
		Homestead					
		Florida City					
		Total	92	96	99	103	106
Service Area Medley	Municipality	Medley					
	Water By Utility	WASD	857	873	888	904	920
		North Miami					
		NMB					
		Homestead					
		Florida City					
		Total	857	873	888	904	920
	Municipality	Medley - within WASD's Service Area (Commercial/Industrial area)					
	Water By Utility	WASD	0	0	0	1	1
		North Miami					
		NMB					
		Homestead					
		Florida City					
		Total	0	0	0	1	1

Exhibit C-3

WASD Wholesale Customers - Water Service Area Population by Utility Served

			2020	2025	2030	2035	2040
	Unincorporated within Medley's Service Area (Commercial/Industria Area)						
	Water By Utility	WASD	0	0	0	0	0
		North Miami					
		NMB					
		Homestead					
		Florida City					
		Total	0	0	0	0	0
	Total Medley Muni. Pop.		857	873	888	905	921
	Total Medley Service Area Pop.		857	873	888	904	920
Service Area Miami Beach	Municipality	Miami Beach					
	Water By Utility	WASD	97,563	102,654	107,745	112,836	117,927
		North Miami					
		NMB					
		Homestead					
		Florida City					
		Total	97,563	102,654	107,745	112,836	117,927
Service Area North Bay Village	Municipality	North Bay Village					
	Water By Utility	WASD	8,079	8,669	9,258	9,848	10,437
		North Miami					
		NMB					
		Homestead					
		Florida City					
		Total	8,079	8,669	9,258	9,848	10,437
Service Area Opa Locka	Municipality	Opa Locka					
	Water By Utility	WASD	16,631	17,372	18,114	18,855	19,596
		North Miami					
		Homestead					
		Florida City					
		Total	16,631	17,372	18,114	18,855	19,596
	Municipality	Opa Locka - WASD Service Area					
	Water By Utility	WASD	1	1	1	1	1
		North Miami					
		NMB					
		Homestead					
		Florida City					
		Total	1	1	1	1	1
	Miami Gardens within Opa Locka Service Area						
	Water By Utility	WASD	3,262	3,373	3,483	3,594	3,705
		North Miami					
		NMB					
		Homestead					
		Florida City					
		Total	3,262	3,373	3,483	3,594	3,705
	Unincorporated within Opa Locka Service Area						
	Water By Utility	WASD	1,094	1,108	1,121	1,135	1,149
		North Miami					
		NMB					
		Homestead					
		Florida City					
		Total	1,094	1,108	1,121	1,135	1,149
	Total Opa Locka Muni. Pop		16,631	17,372	18,114	18,855	19,596
	Total Opa Locka Service Area Pop		20,987	21,853	22,719	23,585	24,451

Exhibit C-3

WASD Wholesale Customers - Water Service Area Population by Utility Served

			2020	2025	2030	2035	2040
Service Area Surfside	Municipality	Surfside					
	Water By Utility	WASD	6,262	6,493	6,725	6,956	7,187
		North Miami					
		NMB					
		Homestead					
		Florida City					
		Total	6,262	6,493	6,725	6,956	7,187
Service Area Virginia Gardens	Municipality	Virginia Gardens					
	Water By Utility	WASD	1,989	2,041	2,093	2,145	2,197
		North Miami					
		NMB					
		Homestead					
		Florida City					
		Total	1,989	2,041	2,093	2,145	2,197
Service Area West Miami	Municipality	West Miami					
	Water By Utility	WASD	7,256	8,357	9,458	10,559	11,660
		North Miami					
		NMB					
		Homestead					
		Florida City					
		Total	7,256	8,357	9,458	10,559	11,660

Note: North Miami and North Miami Beach have a wholesale contract with WASD. See Exhibit C-5-Other Utilities for water service area population in these utilities.

Exhibit C-4

WASD Retail Municipal Customers - Water Service Area Population by Utility Served

		2020	2025	2030	2035	2040
Municipality	Coral Gables					
Water By Utility	WASD	51,018	53,109	55,200	57,290	59,381
	North Miami					
	NMB					
	Homestead					
	Florida City					
	Total	**51,018**	**53,109**	**55,200**	**57,290**	**59,381**
Municipality	Cutler Bay					
Water By Utility	WASD	44429	44874	45318	45763	46207
	North Miami					
	NMB					
	Homestead					
	Florida City					
	Total	**44,429**	**44,874**	**45,318**	**45,763**	**46,207**
Municipality	Doral					
Water By Utility	WASD	62,789	69,407	76,024	82,642	89,260
	North Miami					
	NMB					
	Homestead					
	Outside UDB					
	Total	**62,789**	**69,407**	**76,024**	**82,642**	**89,260**
Municipality	El Portal					
Water By Utility	WASD	2,374	2,431	2,487	2,544	2,601
	North Miami					
	NMB					
	Homestead					
	Florida City					
	Total	**2,374**	**2,431**	**2,487**	**2,544**	**2,601**
Municipality	Key Biscayne					
Water By Utility	WASD	13,351	13,448	13,546	13,643	13,741
	North Miami					
	NMB					
	Homestead					
	Florida City					
	Total	**13,351**	**13,448**	**13,546**	**13,643**	**13,741**
Municipality	Miami					
Water By Utility	WASD	457,001	496,232	535,463	574,694	613,925
	North Miami					
	NMB					
	Homestead					
	Florida City					
	Total	**457,001**	**496,232**	**535,463**	**574,694**	**613,925**

Exhibit C-4

WASD Retail Municipal Customers - Water Service Area Population by Utility Served

		2020	2025	2030	2035	2040
Municipality	Miami Lakes					
Water By Utility	WASD	31,808	32,783	33,757	34,732	35,706
	North Miami					
	NMB					
	Homestead					
	Florida City					
	Total	31,808	32,783	33,757	34,732	35,706
Municipality	Miami Shores					
Water By Utility	WASD	11,835	12,070	12,305	12,540	12,774
	NM Water by WASD	333.78	337.50	341.22	344.94	348.66
	NMB					
	Homestead					
	Florida City					
	Total	12,169	12,408	12,646	12,885	13,123
Municipality	Miami Springs					
Water By Utility	WASD	15,069	15,447	15,825	16,203	16,581
	North Miami					
	NMB					
	Homestead					
	Florida City					
	Total	15,069	15,447	15,825	16,203	16,581
Municipality	Palmetto Bay					
Water By Utility	WASD	24,770	25,812	26,855	27,897	28,940
	North Miami					
	NMB					
	Homestead					
	Florida City					
	Total	24,770	25,812	26,855	27,897	28,940
Municipality	Pinecrest					
Water By Utility	WASD	19,698	20,281	20,863	21,446	22,028
	North Miami					
	NMB					
	Homestead					
	Florida City					
	Total	19,698	20,281	20,863	21,446	22,028

Exhibit C-4

WASD Retail Municipal Customers - Water Service Area Population by Utility Served

		2020	2025	2030	2035	2040
Municipality	South Miami					
Water By Utility	WASD	11,826	12,444	13,062	13,679	14,297
	North Miami					
	NMB					
	Homestead					
	Florida City					
	Total	11,826	12,444	13,062	13,679	14,297
Municipality	Sweetwater					
Water By Utility	WASD	26,274	27,692	29,109	30,527	31,944
	North Miami					
	NMB					
	Homestead					
	Florida City					
	Total	26,274	27,692	29,109	30,527	31,944
Municipality	Aventura					
Water By Utility	WASD	28,049	29,068	30,089	31,109	32,129
	North Miami					
	NMB	11,204	11,673	12,141	12,610	13,079
	Homestead					
	Florida City					
	Total	39,253	40,741	42,230	43,719	45,208
Municipality	Biscayne Park					
Water By Utility	WASD					
	North Miami	3,186	3,197	3,251	3,304	3,358
	NMB					
	Homestead					
	Florida City					
	Total	3,186	3,197	3,251	3,304	3,358
Municipality	Miami Gardens					
Water By Utility	WASD	64,730	67,061	69,392	71,723	74,054
	North Miami					
	NMB	46,071	47,671	49,271	50,871	52,471
	Homestead					
	Florida City					
Water by Opa Locka		3,262	3,373	3,483	3,594	3,705
	Total	114,063	118,105	122,147	126,188	130,230

Exhibit C-4

WASD Retail Municipal Customers - Water Service Area Population by Utility Served

		2020	2025	2030	2035	2040
Municipality	Golden Beach					
Water By Utility	WASD					
	North Miami					
	NMB	1,007	1,058	1,110	1,161	1,213
	Homestead					
	Florida City					
	Total	1,007	1,058	1,110	1,161	1,213
Municipality	Sunny Isles Beach					
Water By Utility	WASD					
	North Miami					
	NMB	22,698	24,293	25,887	27,482	29,076
	Homestead					
	Florida City					
	Total	22,698	24,293	25,887	27,482	29,076

Exhibit C-5

Exhibit C-5 Other Utilities Water Service Area Population Projections

			2020	2025	2030	2035	2040
	Water By Utility	NMB					
		Homestead					
		Florida City					
		Total	3,186	3,197	3,251	3,304	3,358
	Municipality	Miami Shores					
	Water By Utility	WASD					
		North Miami	334	338	341	345	349
		NMB					
		Homestead					
		Florida City					
		Total	334	338	341	345	349
	Total Muni. Population		46,267	47,416	48,564	49,713	50,861
	Total NM Service Area		73,460	75,438	77,459	79,479	81,500
Service Area North Miami Beach	Municipality	North Miami Beach					
	Water By Utility	WASD					
		North Miami					
		NMB	46,182	49,228	52,274	55,321	58,367
		Homestead					
		Florida City					
		Total	46,182	49,228	52,274	55,321	58,367
	Municipality	Aventura					
	Water By Utility	WASD					
		North Miami					
		NMB	11,204	11,673	12,141	12,610	13,079
		Homestead					
		Florida City					
		Total	11,204	11,673	12,141	12,610	13,079
	Municipality	Golden Beach					
	Water By Utility	WASD					
		North Miami					
		NMB	1,007	1,058	1,110	1,161	1,213
		Homestead					
		Florida City					
		Total	1,007	1,058	1,110	1,161	1,213
	Municipality	Miami Gardens					
	Water By Utility	WASD					
		North Miami					
		NMB	46,071	47,671	49,271	50,871	52,471
		Homestead					
		Florida City					
		Total	46,071	47,671	49,271	50,871	52,471
	Municipality	Sunny Isles Beach					
	Water By Utility	WASD					
		North Miami					
		NMB	22,698	24,293	25,887	27,482	29,076
		Homestead					
		Florida City					
		Total	22,698	24,293	25,887	27,482	29,076
	Unincorporated within NMB Service Area						
	Water By Utility	WASD					
		North Miami					
		NMB	47,798	50,006	52,215	54,423	56,631
		Homestead					
		Florida City					
		Total	47,798	50,006	52,215	54,423	56,631
	Total NMB Municipal Population		46,182	49,228	52,274	55,321	58,367
	Total NMB Service Area Pop.		174,960	183,929	192,899	201,868	210,837

Exhibit C-5

Exhibit C-5 Other Utilities Water Service Area Population Projections

			2020	2025	2030	2035	2040
Service Area Florida City	Municipality	Florida City					
	Water By Utility	WASD					
		North Miami					
		NMB					
		Homestead					
		Florida City	13,360	15,789	18,219	20,648	23,078
		Total	13,360	15,789	18,219	20,648	23,078
	Municipality	Florida City-WASD Service Area					
	Water By Utility	WASD	170	255	339	424	508
		North Miami					
		NMB					
		Homestead					
		Florida City					
		Total	170	255	339	424	508
	Total Fl City Municipality Pop. within WASD Service Area		170	255	339	424	508
	Total Florida Service Area Pop.		13,360	15,789	18,219	20,648	23,078
	Total Florida City Muni. Pop		13,533	16,050	18,568	21,086	23,603
Service Area Homestead	Municipality	Homestead-Homestead service area					
	Water By Utility	WASD					
		North Miami					
		NMB					
		Homestead	67,365	71,689	76,012	80,336	84,659
		Florida City					
		Total	67,365	71,689	76,012	80,336	84,659
	Municipality	Homestead within WASD service area					
	Water By Utility	WASD	2,992	3,454	3,915	4,377	4,839
		North Miami					
		NMB					
		Homestead					
		Florida City					
		Total	2,992	3,454	3,915	4,377	4,839
	Municipality	Unincorporated-Homestead Service Area					
	Water By Utility	WASD	5,887	6,228	6,570	6,911	7,252
		North Miami					
		NMB					
		Homestead					
		Florida City					
		Total	5,887	6,228	6,570	6,911	7,252
	Total Homestead Municipal Population		70,357	75,142	79,927	84,713	89,498
	Total Homestead Service Area Population		73,252	77,917	82,582	87,247	91,911
Service Area North Miami	Municipality	North Miami					
	Water By Utility	WASD					
		North Miami	46,267	47,416	48,564	49,713	50,861
		NMB					
		Homestead					
		Florida City					
		Total	46,267	47,416	48,564	49,713	50,861
	Unincorporated within NM Service Area						
	Water By Utility	WASD					
		North Miami	23,673	24,488	25,303	26,117	26,932
		NMB					
		Homestead					
		Florida City					
		Total	23,673	24,488	25,303	26,117	26,932
	Municipality	Biscayne Park					
		WASD					
		North Miami	3,186	3,197	3,251	3,304	3,358

Exhibit C-6

Wholesale Service Area Water Demand Projections

Wholesale Customer	Projection Year	Population*	2018 Gallons Per Capita per Day (GPD)	Projected Water Demand (GPD)	Projected Water Demand (MGD)
Bal Harbour	2020	3,442	358.53	1,234,064	1.23
Bal Harbour	2025	3,558	358.53	1,275,654	1.28
Bal Harbour	2030	3,675	358.53	1,317,602	1.32
Bal Harbour	2035	3,792	358.53	1,359,550	1.36
Bal Harbour	2040	3,909	358.53	1,401,499	1.40
Bay Harbor Islands	2020	6,398	149.59	957,063	0.96
Bay Harbor Islands	2025	6,709	149.59	1,003,585	1.00
Bay Harbor Islands	2030	7,019	149.59	1,049,957	1.05
Bay Harbor Islands	2035	7,330	149.59	1,096,479	1.10
Bay Harbor Islands	2040	7,641	149.59	1,143,001	1.14
Hialeah	2020	240,274	76.90	18,477,968	18.48
Hialeah	2025	246,436	76.90	18,951,849	18.95
Hialeah	2030	252,598	76.90	19,425,730	19.43
Hialeah	2035	258,760	76.90	19,899,610	19.90
Hialeah	2040	264,922	76.90	20,373,491	20.37
Hialeah Gardens	2020	23,556	83.59	1,969,147	1.97
Hialeah Gardens	2025	24,265	83.59	2,028,415	2.03
Hialeah Gardens	2030	24,974	83.59	2,087,684	2.09
Hialeah Gardens	2035	25,682	83.59	2,146,869	2.15
Hialeah Gardens	2040	26,391	83.59	2,206,137	2.21
Indian Creek	2020	92	4,996.44	459,673	0.46
Indian Creek	2025	96	4,996.44	479,658	0.48
Indian Creek	2030	99	4,996.44	494,648	0.49
Indian Creek	2035	103	4,996.44	514,634	0.51
Indian Creek	2040	106	4,996.44	529,623	0.53
Medley	2020	857	1,229.29	1,053,505	1.05
Medley	2025	873	1,229.29	1,073,174	1.07
Medley	2030	888	1,229.29	1,091,613	1.09
Medley	2035	904	1,229.29	1,111,282	1.11
Medley	2040	920	1,229.29	1,130,951	1.13
Miami Beach	2020	97,563	241.60	23,571,516	23.57
Miami Beach	2025	102,654	241.60	24,801,517	24.80
Miami Beach	2030	107,745	241.60	26,031,518	26.03
Miami Beach	2035	112,836	241.60	27,261,519	27.26
Miami Beach	2040	117,927	241.60	28,491,520	28.49
North Bay Village	2020	8,079	145.41	1,174,745	1.17
North Bay Village	2025	8,669	145.41	1,260,535	1.26
North Bay Village	2030	9,258	145.41	1,346,180	1.35
North Bay Village	2035	9,848	145.41	1,431,970	1.43
North Bay Village	2040	10,437	145.41	1,517,615	1.52
North Miami*	2020	22,025	453.57	9,989,964	9.99
North Miami	2025	22,631	453.57	10,264,916	10.26
North Miami	2030	23,238	453.57	10,539,867	10.54
North Miami	2035	23,844	453.57	10,814,818	10.81
North Miami	2040	24,450	453.57	11,089,769	11.09
Opa-Locka	2020	20,987	120.26	2,523,867	2.52
Opa-Locka	2025	21,853	120.26	2,627,980	2.63

Exhibit C-6

Wholesale Service Area Water Demand Projections

Wholesale Customer	Projection Year	Population*	2018 Gallons Per Capita per Day (GPD)	Projected Water Demand (GPD)	Projected Water Demand (MGD)
Opa-Locka	2030	22,719	120.26	2,732,092	2.73
Opa-Locka	2035	23,585	120.26	2,836,205	2.84
Opa-Locka	2040	24,450	120.26	2,940,317	2.94
Surfside	2020	6,262	172.34	1,079,175	1.08
Surfside	2025	6,493	172.34	1,118,985	1.12
Surfside	2030	6,725	172.34	1,158,967	1.16
Surfside	2035	6,956	172.34	1,198,777	1.20
Surfside	2040	7,187	172.34	1,238,586	1.24
Virginia Gardens	2020	1,989	117.33	233,369	0.23
Virginia Gardens	2025	2,041	117.33	239,471	0.24
Virginia Gardens	2030	2,093	117.33	245,572	0.25
Virginia Gardens	2035	2,145	117.33	251,673	0.25
Virginia Gardens	2040	2,197	117.33	257,774	0.26
West Miami	2020	7,256	133.06	965,519	0.97
West Miami	2025	8,357	133.06	1,112,023	1.11
West Miami	2030	9,458	133.06	1,258,528	1.26
West Miami	2035	10,559	133.06	1,405,032	1.41
West Miami	2040	11,660	133.06	1,551,536	1.55

Notes:

*Population represents total service area served.

**Water Demand for North Miami represents the area served by MDWASD only (30% of total service area population).

Exhibit C-7

Retail Municipal Customers Water Demand Projections

Municipality	Projection Year	Total Population	2018 Per Capita (GPD)	Projected Demand (MGD)
Aventura[1]	2020	28,049	183.62	5.15
Aventura	2025	29,068	183.62	5.34
Aventura	2030	30,089	183.62	5.52
Aventura	2035	31,109	183.62	5.71
Aventura	2040	32,129	183.62	5.90
Coral Gables	2020	51,018	167.82	8.56
Coral Gables	2025	53,109	167.82	8.91
Coral Gables	2030	55,200	167.82	9.26
Coral Gables	2035	57,290	167.82	9.61
Coral Gables	2040	59,381	167.82	9.97
Cutler Bay	2020	44,429	68.00	3.02
Cutler Bay	2025	44,874	68.00	3.05
Cutler Bay	2030	45,318	68.00	3.08
Cutler Bay	2035	45,763	68.00	3.11
Cutler Bay	2040	46,207	68.00	3.14
Doral	2020	62,789	126.94	7.97
Doral	2025	69,407	126.94	8.81
Doral	2030	76,024	126.94	9.65
Doral	2035	82,642	126.94	10.49
Doral	2040	89,260	126.94	11.33
El Portal	2020	2,374	61.49	0.15
El Portal	2025	2,431	61.49	0.15
El Portal	2030	2,487	61.49	0.15
El Portal	2035	2,544	61.49	0.16
El Portal	2040	2,601	61.49	0.16
Key Biscayne	2020	13,351	220.28	2.94
Key Biscayne	2025	13,448	220.28	2.96
Key Biscayne	2030	13,546	220.28	2.98
Key Biscayne	2035	13,643	220.28	3.01
Key Biscayne	2040	13,741	220.28	3.03
Miami	2020	457,001	97.54	44.58
Miami	2025	496,232	97.54	48.40
Miami	2030	535,463	97.54	52.23
Miami	2035	574,694	97.54	56.06
Miami	2040	613,925	97.54	59.89
Miami Gardens	2020	114,063	67.69	7.72
Miami Gardens	2025	118,105	67.69	7.99
Miami Gardens	2030	122,147	67.69	8.27
Miami Gardens	2035	126,188	67.69	8.54
Miami Gardens	2040	130,230	67.69	8.81

Exhibit C-7

Retail Municipal Customers Water Demand Projections

Miami Lakes	2020	31,808	92.33	2.94
Miami Lakes	2025	32,783	92.33	3.03
Miami Lakes	2030	33,757	92.33	3.12
Miami Lakes	2035	34,732	92.33	3.21
Miami Lakes	2040	35,706	92.33	3.30
Miami Shores	2020	12,169	81.62	0.99
Miami Shores	2025	12,408	81.62	1.01
Miami Shores	2030	12,646	81.62	1.03
Miami Shores	2035	12,885	81.62	1.05
Miami Shores	2040	13,123	81.62	1.07
Miami Springs	2020	15,069	93.79	1.41
Miami Springs	2025	15,447	93.79	1.45
Miami Springs	2030	15,825	93.79	1.48
Miami Springs	2035	16,203	93.79	1.52
Miami Springs	2040	16,581	93.79	1.56
Palmetto Bay	2020	24,770	88.67	2.20
Palmetto Bay	2025	25,812	88.67	2.29
Palmetto Bay	2030	26,855	88.67	2.38
Palmetto Bay	2035	27,897	88.67	2.47
Palmetto Bay	2040	28,940	88.67	2.57
Pinecrest	2020	19,698	82.91	1.63
Pinecrest	2025	20,281	82.91	1.68
Pinecrest	2030	20,863	82.91	1.73
Pinecrest	2035	21,446	82.91	1.78
Pinecrest	2040	22,028	82.91	1.83
South Miami	2020	11,826	115.40	1.36
South Miami	2025	12,444	115.40	1.44
South Miami	2030	13,062	115.40	1.51
South Miami	2035	13,679	115.40	1.58
South Miami	2040	14,297	115.40	1.65
Sweetwater	2020	26,274	62.78	1.65
Sweetwater	2025	27,692	62.78	1.65
Sweetwater	2030	29,109	62.78	1.65
Sweetwater	2035	30,527	62.78	1.65
Sweetwater	2040	31,944	62.78	1.65

Notes:

[1] Water demand projections for Aventura are for the area served by Miami Dade WASD only.

[2] Water demand projections for Miami Gardens are for the area served by Miami Dade WASD only.

APPENDIX D

Water Use Efficiency

MEMORANDUM

Agenda Item No. 7(D)

(Second Reading 9-2-08)

TO: Honorable Chairman Bruno A. Barreiro and Members, Board of County Commissioners

DATE: May 20, 2008

FROM: R. A. Cuevas, Jr. County Attorney

SUBJECT: Ordinance relating to Water Use Efficiency Standards

The accompanying ordinance was prepared and placed on the agenda at the request of Prime Sponsor Commissioner Natacha Seijas.

R. A. Cuevas, Jr.
County Attorney

RAC/bw

Memorandum

MIAMI-DADE COUNTY

Date: September 2, 2008

To: Honorable Chairman Bruno A. Barreiro
and Members, Board of County Commissioners

From: George M. Burgess
County Manager

Subject: Ordinance relating to Water Efficiency Standards

The ordinance relating to water efficiency standards will not have a fiscal impact to Miami-Dade County.

There will be an impact to the public for High Efficiency Appliances, which currently have a higher initial cost.

Susanne M. Torriente
Chief Assistant County Manager

fis05108

MEMORANDUM

(Revised)

TO: Honorable Chairman Bruno A. Barreiro and Members, Board of County Commissioners

DATE: September 2, 2008

FROM: R. A. Cuevas, Jr. County Attorney

SUBJECT: Agenda Item No. 7(D)

Please note any items checked.

_____ "4-Day Rule" ("3-Day Rule" for committees) applicable if raised

_____ 6 weeks required between first reading and public hearing

_____ 4 weeks notification to municipal officials required prior to public hearing

_____ Decreases revenues or increases expenditures without balancing budget

_____ Budget required

_____ Statement of fiscal impact required

_____ Bid waiver requiring County Manager's written recommendation

_____ Ordinance creating a new board requires detailed County Manager's report for public hearing

_____ Housekeeping item (no policy decision required)

_____ No committee review

Approved _____ Mayor
Veto _____
Override _____

Agenda Item No. 7(D)
9-2-08

ORDINANCE NO. _____

ORDINANCE RELATING TO WATER USE EFFICIENCY STANDARDS; AMENDING SECTIONS 8-31, 32-84, AND 8A-381 OF THE CODE OF MIAMI-DADE COUNTY, FLORIDA; CHANGING EFFECTIVE DATES TO JANUARY 1, 2009 AND CLARIFYING STANDARDS FOR PLUMBING FIXTURES, FIXTURE FITTINGS AND APPLIANCES; PROVIDING SEVERABILITY; INCLUSION IN CODE AND AN EFFECTIVE DATE

NOW, THEREFORE, BE IT ORDAINED BY THE BOARD OF COUNTY COMMISSIONERS OF MIAMI-DADE COUNTY, FLORIDA:

Section 1. Section 8-31 of the Code of Miami-Dade County is hereby amended to read as follows: [1]

Sec. 8-31. Local Technical Amendments to Florida Building Code

(A) The County hereby adopts the following local technical amendments to Chapter 6 (Plumbing) of the Florida Building Code.

604.4 Maximum flow and water consumption.

The maximum water consumption flow rates and quantities for all plumbing fixtures, fixture fittings and appliances shall be in accordance with Table 604.4. Effective [[~~July 1, 2008~~]] >>January 1, 2009,<< permit applications for new residential and commercial structures shall include high efficiency plumbing fixtures, fixture fittings and appliances as provided in Table 604.4. Such high efficiency plumbing fixtures, fixture fittings and appliances shall comply with the specifications >>in Table 604.4 or have received the<< [[~~of~~]] U.S. Environmental Protection Agency (EPA) WaterSense >>Label.<< [[~~Program or the Uniform North American Requirements (UNAR) Guidelines and Specifications.~~]]

1Words Stricken through and/or [[double bracketed]] shall be deleted. Words underscored and/or >>double arrowed<< constitute the amendment proposed. Remaining provisions are now in effect and remain unchanged.

Exceptions:

1. Blowout design water closets [3.5 gallons (13L) per flushing cycle].
2. Vegetable sprays.
3. Clinical sinks [4.5 gallons (17 L) per flushing cycle].
4. Service sinks.
5. Emergency showers.

TABLE 604.4

MAXIMUM FLOW RATES AND CONSUMPTION FOR
PLUMBING FIXTURES, FIXTURE FITTINGS AND APPLIANCES

PLUMBING FIXTURE OR FIXTURE FITTING	MAXIMUM FLOW RATE [b]
Lavatory, private	[[~~1.0~~]] >>1.5<<gpm at 60 psi
Lavatory, public, (metering)	0.25 gallon per metering cycle
Lavatory, public (other than metering)	0.5 gpm at 60 psi
Shower head [a]	1.5 gpm at 80 psi
Sink faucet	[[~~1.0~~]] >>1.5<< gpm at 60 psi
Urinal	Waterless or 0.5 gallon per flushing cycle
Water closet	1.28 gallons per flushing cycle
Dishwasher (residential)	6.5 gallons per cycle or less (Energy Star/Water Sense Certified) [c]
Dishwasher (commercial	less than 1.2 gallons per rack for fill and dump machines and less than 0.9 gallons per rack for all other types of machines
Under the counter machines	1.0 gallon or less per rack for high-temperature machines and 1.7 gallons per rack for low-temperature machines
Washing machine	Water factor of 8 or lower (Energy Star/Water Sense Certified) [c]

For SI: 1 gallon = 3.785 L, 1 gallon per minute = 3.785 L/m
1 pound per square inch = 6.895 kPa.
a. A hand-held shower spray is a shower head.
b. Consumption tolerances shall be determined from referenced standards.
c. Water factor in gallons per cycle per cubic foot.

(B) The County hereby adopts the following local technical amendments to Chapter 29 (Residential) of the Florida Building Code.

P2903.2 Maximum flow and water consumption.

The maximum water consumption flow rates and quantities for all plumbing fixtures, fixture fittings and appliances shall be in accordance with Table P2903.2a. Effective [[~~July 1, 2008~~]] >>January 1, 2009,<< permit applications for new residential structures shall include high efficiency plumbing fixtures, fixture fittings and appliances as provided in Table P2903.2a. Such high efficiency plumbing fixtures, fixture fittings and appliances shall comply with the specifications >>in Table P2903.2a or have received the<<of U.S. Environmental Protection Agency (EPA) WaterSense >>Label.<< [[~~Program or the Uniform North American Requirements (UNAR) Guidelines and Specifications.~~]]

TABLE P2903.2a
MAXIMUM FLOW RATES AND CONSUMPTION FOR
PLUMBING FIXTURES, FIXTURE FITTINGS AND APPLIANCES

PLUMBING FIXTURE OR FIXTURE FITTING	PLUMBING FIXTURE OR FIXTURE FITTING MAXIMUM FLOW RATE [b]
Lavatory faucet	[[~~1.0~~]] >>1.5<<gpm at 60 psi
Shower head [a]	1.5 gpm at 80 psi
Sink faucet	[[~~1.0~~]] >>1.5<<gpm at 60 psi
Water closet	1.28 gallons per flushing cycle
Dishwasher (residential)	6.5 gallons per cycle or less (Energy Star/Water Sense Certified) [c]
Washing Machine	Water factor of 8 or lower (Energy Star/Water Sense Certified) [c]

For SI: 1 gallon = 3.785 L, 1 gallon per minute = 3.785 L/m
1 pound per square inch = 6.895 kPa.
a. A handheld shower spray is a showerhead.
b. Consumption tolerances shall be determined from referenced standards.
c. Water factor in gallons per cycle per cubic foot

Section 2. Section 32-84 of the Code of Miami-Dade County, Florida is hereby amended to read as follows:

Sec. 32-84. Water use efficiency standards manual

The Miami-Dade Water and Sewer Department ("MDWASD"), in consultation with the Planning Department and such other applicable county departments and agencies, shall publish a water use efficiency standards manual to achieve maximum water savings in new residential and commercial developments in the incorporated and unincorporated areas of Miami-Dade County. The manual shall be initially published on [[~~July 1, 2008~~]] >>January 1, 2009<< and [[~~shall~~]] >>may<< be updated annually on [[~~July 1~~]] >>January 1<< following approval by the County Commission. Each applicant for water service to a new residential or commercial development in incorporated and unincorporated areas of Miami-Dade County shall include in its application every water use efficiency standard that will be incorporated into the new development. The County or applicable municipality shall review the application for compliance with the manual. In evaluating the application for compliance, the County or applicable municipality will consider the availability of products required to implement the water use efficiency standards. The developer's agreement for water service shall include the water use efficiency standards approved by the County.

Section 3. Section 8A-381 of the County of Miami-Dade County, Florida is hereby amended to read as follows:

Sec. 8A-381. Intent and application.

* * *

(c) The provisions of this article shall apply to multiple unit properties utilizing water services. Effective [[~~July 1, 2008~~]] >>January 1, 2009<<, all permit applications for new multi-family residential developments shall be required to include a submeter for each individual dwelling unit.

Section 4. If any section, subsection, sentence, clause or provision of this ordinance is held invalid, the remainder of this ordinance shall not be affected by such invalidity.

Section 5. It is the intention of the Board of County Commissioners, and it is hereby ordained that the provisions of this ordinance, including any Sunset provision, shall become and be made a part of the Code of Miami-Dade County, Florida. The sections of this ordinance may be renumbered or relettered to accomplish such intention and the word "ordinance" may be changed to "section", "article" or other appropriate word.

Section 6. This ordinance shall become effective ten (10) days after the date of enactment unless vetoed by the Mayor, and if vetoed, shall become effective only upon an override by this Board.

PASSED AND ADOPTED:

Approved by County Attorney as
to form and legal sufficiency.

Prepared by:

Henry N. Gillman

Prime Sponsor: Commissioner Natacha Seijas

Memorandum

MIAMI-DADE COUNTY

Date: May 5, 2009

To: Honorable Chairman Dennis C. Moss and Members, Board of County Commissioners

Agenda Item No. 7(F)

From: George M. Burgess, County Manager

Subject: Ordinance Revising Chapter 18A of the Code of Miami-Dade County, the Landscape Ordinance.

This Substitute Item #2 differs from the original item as follows:

- **Replaces references to "Xeriscape" landscapes with "Florida Friendly" landscapes as promoted by the State.**
- **Updates the definition of "native" plants.**
- **Keeps the native plants requirement to 30% as provided in the current code. Original item increased the native requirement to 50%.**
- **Requires that 50% of the plant material be low maintenance and drought tolerant.**
- **Revises the definition of mulch and the pertinent criteria in order to reflect Florida Friendly landscapes.**
- **Substitute No. 2 differs from Substitute No. 1 in that it complies with the new rule change regarding substitutes and alternates as provided in Ordinance #09-13 adopted on March 3, 2009.**

Recommendation

It is recommended that the Board of County Commissioners (BCC) adopt the attached ordinance revising the Miami-Dade County Landscape Ordinance to supplement outdoor water conservation measures in accordance with the Miami-Dade Water Use Efficiency Plan adopted pursuant to Resolution No. R-468-06.

Scope

This ordinance is of countywide impact.

Fiscal Impact/Funding Source

The proposed ordinance creates no fiscal impact on Miami-Dade County.

Track Record/Monitor

Not applicable.

Background

On April 25, 2006 the Board adopted Resolution R-468-06 which approves the Miami-Dade Water Use Efficiency Plan (Plan) as a part of a larger effort to improve the management of traditional water supplies while improving the efficiency of the County's current water use. The Plan outlines the County's water efficiency measures and best management practices.

The South Florida Water Management District (District) approved the Plan as a condition of the County's 20-Year Water Use Permit issued on November 15, 2007. During the first year of the Plan, WASD kicked-off its conservation efforts by implementing a series of efficiency projects. It is calculated that the total water use savings from these projects will yield a savings of 20 million gallons a day through 2026, including indoor and outdoor water use.

In addition to the implementation of the Plan, an Advisory Committee was established in 2007 at the request of the Government Operations and Environment Committee Chair with the goal of developing countywide guidelines that address water conservation issues and alternative water supplies to assist the County in meeting the conditions of the 20-Year Water Use Permit.

The Advisory Committee is comprised of several county departments including DERM, GSA, Building, Park and Recreation, Planning and Zoning, Building Compliance, Fire, Public Works, and Water and Sewer. In addition to County staff, the Advisory Committee includes representation from stakeholder groups such as the American Society of Landscape Architects, South Florida Builders Association, Sierra Club, Latin Builders Association, Tropical Audubon Society, Association of Cuban Engineers, South Florida Regional Planning Council, Farm Bureau, South Florida Water Management District and the Greater Miami Chamber of Commerce.

On June 5, 2007, the Advisory Committee summarized its findings and presented them to the BCC. These findings included specific recommendations for indoor and outdoor water conservation measures such as the use of high efficiency plumbing fixtures and the use of Florida Friendly landscape principles and irrigation soil moisture sensors. With regards to landscape irrigation, the Advisory Committee's findings were consistent with the "Landscape Irrigation & Florida-Friendly Design Standards" issued by the Florida Department of Environmental Protection in December 2006.

On February 5, 2008 the BCC adopted Ordinance No. 08-14 establishing indoor water conservation measures. The adopted measures call for the installation of efficient water fixtures, appliances and other water saving measures and equipment in new developments. In order to meet the water conservation goals provided in the Plan, the County must also address outdoor water conservation measures.

The proposed revisions to the attached Landscape Ordinance assist the County in meeting the outdoor water conservation goals specified in the Plan for the duration of the County's 20-Year Water Use Permit. In the development of the proposed revisions to the ordinance, the staff of the Department of Planning and Zoning has been working closely with the membership of the Advisory Committee to address outdoor water conservation issues and alternative water supplies for the development community as well as with the members of the Community Image Advisory Board and its Tree and Landscape Projects Sub-Committees. Consultation with other municipalities was also facilitated through these committees.

The proposed ordinance seeks to address outdoor water conservation measures by amending the countywide Landscape Ordinance (Chapter 18A) in order to revise the required plant material, and update the outdoor irrigation language and criteria.

Section 1 of this ordinance revises the Purpose and Intent section of Chapter 18A in order to add by reference the Florida Friendly landscaping principles.

Section 2 of this ordinance revises the Definitions in order to provide additional definitions including definitions for Florida Friendly and the State's Florida Yards & Neighborhood Program. A definition of the County's newly adopted Street Tree Master Plan is also added to this section.

Section 3 of this ordinance revises the Plans Required section in order to include the location of rain switches and soil moisture sensors on the required plans.

Section 4 of this ordinance amends the Minimum Standards section in order to revise the irrigation, trees, shrubs, mulching and plant quality criteria. More specifically this section:

- Updates and rearranges the irrigation sub-section in order to address the design, operation and maintenance of effective irrigation systems. Efforts are made to minimize free water flow conditions and to maximize the uniformity of the system by considering the emitters type, the head spacing, the sprinkler patterns and the water pressure. The section also requires the use of rain switches such as soil moisture sensors.
- Requires that thirty (30) percent of the required plant material shall be native species. No more than 30% of the required shall be palms.
- Requires that fifty (50) percent instead of the required plant material shall be low maintenance and drought tolerant.
- Requires that eighty (80) percent of the plant material required listed in the Landscape Manual, the Street Tree Master Plan or the University of Florida's Low Maintenance Landscape Plants for South Florida list.
- Requires mulches to be applied and maintained in accordance with Florida Friendly Landscaping.

Section 5 of this ordinance revises the Landscape Plan Review Criteria section in order to provide reference to Florida Friendly landscaping.

This ordinance will be complemented by an ordinance establishing minimum landscaping and irrigation criteria for public rights-of-way.

Alex Muñoz
Assistant County Manager

MEMORANDUM

(Revised)

TO: Honorable Chairman Dennis C. Moss and Members, Board of County Commissioners

DATE: May 5, 2009

FROM: R. A. Cuevas, Jr. County Attorney

SUBJECT: Agenda Item No. 7(F)

Please note any items checked.

____	"4-Day Rule" ("3-Day Rule" for committees) applicable if raised
✓	6 weeks required between first reading and public hearing
✓	4 weeks notification to municipal officials required prior to public hearing
____	Decreases revenues or increases expenditures without balancing budget
____	Budget required
____	Statement of fiscal impact required
____	Bid waiver requiring County Mayor's written recommendation
____	Ordinance creating a new board requires detailed County Manager's report for public hearing
____	Housekeeping item (no policy decision required)
____	No committee review

Approved _____ Mayor

Veto _____

Override _____

Agenda Item No. 7(F)

5-5-09

ORDINANCE NO. _____

ORDINANCE REVISING CHAPTER 18A OF THE CODE OF MIAMI-DADE COUNTY, FLORIDA ("CODE"), MIAMI-DADE COUNTY LANDSCAPE ORDINANCE, AMENDING SECTIONS 18A-2 THROUGH 18A-4 AND SECTIONS 18A-6 THROUGH 18A-7, PROVIDING SEVERABILITY, INCLUSION IN THE CODE AND AN EFFECTIVE DATE

BE IT ORDAINED BY THE BOARD OF COUNTY COMMISSIONERS OF MIAMI-DADE COUNTY, FLORIDA:

Section 1. Section 18A-2 of the Code of Miami-Dade County, Florida is hereby amended as follows[1]:

Sec. 18A-2. Purpose and intent.

It is the intent of this chapter to establish minimum landscape standards for Incorporated and Unincorporated Miami-Dade County that enhance, improve and maintain the quality of the landscape, and to:

(A) Promote [[~~xeriscape and~~]] >>Florida Friendly landscaping<< principles through the use of drought-tolerant [[~~landscape~~]] >>plant<< species, grouping of plant material by water requirements, the use of irrigation systems that conserve the use of potable and nonpotable water supplies and restrictions on the amount of lawn areas. >>Florida Friendly landscape principles also promote planting the

[1] Words stricken through and/or [[double bracketed]] shall be deleted. Words underscored and/or >>double arrowed<< constitute the amendment proposed. Remaining provisions are now in effect and remain unchanged.

right plant in the right place and appropriate fertilization and mulching.<<

* * *

Section 2. Section 18A-3 of the Code of Miami-Dade County, Florida is hereby amended as follows:

Sec. 18A-3. Definitions.

The definitions contained in Chapters 24 and 33, Code of Miami-Dade County, Florida, shall apply to this chapter except as otherwise changed herein:

* * *

[[~~(A)~~]] *Accessways:* The maximum width of an accessway through the perimeter landscaped strip to an off-street parking or other vehicular use area shall be determined according to the Public Works Manual, Part I, Standard Details. No more than one (1) two-way accessway shall be permitted or any street frontage up to one hundred (100) lineal feet or no more than two (2) one-way accessways shall be permitted for any street frontage up to one hundred (100) lineal feet, such standards to be applicable to any property under one (1) ownership. Where such ownership involves over one hundred (100) feet of street frontage, one (1) additional two-way or two (2) additional one-way drives may be permitted for each additional one hundred (100) feet of frontage or major fraction thereof. The balance of such street frontage not involved with access ways shall be landscaped in accordance with the provisions of this chapter.

>>*ANSI A300 Standards:* Industry-developed standards of practice for tree care. Acronym for American National Standards Institute.<<

[[~~(B)~~]] *Automatic irrigation system:* An irrigation system with a programmable controller or timing mechanism.

[[~~(C)~~]] *Bonafide agricultural activities:* Land used for the growing of food crops, nurseries for the growing of landscape material, the raising of livestock, horse farms, and other good faith agricultural uses, except any portion of the property not eligible for agricultural exemption.

[[~~(D)~~]] *Buffer, perimeter landscape:* An area of land which is set aside along the perimeter of a parcel of land in which landscaping is required to provide an aesthetic transition between different land

uses and to eliminate or reduce the adverse environmental impact, and incompatible land use impacts.

[[~~(E)~~]] *Caliper:* For trees under four (4) inches in diameter, the trunk diameter measured at a height of six (6) inches above natural grade. For trees four (4) inches and greater in diameter, the trunk diameter measured at twelve (12) inches above natural grade.

[[~~(F)~~]] *Clearance pruning:* Pruning required to avoid damage or danger related to structures, power distribution and property, as defined in the current ANSI A300 Standards.

[[~~(G)~~]] *Colonnade:* A roof or building structure, extending over the sidewalk, open to the street and sidewalk, except for supporting columns or piers.

[[~~(H)~~]] *Common open space:* Area required as open space under Chapter 33 or municipal codes for various zoning districts.

[[~~(I)~~]] *Controlled plant species:* Those plant species listed in the Landscape Manual which tend to become nuisances because of their ability to invade proximal native plant communities or native habitats, but which, if located and cultivated properly may be useful or functional as elements of landscape design.

[[~~(J)~~]] *Diameter at breast height (DBH):* Diameter of a tree's trunk measured at a height four and one-half (4.5) feet above natural grade. In the case of multiple-trunk trees, the DBH shall mean the sum of each trunk's diameter measured at a height of four and one-half (4.5) feet above natural grade.

[[~~(K)~~]] *Differential operation schedule:* A method of scheduling an irrigation system to apply different quantities of water, and/or apply water at different frequencies as appropriate, for different hydrozones.

[[~~(L)~~]] *Dissimilar land uses:* Proximate or directly associated land uses which are contradictory, incongruous, or discordant such as higher intensity residential, commercial or industrial uses located adjacent to lower intensity uses.

[[~~(M)~~]] *Drip line:* An imaginary vertical line extending from the outermost horizontal circumference of a tree's branches to the ground.

[[~~(N)~~]] *Duplex dwelling:* A residence building designed for, or used as the separate homes or residences of two (2) separate and distinct families, but having the appearance of a single family dwelling house. Each individual unit in the duplex shall comply with the definition for a one-family dwelling.

>>*Emitters:* devices which are used to control the discharge of irrigation water from lateral pipes.<<

[[~~(O)~~]] *Existing development:* [[~~Existing development shall~~]] >>Shall<< mean a site with structures that were legally approved through the issuance of a certificate of use and occupancy or a certificate of completion as of the effective date of this chapter.

[[~~(P)~~]] *Energy conservation zone:* A zone located no more than twenty-two (22) feet from a structure in a one hundred eighty (180) degree band from due east of the northeast point of the structure, to due south, to due west of the northwest point of the structure.

>>*Environmentally Endangered Lands:* lands that contain natural forest, wetland or native plant communities, rare and endangered

plants and animals, endemic species, endangered species habitat, a diversity of species, outstanding geologic or other natural features, or land which functions as an integral and sustaining component of an existing ecosystem.<<

[[~~(Q)~~]] *Facultative:* Plants with a similar likelihood of occurring in both wetlands and uplands, which are not recognized indicators of either wetland or upland conditions.

>>*Florida Friendly Landscaping:* practices, materials or actions developed by the Florida Yards & Neighborhood Program that help to preserve Florida's natural resources and protect the environment.

Florida Yards & Neighborhood Program: Is a partnership of the University of Florida/Institute of Food and Agricultural Sciences, Florida's water management districts, the Florida Department of Environmental Protection, the National Estuary Program, the Florida Sea Grant College Program and other agencies, managed locally by the Miami-Dade Cooperative Extension Division of the Consumer Services Department.<<

[[~~(R)~~]] *Forbs:* Herbaceous plants other than grasses.

[[~~(S)~~]] *Geologic feature:* A natural rock or mineral formation.

[[~~(T) Gray water~~]] >>*Graywater*<<: That portion of domestic sewage emanating from residential showers, >>residential baths,<< residential bathroom washbasins, or residential clothes washing machines.

[[~~(U)~~]] *Ground cover:* A dense, extensive growth of low-growing plants, other than turfgrass, normally reaching an average maximum height of not more than twenty-four (24) inches at maturity.

[[~~(V)~~]] *Hatrack:* To flat-cut the top of a tree, severing the leader or leaders, or the removal of any branch three (3) inches or greater in diameter at any point other than the branch collar.

[[~~(W)~~]] *Hazard pruning:* The removal of dead, diseased, decayed, or obviously weak branches two (2) inches in diameter or greater.

[[~~(X)~~]] *Heat island:* An unnaturally high temperature [[~~microclimate~~]] >>microclimate<< resulting from radiation from unshaded impervious surfaces.

[[~~(Y)~~]] *Hedge:* A landscape barrier consisting of a continuous, dense planting of shrubs, not necessarily of the same species.

[[~~(Z)~~]] *Herbaceous plant:* A plant having little or no woody tissue.

[[~~(AA)~~]] *Hydromulch:* A sprayed application of seed, mulch and water.

[[~~(BB)~~]] *Hydrozone:* A zone in which plant material with similar water needs are grouped together.

[[~~(CC)~~]] *Included bark:* Bark that is >>embedded in a crotch between a branch and trunk or between co-dominant stems<< [[~~pushed inside a developing crotch~~]], causing a weakened structure.

[[~~DD~~]] *Irrigation detail:* A graphic representation depicting the materials to be used and dimensions to be met in the installation of the irrigation system.

[[~~(EE)~~]] *Irrigation plan:* A plan drawn at the same scale as the landscape plan, indicating location and specification of irrigation system components and other relevant information as required by this chapter.

[[~~(FF)~~]] *Irrigation system:* A system of pipes or other conduits designed to transport and distribute water to keep plants in a healthy and vigorous condition.

[[~~(GG)~~]] *Landscape feature:* Trellis, arbor, fountain, pond, garden sculpture, garden lighting, decking, patio, decorative paving, gazebo>>,<< and other similar elements.

[[~~(HH)~~]] *Landscape material:* Plants such as grass, ground cover, forbs, shrubs, vines, hedges, trees and non-living material such as rocks, pebbles, sand, mulch, or pervious decorative paving materials.

[[~~(II)~~]] *Landscape plan:* A plan indicating all landscape areas, stormwater retention/detention areas, areas which qualify to be excluded from maximum permitted lawn area, existing vegetation to be retained, proposed plant material, landscape legend, landscape features, planting specifications, and details, and all other relevant information in compliance with this chapter.

[[~~(JJ)~~]] *Lawn area:* An area planted with lawn grasses.

[[~~(KK)~~]] *Manual irrigation system:* An irrigation system in which control valves and switches are manually operated rather than operated by automatic controls.

[[~~(LL)~~]] *Mixed use:* A mixture of land uses such as provided in Traditional Neighborhood Development (TND), Planned Area Development (PAD), and Planned Development (PD).

[[~~(MM)~~]] *Moisture and rain sensor switches:* Devices which have the ability to switch off an automatic irrigation controller after receiving a predetermined amount of rainfall or moisture content in the soil.

[[~~(NN)~~]] *Mulch:* [[~~Non-living organic materials~~]] >>Materials<< customarily used in landscape design to retard erosion, weed infestation, and retain moisture and for use in planting areas.

[[~~(OO)~~]] *Multifamily residential development:* Any residential development other than attached or detached single family or duplex.

[[~~(PP)~~]] *Multiple single family developments:* Attached and detached single family developments that are planned as a total project and not as a single family unit on a single lot.

[[~~(QQ)~~]] *Native habitat:* An area enhanced or landscaped with an appropriate mix of native tree, shrub and groundcover species that resembles a native plant community or natural forest community in structure and composition or is naturally occurring.

[[~~(RR)~~]] *Native plant species:* Plant species with a geographic distribution indigenous to all or part of Miami-Dade County. Plants which are described as being native to Miami-Dade County in botanical manuals such as, but not limited to, "A Flora of Tropical Florida" by Long and Lakela [[~~and "The Biology of Trees Native to Tropical Florida" by P. B. Tomlinson~~]], are native plant species within the meaning of this definition. Plant species which have been introduced into Miami-Dade County by man are not native plant species.

[[~~(SS)~~]] *Native plant community:* A natural association of plants dominated by one (1) or more prominent native plant species, or a characteristic physical attribute.

[[~~(TT)~~]] *Natural [[~~forest community~~]]* >>*Forest Community*<<: All assemblages of vegetation designated as Natural Forest

Communities on the Miami-Dade County Natural Forest Community Maps and approved by the Board of County Commissioners, pursuant to Resolution No. R-1764-84 and further defined in Section 24-[[3]]>>5<< of the Miami-Dade County Code.

[[~~(UU)~~]] *Net lot area:* For the purpose of this chapter, net lot area shall be the area within lot boundaries of all lands comprising the site. Net lot area shall not include any portion of the abutting dedicated streets, alleys, waterways, canals, lakes or any other such dedications.

[[~~(VV)~~]] *One family dwelling:* A private residence building used or intended to be used as a home or residence in which all living rooms are accessible to each other from within the building and in which the use and management of all sleeping quarters, all appliances for sanitation, cooking, ventilating, heating or lighting are designated for the use of one (1) family only.

[[~~(WW)~~]] *Overhead irrigation system:* A high pressure, high volume irrigation system.

[[~~(XX)~~]] *Planting detail:* A graphic representation of the plant installation depicting the materials to be used and dimensions to be met in the placement of plants and other landscape materials.

[[~~(YY)~~]] *Prohibited plant species:* Those plant species listed in the >>Miami-Dade<< Landscape Manual which are demonstrably detrimental to native plants, native wildlife, ecosystems, or human health, safety, and welfare.

[[~~(ZZ)~~]] *Shrub:* A self-supporting woody perennial plant normally growing to a height of twenty-four (24) inches or greater, characterized by multiple stems and branches continuous from the base.

[[~~(AAA)~~]] *Site plan:* A comprehensive plan drawn to scale indicating appropriate site elevations, roadways, and location of all relevant site improvements including structures, parking, other paved areas, ingress and egress drives, landscaped open space and signage.

[[~~(BBB)~~]] *Specimen tree:* A tree with any individual trunk which has a DBH of eighteen (18) inches or greater, but not including the following:

(1) All trees listed in Section 24-[[~~60~~]]>>49<<(4)(f);

(2) Non-native fruit trees that are cultivated or grown for the specific purpose of producing edible fruit, including, but not limited to, mangos, avocados, or species of citrus;

(3) Non-native species of the genus *Ficus*, and

(4) All multitrunk trees in the palm family, except [[~~Accelorrhaphe~~]]>>*Acoelorrhaphe*<< *wrightii* >>*and Phoenix reclinata*<< which have a minimum overall height of fifteen (15) feet.

[[~~(CCC)~~]] *Spray head:* An irrigation device which applies water to the soil or plant surface by fixed spray or mist nozzles.

>>*Sprinkler Head:* a sprinkler head that provides above ground or overhead irrigation.<<

[[~~(DDD)~~]] *Stabilized lawn area:* An area of ground underlain with structural support in the form of grass pavers or stabilized soil prepared to withstand the load of intended vehicular use, such as automobiles, fire trucks and garbage trucks.

[[~~(EEE)~~]] *Stormwater retention/detention area:* An area designed, built and used for temporary storage of stormwater. For purposes of this chapter, these areas are intended to be permanently exempt from wetland regulations.

>>*Street Tree Master Plan:* A greenprint for Miami-Dade County as adopted by the Board of County Commissioners on March 6, 2007 as may be amended from time to time.<<

[[~~(FFF)~~]] *Tree abuse.* Tree abuse shall include:

(1) Damage inflicted upon any part of a tree, including the root system, by machinery, construction equipment, cambium layer penetration, storage of materials, soil compaction, excavation, chemical application or spillage, or change to the natural grade.

(2) Hatracking.

(3) Girdling or bark removal of more than one-third (1/3) of the tree diameter.

(4) Tears and splitting of limb ends or peeling and stripping of bark resulting from improper pruning techniques not in accordance with the current ANSI A300 Standards.

[[~~(GGG)~~]] *Tree canopy [[~~cover~~]]:* The aerial extent of the branches and foliage of a tree >>as defined by the drip line<<.

[[~~(HHH)~~]] *Temporary irrigation systems:* A system including surface distribution elements (hose, pipe, etc.) which may be easily removed when landscape is established.

[[~~(III)~~]] *Understory:* The complex of woody, fibrous, [[~~and~~]] herbaceous >>and graminoid<< plant species that are typically associated with a natural forest community, native plant community, or native habitat.

[[~~(JJJ)~~]] *Vegetation required to be preserved by law:* Portions of a site, including but not limited to specimen trees, natural forest communities and native vegetation which are clearly delineated on site plans, plats, or recorded restrictions, or in some other legally binding manner that are to be protected from any tree or understory removal or effective destruction and maintained without any development.

[[~~(KKK)~~]] *Vegetation survey:* A drawing provided at the same scale as the landscape plan which includes relevant information as required by this chapter.

[[~~(LLL)~~]] *Vehicular use area:* A hard surface area designed or used for off-street parking and/or an area used for loading, circulation, access, storage, including fire trucks, garbage trucks, or display of motor vehicles.

[[~~(MMM)~~]] *Vine:* A plant with a flexible stem which normally requires support to reach mature form.

Section 3. Section 18A-4 of the Code of Miami-Dade County, Florida is hereby amended as follows:

Sec. 18A-4. Plans required.

* * *

(D) *Irrigation plans.* An irrigation plan shall be submitted if a sprinkler system is required by Chapter 33, or as required in the individual municipalities or where an irrigation system is to be provided regardless of code requirements. Where a landscape plan is required, an irrigation plan shall be submitted concurrently.

(1) For a new one-family or duplex dwelling the irrigation plan may be indicated on a plot plan or a separate drawing prepared by the owner or the owner's agent indicating area(s) to be irrigated, location and specifications of lines and heads and pump specifications.

(2) All other development other than those provided in a subsection (1) above shall:

(a) Be drawn on a base plan at the same scale as landscape plan(s).

(b) Delineate landscape areas, major landscape features, and hydrozones.

(c) Delineate existing and proposed structures, parking areas or other vehicular use areas, access aisles, sidewalks, driveways, the location of utilities and easements, and similar features,

(d) Include water source, design operating pressure and flow rate per zone, total volume required for typical depths of application, and application rate.

(e) Include locations of pipes, controllers, valves, sprinklers, back flow prevention devices>>, rain switches or soil moisture sensors,<< and electrical supply.

(f) Irrigation details.

Section 4. Section 18A-6 of the Code of Miami-Dade County, Florida is hereby amended as follows:

Sec. 18A-6. Minimum standards.

The following standards shall be considered minimum requirements unless otherwise indicated:

* * *

(B) *Irrigation.*

(1) All newly-planted and relocated plant material shall be watered by temporary or permanent irrigation systems until such time as they are established >>and subsequently on as needed basis to prevent stress and die off in compliance with existing water use restrictions<<.

(2) Irrigation shall be prohibited within native plant communities and natural forest communities, except for temporary systems needed to establish newly planted material. Temporary irrigation systems shall be disconnected immediately after establishment of plant communities.

[[~~(3) Irrigation systems shall be designed to]] conserve water by allowing differential operation schedules based on hydrozone.~~

~~(4) Irrigation systems shall be designed, operated, and maintained to not overthrow or overflow on to impervious surfaces.~~

~~(5) Low trajectory spray heads, and/or low volume water distributing or application devices, shall be used. Overhead irrigation systems shall only be permitted in bonafide agricultural activity areas.~~

~~(6) Gray water shall be used where approved systems are available.~~

~~(7) During dry periods, irrigation application rates of between one (1) and one and one-half (1 1/2) inches per week are recommended for turf areas.~~

~~(8) A moisture or rain sensor device shall be required on all irrigation systems equipped with automatic controls.~~

~~(9) Irrigation systems shall be timed to operate only during hours and on days permitted under Chapter 32 of the Code.~~

~~(10) If an irrigation system is not provided, a hose bib shall be provided within seventy-five (75) feet of any landscape area.~~]]

>>(3) Irrigation systems shall be designed, operated and maintained to:

(a) Meet the needs of all the plants in the landscape.

(b) Conserve water by allowing differential operation schedules based on hydrozone.

(c) Consider soil, slope and other site characteristics in order to minimize water waste, including overspray or overflow on to impervious surfaces and other non-vegetated areas, and off-site runoff.

(d) Minimize free flow conditions in case of damage or other mechanical failure.

(e) Use low trajectory spray heads, and/or low volume water distributing or application devices.

(f) Maximize uniformity, considering factors such as:

(1) Emitters types,

(2) Head Spacing,

(3) Sprinkler pattern, and

(4) Water pressure at the emitter.

(g) Use the lowest quality water feasible (graywater shall be used where approved systems are available).

(h) Rain switches or other devices, such as soil moisture sensors, shall be used with automatic controls.

Operate only during hours and on days permitted under Chapter 32 of the Code of Miami-Dade County.

(i) Where feasible, drip irrigation or micro-sprinklers shall be used.

(4) During dry periods, irrigation application rates of between one (1) and one and one-half (1 1/2) inches per week are recommended for turf areas.

(5) If an irrigation system is not provided, a hose bib shall be provided within seventy-five (75) feet of any landscape area.<<

(C) *Trees.*

(1) *Tree size.* All trees, except street trees [[~~and trees located beneath power lines~~]], shall be a minimum of ten (10) feet high and have a minimum caliper of two (2) inches at time of planting except that thirty (30) percent of the tree requirement may be met by native species with a minimum height of eight (8) feet and a minimum caliper of one and one-half (1 1/2) inches at time of planting.

* * *

(11) [[~~Thirty (30)~~]] [[~~>>Fifty (50)<<~~]] [[~~percent of the required trees and/or palms shall be native species.~~]] >>Of the required trees at least:
(a) Thirty (30) percent shall be native species; and
(b) Fifty (50) percent shall be low maintenance and drought tolerant; and
(c) No more than thirty (30) percent shall be palms.<<

>>(12) Eighty (80) percent of the trees shall be listed in the Miami-Dade Landscape Manual, the Miami-Dade Street Tree Master Plan and/or the University of Florida's Low-Maintenance Landscape Plants for South Florida list.<<

[[~~(12)~~]] >>(13)<< In order to prevent adverse environmental impacts to existing native plant communities, [[~~only existing Sabal Palmettos (Cabbage Palms)~~]] >>cabbage palms (Sabal palmetto) that are harvested from the wild shall not be used to satisfy minimum landscaping requirements.<< [[~~shall be used to satisfy minimum tree and native plant requirements, except that~~]] >>Only existing cabbage palms,<< [[~~Cabbage Palms~~]] which are rescued from government approved donor sites, transplanted within the site, or commercially grown from seed shall be counted towards the minimum tree and native plant requirements.

[[~~(13)~~]] >>(14)<< When trees are planted within the right-of-way, the owners of land adjacent to the areas where street trees are planted must maintain those areas including the trees, plants and sod, using pruning methods specified in this Code. A covenant executed by those owners is required, or a special taxing district must be created to maintain these areas. Where the State, County or municipality determines that the planting of trees and other landscape material is not appropriate in the public right-of-way, they may require that said trees and landscape material be placed on private property.

[[~~(14)~~]] >>(15)<< Consideration shall be given to the selection of trees, plants and planting site to avoid serious problems such as clogged sewers, cracked sidewalks, and power service interruptions.

[[~~(15)~~]] >>(16)<< Municipalities shall meet all the above requirements in the corresponding zoning districts or land use categories of the particular municipality.

(D) *Shrubs.*

(1) All shrubs shall be a minimum of eighteen (18) inches in height when measured immediately after planting. Shrubs shall be provided at ratio of ten (10) per required tree. [[~~Thirty (30)~~]] [[~~>>Fifty (50)<<~~]] [[~~percent of the shrubs shall be native species.~~]] >>Of the provided shrubs at least:
(a) Thirty (30) percent shall be native species; and
(b) Fifty (50) percent shall be low maintenance and drought tolerant; and
(c) Eighty (80) percent shall be listed in the Miami-Dade Landscape Manual, the Miami-Dade Street Tree Master Plan and/or the University of Florida's Low-Maintenance Landscape Plants for South Florida list.<<

(2) When used as a visual screen, buffer, or hedge, shrubs shall be planted at a maximum average spacing of thirty (30) inches on center or if planted at a minimum height of thirty-six (36) inches, shall

have a maximum average spacing of forty-eight (48) inches on center and shall be maintained so as to form a continuous, unbroken and solid visual screen within one (1) year after time of planting. Shrubs used as a buffer, visual screen, or hedge need not be of the same species.

* * *

(G) *Mulch.*

(1) [[~~Weed-free mulch~~]] [[~~Environmentally friendly organic mulches~~]] >>Mulches<< shall be applied and maintained in [[~~a minimum three (3) inch layer under and around all trees and shrubs, and in a minimum two (2) inch layer under and around all ground cover~~]] >>accordance with the most recent edition of the Florida Yards & Neighborhoods Handbook titled "A Guide to Florida Friendly Landscaping" by the University of Florida, Institute of Food and Agricultural Sciences (UF/IFAS) and available online at http://www.floridayards.org/landscape/FYN-Handbook.pdf.<<

[[~~(2) The use of mulch shall be restricted to planting areas.~~ ~~(3)~~]] >>(2)<< Cypress mulch shall not be used because its harvest degrades cypress wetlands.

* * *

Section 5. Section 18A-7 of the Code of Miami-Dade County, Florida is hereby amended as follows:

Sec. 18A-7. Landscape plan review criteria.

In the unincorporated area all landscape plans shall be reviewed by the Department of Planning and Zoning, and where existing trees or [[~~natural forest communities~~]] >>Natural Forest Communities or Environmentally Endangered Lands<< are involved, the Department of Environmental Resources Management. In the case of a municipality, landscape plans shall be approved by the department(s) or board(s) as deemed appropriate within the municipality. Landscape plans shall be reviewed in accordance with the following goals and objectives and the guidelines and illustrations provided in the Landscape Manual >>as well as the Guide to Florida-Friendly Landscaping provided by the Florida Yards and Neighborhoods Program<<:

(A) Landscape design shall enhance architectural features[[,]]>>;<< relate structure design to the site[[,]]>>;<< visually screen dissimilar uses and unsightly views[[,]]>>;<< reduce noise>>, glare and heat gain<< [[~~impacts~~]] from >>paved areas,<< major roadways and incompatible uses[[,]]>>;<< strengthen important vistas and reinforce neighboring site design and architecture.

(B) Existing specimen trees, native vegetation (including canopy, understory, and ground cover) and Natural Forest Communities shall be preserved to the maximum extent possible and all requirements of Section 24-[[60]]>>49<< of the Code >>of Miami-Dade County shall be met. Preserved Natural Forest Community areas shall be deducted from the total area used to calculate minimum landscaping requirements. Native vegetation in these Natural Forest Community areas shall not be used to satisfy minimum landscape requirements<<.

(C) In order to conserve water, reduce maintenance, and promote plant health, plant species shall be selected and installed based on their water needs, growth rate and size, and resource inputs. Plants with similar water needs shall be grouped in hydrozones. Adequate growth area >>, including rooting space<<, based on natural mature shape and size shall be provided for all plant materials.

* * *

Section 6. If any section, subsection, sentence, clause or provision of this ordinance is held invalid, the remainder of this ordinance shall not be affected by such invalidity.

Section 7. It is the intention of the Board of County Commissioners, and is hereby ordained that the provisions of this ordinance shall become and made a part of the Code of Miami-Dade County, Florida. The section of this ordinance may be renumbered or relettered to accomplish such intention, and the word "ordinance" may be changed to "section", "article" or other appropriate word.

Section 8. This ordinance shall become effective ten (10) days after the date of enactment unless vetoed by the Mayor, and if vetoed, shall become effective only upon an override by this Board.

PASSED AND ADOPTED:

Approved by County Attorney as to form and legal sufficiency: APW for RAC

Prepared by: CHC

Craig H. Coller

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Memorandum

MIAMI-DADE COUNTY

Date: May 5, 2009

To: Honorable Chairman Dennis C. Moss
and Members, Board of County Commissioners

Agenda Item No. 7(G)

From: George M. Burgess
County Manager

Subject: Ordinance Creating Chapter 18B of the Code of Miami-Dade County, the Miami-Dade County Right-of-Way Landscape Ordinance .

This Substitute Item #2 differs from the original item as follows:

- **It exempts from the ordinance zoned or dedicated rights-of-way adjacent to land being used for bonafide agricultural activities.**
- **Revises the mulching criteria in order to reflect Florida Friendly landscapes.**
- **Substitute No. 2 differs from Substitute No. 1 in that it complies with the new rule change regarding substitutes and alternates as provided in Ordinance #09-13 adopted on March 3, 2009.**

Recommendation
It is recommended that the Board of County Commissioners (BCC) adopt the attached ordinance creating the Miami-Dade County Right-of-Way Landscape Ordinance. This ordinance is being created to supplement outdoor water conservation measures in accordance with the Miami-Dade Water Use Efficiency Plan adopted pursuant to Resolution No. R-468-06.

Scope
This ordinance is of countywide impact.

Fiscal Impact/Funding Source
The proposed ordinance creates no fiscal impact on Miami-Dade County.

Track Record/Monitor
Not applicable.

Background
On April 25, 2006 the Board adopted Resolution R-468-06 which approves the Miami-Dade Water Use Efficiency Plan (Plan) as a part of a larger effort to improve the management of traditional water supplies while improving the efficiency of the County's current water use. The Plan outlines the County's water efficiency measures and best management practices. The South Florida Water Management District (District) approved the Plan as a condition of the County's 20-Year Water Use Permit issued on November 15, 2007. During the first year of the Plan, WASD kicked-off its conservation efforts by implementing a series of efficiency projects. It is calculated that the total water use savings from these projects will yield a savings of 20 million gallons a day through 2026, including indoor and outdoor water use.

In addition to the implementation of the Plan, an Advisory Committee was established in 2007 at the request of the Government Operations and Environment Committee Chair with the goal of developing countywide guidelines that address water conservation issues and alternative water supplies to assist the County in meeting the conditions of the 20-Year Water Use Permit.

The Advisory Committee is comprised of several county agencies including the departments of Building, Environmental Resources Management, Fire Rescue, Park & Recreation, Planning & Zoning, Public Works, and Water and Sewer; the Building Code Compliance Office and the General Services Administration. In addition to County staff, the Advisory Committee includes representation from stakeholder groups such as the American Society of Landscape Architects, South Florida Builders Association, Sierra Club, Latin Builders Association, Tropical Audubon Society, Association of Cuban Engineers, South Florida Regional Planning Council, Farm Bureau, South Florida Water Management District and the Greater Miami Chamber of Commerce.

On June 5, 2007, the Advisory Committee summarized its findings and presented them to the BCC. These findings included specific recommendations for indoor and outdoor water conservation measures such as the use of high efficiency plumbing fixtures and the use of Florida Friendly landscape principles and irrigation soil moisture sensors. With regards to landscape irrigation, the Advisory Committee's findings were consistent with the "Landscape Irrigation & Florida-Friendly Design Standards" issued by the Florida Department of Environmental Protection in December 2006.

On February 5, 2008 the BCC adopted Ordinance No. 08-14 establishing indoor water conservation measures. The adopted measures call for the installation of efficient water fixtures, appliances and other water saving measures and equipment in new developments. In order to meet the water conservation goals provided in the Plan, the County must also address outdoor water conservation measures.

The proposed Right-of-Way Landscape Ordinance assists the County in meeting the outdoor water conservation goals specified in the Plan for the duration of the County's 20-Year Water Use Permit. In the development of the proposed ordinance the staff of the Department of Planning and Zoning has been working closely with the membership of the Advisory Committee to address outdoor water conservation issues and alternative water supplies for the development community as well as with the members of the Community Image Advisory Board and its Tree and Landscape Projects Sub-Committees. Consultation with other municipalities was also facilitated through these committees.

The proposed ordinance seeks to address outdoor water conservation measures in connection with rights-of-ways in both unincorporated Miami-Dade and in municipalities. It creates a Right-of-Way Landscape Ordinance (Chapter 18B) that mirrors the existing Landscape Ordinance contained in Chapter 18A of the Code, including the proposed concurrent amendments to the same. Presently rights-of-ways are not specifically regulated for water conservation measures. Interlocal agreements with the municipalities will be subsequently executed in order to implement the proposed ordinance.

Section 1 of this ordinance establishes Chapter 18B as the Miami-Dade County Right-of-Way Landscape Ordinance and provides applicability, definitions, purpose and intent of the

same. It also provides the minimum standards for irrigation, plant material and mulch. More specifically this section:

- Establishes the irrigation sub-section in order to address the design, operation and maintenance of effective irrigation systems. Efforts are made to minimize free water flow conditions and to maximize the uniformity of the system by considering the emitters type, the head spacing, the sprinkler patterns and the water pressure. The section also requires the use of rain switches such as soil moisture sensors.
- Requires that fifty (50) percent of the plant material to be low maintenance and drought tolerant. Canopy trees are preferred where conditions are appropriate.
- Requires that eighty (80) percent of the trees and shrubs provided be listed in the Landscape Manual, the Street Tree Master Plan or the University of Florida's Low Maintenance Landscape Plants for South Florida list.
- Requires mulches to be applied and maintained in accordance with Florida Friendly Landscaping.

This ordinance is complementary to the Miami-Dade Landscape Ordinance and its proposed update.

Alex Muñoz
Assistant County Manager

MEMORANDUM

(Revised)

TO: Honorable Chairman Dennis C. Moss and Members, Board of County Commissioners

DATE: May 5, 2009

FROM: R. A. Cuevas, Jr. County Attorney

SUBJECT: Agenda Item No. 7(G)

Please note any items checked.

____	**"4-Day Rule" ("3-Day Rule" for committees) applicable if raised**
✓	**6 weeks required between first reading and public hearing**
✓	**4 weeks notification to municipal officials required prior to public hearing**
____	**Decreases revenues or increases expenditures without balancing budget**
____	**Budget required**
____	**Statement of fiscal impact required**
____	**Bid waiver requiring County Mayor's written recommendation**
____	**Ordinance creating a new board requires detailed County Manager's report for public hearing**
____	**Housekeeping item (no policy decision required)**
____	**No committee review**

Approved _____ Mayor

Veto _____

Override _____

Agenda Item No. 7(G)

5-5-09

ORDINANCE NO. _____

ORDINANCE CREATING CHAPTER 18B OF THE CODE OF MIAMI-DADE COUNTY, FLORIDA ("CODE"), MIAMI-DADE COUNTY RIGHT-OF-WAY LANDSCAPE ORDINANCE, CREATING SECTIONS 18B-1 THROUGH 18B-4, PROVIDING SEVERABILITY, INCLUSION IN THE CODE AND AN EFFECTIVE DATE

BE IT ORDAINED BY THE BOARD OF COUNTY COMMISSIONERS OF MIAMI-DADE COUNTY, FLORIDA:

Section 1. Chapter 18B of the Code of Miami-Dade County is hereby created as follows:

CHAPTER 18B MIAMI-DADE COUNTY RIGHT-OF-WAY LANDSCAPE ORDINANCE

Sec. 18B-1. Short title and applicability.

(A) This chapter shall be known and may be cited as the "Miami-Dade County Right-of-Way Landscape Ordinance".

(B) *Applicability.* This chapter shall be a minimum standard and shall apply to all public rights-of-way both in the incorporated and unincorporated areas >>except for zoned or dedicated rights-of-way adjacent to lands being used for bonafide agricultural activities as defined in Chapter 18A of this Code<<. Enforcement in the unincorporated area shall be by the County and in the incorporated areas by the municipalities; provided, any municipality may establish and enforce more stringent regulations as such municipality may deem necessary. In the event the provisions hereof are not enforced within any municipality, the County shall enforce same.

Sec. 18B-2. Purpose and intent.

It is the intent of this chapter to establish minimum landscape standards for public rights-of-way in incorporated and unincorporated Miami-Dade County that enhance, improve and maintain the quality of the landscape, and to:

(A) Promote [[~~xeriscape and~~]] Florida Friendly principles through the use of drought-tolerant landscape species, grouping of plant material by water requirements, the use of irrigation systems that conserve the use of potable and nonpotable water supplies and restrictions on the amount of lawn areas.

(B) Use landscape material, specifically street trees, to visually define the hierarchy of roadways, and to provide shade and a visual edge along roadways.

(C) Prevent the destruction of the community's existing tree canopy and promote its expansion.

(D) Provide for the preservation of existing natural forest communities and specimen sized trees in conformance with Section 24-49, as may be amended from time to time; re-establish native habitat where appropriate, and encourage the appropriate use of native plant material in the landscape.

(E) Promote the use of trees and shrubs for energy conservation by encouraging cooling through the provision of shade and the channeling of breezes, thereby helping to offset global warming and local heat island effects through the added absorption of carbon dioxide and reduction of heat islands.

(F) Contribute to the processes of air movement, air purification, oxygen regeneration, ground water recharge, and retention of stormwater runoff, as well as aiding in the abatement of noise, glare, heat, air pollution and dust generated by major roadways and intense use areas.

(G) Reduce the negative impacts of exotic pest plant species and prohibit the use of noxious exotic plants which invade native plant communities.

(H) Promote the use of trees to protect and buffer the effects of high winds on structures.

(I) Promote the concept of planting the right tree or plant in the right place to avoid problems such as clogged sewers, cracked sidewalk and power services interruptions.

Sec. 18B-3. Definitions.

The definitions contained in Chapters 18A, Code of Miami-Dade County, Florida, shall apply to this chapter.

Sec. 18B-4. Minimum standards.

(A) *Irrigation.*

(1) All newly-planted and relocated plant material shall be watered by temporary or permanent irrigation systems until such time as they are established and subsequently on as needed basis to prevent stress and die off in compliance with existing water use restrictions.

(2) Irrigation systems shall be prohibited within native plant communities and natural forest communities, except for temporary systems needed to establish newly planted material. Temporary irrigation systems shall be disconnected immediately after establishment of plant communities.

(3) Irrigation systems shall be designed, operated and maintained to:

(a) Meet the needs of the plants in the landscape.

(b) Conserve water by allowing differential operation schedules based on hydrozone.

(c) Consider soil, slope and other site characteristics in order to minimize water waste, including overspray or overflow on to impervious surfaces and other non-vegetated areas, and off-site runoff.

(d) Minimize free flow conditions in case of damage or other mechanical failure.

(e) Use low trajectory spray heads, and/or low volume water distributing or application devices.

(f) Maximize uniformity, considering factors such as:
(1) Emitters types,
(2) Head spacing,
(3) Sprinkler pattern, and
(4) Water pressure at the emitter.

(g) Use the lowest quality water feasible (graywater shall be used where approved systems are available).

(h) Rain switches or other devices, such as soil moisture sensors, shall be used with automatic controls.

(i) Operate only during hours and on days permitted under Chapter 32 of this Code.

(j) Where feasible, drip irrigation or micro-sprinklers shall be used.

(4) During dry periods, irrigation application rates of between one (1) and one and one-half (1 1/2) inches per week are recommended for turf areas.

(B) *Plant Material and Mulch.*

(1) At least fifty (50) percent of the plant material shall be low maintenance and drought tolerant. Canopy trees are preferred where conditions are appropriate.

(2) Eighty (80) percent of the plant material shall be listed in the Miami-Dade Landscape Manual, the Miami-Dade Street Tree Master Plan and/or the University of Florida's Low-Maintenance Landscape Plants for South Florida list.

(3) Right-of-way landscaping shall include the use of native plant species in order to re-establish an aesthetic regional quality and take advantage of the unique diversity and adaptability of native species to the environmental conditions of South Florida.

(4) Where feasible, the re-establishment of native habitats shall be incorporated into the landscaping.

(5) Existing specimen trees, native vegetation (including canopy, understory, and ground cover) and Natural Forest Communities shall be preserved to the maximum extent possible and all requirements of Section 24-49 of the Code of Miami-Dade County.

(6) In order to conserve water, reduce maintenance, and promote plant health, plant species shall be selected and installed based on their water needs, growth rate and size, and resource inputs. Plants with similar water needs shall be grouped in hydrozones. Adequate growth area (including rooting space), based on natural mature shape and size shall be provided for all plant materials.

(7) Trees and shrubs shall be planted in the energy conservation zone where feasible, in order to reduce energy consumption by shading buildings and other structures and shall be used to reduce heat island effects by shading paved surfaces.

(8) Street trees shall be used to shade roadways and provide visual order. Where feasible, selected species shall be used to establish a road hierarchy by defining different road types.

(9) Prohibited trees shall be removed.

(10) Special attention shall be given to the use of appropriate species located under, or adjacent to overhead power lines, and near native plant communities and near underground utility lines. Adequate growth area shall be provided for all plant materials.

(11) Landscaping shall be designed in such a way as to provide safe and unobstructed views at intersections of roadways, driveways, recreational paths and sidewalks in accordance with Section 33-11 of the Code of Miami-Dade County and in compliance with federal and state standards.

(12) Historic landscapes and landscape features designated by local, State or federal governments shall be preserved.

[[~~(13) Environmentally friendly organic mulches shall be applied and maintained in a minimum three (3) inch layer under and around all trees and shrubs, and in a minimum two (2) inch layer under and around all ground cover.~~

~~(14) The use of mulch shall be restricted to planting areas.~~]]

>>(13) Mulches shall be applied and maintained in accordance with the most recent edition of the Florida Yards & Neighborhoods Handbook titled "A Guide to Florida Friendly Landscaping" by the University of Florida, Institute of Food and Agricultural Sciences (UF/IFAS) and available online at http://www.floridayards.org/landscape/FYN-Handbook.pdf.<<

[[~~(14)~~]] >>(15)<< Cypress mulch shall not be used because its harvest degrades cypress wetlands.

Section 2. If any section, subsection, sentence, clause or provision of this ordinance is held invalid, the remainder of this ordinance shall not be affected by such invalidity.

Section 3. It is the intention of the Board of County Commissioners, and it is hereby ordained that the provisions of this ordinance, including any sunset provision, shall become and be made part of the Code of Miami-Dade County, Florida. The sections of this ordinance may be renumbered or relettered to accomplish such intention, and the word "ordinance" may be changed to "section," "article," or other appropriate word.

Section 4. This ordinance shall become effective ten (10) days after the date of enactment unless vetoed by the Mayor, and if vetoed, shall become effective only upon an override by this Board.

PASSED AND ADOPTED:

Approved by County Attorney as to form and legal sufficiency: APW for RAC

Prepared by: CHC

Craig H. Coller

MEMORANDUM

Agenda Item No. 7(B)

TO:	Honorable Chairman Dennis C. Moss and Members, Board of County Commissioners	**DATE:**	April 7, 2009
FROM:	R. A. Cuevas, Jr. County Attorney	**SUBJECT:**	Ordinance amending Section 32-8.2 of the Code relating to the permanent landscape irrigation restrictions

This ordinance was amended by the Governmental Operations Committee to correct scrivener's errors regarding the current drought restriction in the third Whereas clause and the irrigation of new lawns for thirty days in Section (d) (ii) (7).

The accompanying ordinance was prepared and placed on the agenda at the request of Prime Sponsor Commissioner Natacha Seijas.

R. A. Cuevas, Jr.
County Attorney

RAC/cp

Memorandum

MIAMI-DADE COUNTY

Date: April 7, 2009

To: Honorable Chairman Dennis C. Moss
and Members, Board of County Commissioners

From: George M. Burgess
County Manager

Subject: Ordinance amending Section 32-8.2 of the Code relating to the permanent landscape irrigation restrictions

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The ordinance relating to permanent landscape irrigation restrictions is not expected to have a fiscal impact to Miami-Dade County. The permanent landscape irrigation restrictions are a continuation of the watering restriction imposed by the South Florida Water Management District for more than two years. In the long term, it is expected that water conservation measures such as this are more cost effective in meeting our future water demands in lieu of constructing and operating new water supply facilities.

Alex Munoz
Assistant County Manager

Fis02109

MEMORANDUM

(Revised)

TO: Honorable Chairman Dennis C. Moss and Members, Board of County Commissioners

DATE: April 7, 2009

FROM: R. A. Cuevas, Jr. County Attorney

SUBJECT: Agenda Item No. 7(B)

Please note any items checked.

____	"4-Day Rule" ("3-Day Rule" for committees) applicable if raised
✓	6 weeks required between first reading and public hearing
✓	4 weeks notification to municipal officials required prior to public hearing
____	Decreases revenues or increases expenditures without balancing budget
____	Budget required
____	Statement of fiscal impact required
____	Bid waiver requiring County Mayor's written recommendation
____	Ordinance creating a new board requires detailed County Manager's report for public hearing
____	Housekeeping item (no policy decision required)
____	No committee review

Approved _____ Mayor
Veto _____
Override _____

Agenda Item No. 7(B)
4-7-09

ORDINANCE NO. _____

ORDINANCE AMENDING SECTION 32-8.2 OF THE CODE OF MIAMI-DADE COUNTY, FLORIDA, RELATING TO PERMANENT LANDSCAPE IRRIGATION RESTRICTIONS; PROVIDING MANDATORY YEAR-ROUND LANDSCAPE IRRIGATION CONSERVATION MEASURES; AMENDING CHAPTER 8CC OF THE CODE OF MIAMI-DADE COUNTY, FLORIDA, RELATING TO CODE ENFORCEMENT; PROVIDING SEVERABILITY, INCLUSION IN THE CODE AND AN EFFECTIVE DATE

>>**WHEREAS**, the South Florida Water Management District ("District") has statutory authority to declare a water shortage when insufficient ground or surface water is available to meet the needs of the users or when conditions are such as to require temporary reduction in total use within an area to protect water resources from serious harm; and[1]

WHEREAS, the District previously issued a declaration of water shortage condition for Miami-Dade County based on the region's ongoing drought and the water level of Lake Okeechobee which is operationally controlled by the District; and

WHEREAS, the District invoked Modified Phase II drought restrictions which limited landscape irrigation to two days per week in Miami-Dade County; and

WHEREAS, to protect the water resources in Miami-Dade County, this Board previously enacted Section 32-8.2 of the Code of Miami-Dade County which permanently

[1] Words stricken through and/or [[double bracketed]] shall be deleted. Words underscored and/or >>double arrowed<< constitute the amendment proposed. Remaining provisions are now in effect and remain unchanged.

prohibits landscape irrigation daily between 9:00 am and 5:00 pm except as otherwise provided; and

WHEREAS, due to fluctuating weather conditions and changing water levels of Lake Okeechobee, it is anticipated the District will impose and lift restrictions periodically in order to properly manage flood and drought conditions in the region; and

WHEREAS, this Board finds that it is in the best interest of the people of Miami-Dade County to have a consistent and permanent landscape irrigation policy; and

WHEREAS, this Board finds that a year-round uniform policy for landscape irrigation will effectively protect the water resources of Miami-Dade County and help ensure the availability of potable water to meet the County's projected demand for water,

NOW, THEREFORE,<< BE IT ORDAINED BY THE BOARD OF COUNTY COMMISSIONERS OF MIAMI-DADE COUNTY, FLORIDA:

Section 1. Section 32-8.2 of the Code of Miami-Dade County, Florida, is hereby amended to read as follows:

Sec. 32-8.2. Permanent landscape irrigation restrictions.

(a) *Intent and purpose.* To protect the water resources of Miami-Dade County, Florida from the harmful effects of over utilization[[~~by prohibiting~~]]>>, increase water use efficiency and prevent and curtail wasteful water use practices by providing mandatory year-round<< landscape irrigation >>conservation measures<< [[~~during periods of high evaporation,~~]] and prohibiting the operation of irrigation systems [[~~operated~~]] in a manner causing water to be wasted.

(b) *Definitions.* In construing the provisions of this section, the following definitions shall apply:

>>(1) *Address* shall mean the "house number" (a numeric or alphanumeric designation) that, together with the

street name, describes the physical location of a specific property. This includes "rural route" numbers but excludes post office box numbers. If a lot number in a mobile home park or similar community is used by the U.S. Postal Service to determine a delivery location, the lot number shall be the property's address. If a lot number in a mobile home park or similar residential community is not used by the U.S. Postal Service (e.g. the park manager sorts incoming mail delivered to the community's address), then the community's main address shall be the property's address. If a property has no address it shall be considered "even-numbered".

(2) *Athletic play area* shall mean all golf course fairways, tees, roughs and greens and other athletic play surfaces; including, football, baseball, soccer, polo, tennis and lawn bowling fields, rodeo, equestrian and livestock arenas.

(3) *Even Numbered Address* means an address ending in the numbers 0, 2, 4, 6, 8, or rights-of-way or other locations with no address or the letters A-M.

(4) *Existing Landscape* shall mean any landscaping where a period of 90 days has lapsed from the date of purchase.<<

[[~~(1)~~]]>>(5)<<*Irrigation* shall mean the application of water by means other than natural precipitation.

[[~~(2)~~]]>>(6)<<*Irrigation systems* shall mean equipment and devices which deliver water to the [[~~plants~~]] >>landscape<< being irrigated including, but not limited to, pumping stations, controls, main and submain pipelines, lateral pipelines, emitters, valves, fittings and safety devices.

[[~~(3)~~]]>>(7)<<*Landscape* shall mean all residential, commercial, institutional, industrial or governmental areas which are ornamentally planted including, but not limited to, turf, ground covers, flowers, shrubs, trees, sand, mulch, hedges and similar plant materials>>, lawns, sod, grass and such other flora, not intended for resale, which are situated in locations including, but

not limited to, residential landscapes, recreation areas, cemeteries, public, commercial, and industrial establishments, public medians, and rights-of-way except athletic play areas and public gardens as defined herein.

(8) *Low Volume Hand Watering* shall mean the watering of landscape by one person, with one hose, fitted with a self-canceling or automatic shutoff nozzle.

(9) *Low Volume Irrigation* shall mean the use of equipment and devices specifically designed to allow the volume of water delivered to be limited to a level consistent with the water requirement of the plant being irrigated and to allow that water to be placed with a high degree of efficiency in the root zone of the plant. The term also includes water used in mist houses and similar establishments for plant propagation. Overhead irrigation and flood irrigation are not included.

(10) *Landscape Irrigation* shall mean the outside watering of shrubbery, trees, lawns, sod, grass, ground covers, plants, vines, ornamental gardens, and such other flora not intended for resale, which are planted and are situated in such diverse locations as residential landscapes, recreation areas, cemeteries, public, commercial, and industrial establishments, public medians, and rights-of-way except athletic play areas and public gardens as defined herein.

(11) *Micro-Irrigation* shall mean the application of small quantities of water on or below the soil surface as drops or tiny streams of spray through emitters or applicators placed along a water delivery line. Micro-irrigation includes a number of methods or techniques such as bubbler, drip, trickle, mist or microspray, and subsurface irrigation.

(12) *New Landscaping* shall mean any landscaping where the period of time from the date of purchase is ninety (90) days or less.

(13) *Odd Numbered Address* shall mean an address ending in the numbers 1, 3, 5, 7, 9, or the letters N-Z.

(14) *Public Gardens* shall mean botanical gardens and zoological parks and any planned outdoor space where landscaping is cared for and exhibited and the facility is open to the public at least six months during a twelve month period.

(15) *Reclaimed Water* shall mean wastewater as defined in Rule 62-40.210, F.A.C.

(16) *User* shall mean any person, individual, firm, association, organization, partnership, business trust, corporation, company, agent, employee or other legal entity whether natural or artificial, the United States of America, and the State and all political subdivisions, regions, districts, municipalities, and public agencies thereof, which directly or indirectly takes water from the water resource, including users of private or public utility systems, individual wells or pumps.

(17) *Wasteful and Unnecessary* shall mean allowing water to be dispersed without any practical purpose to the water use; for example, excessive landscape irrigation, leaving an unattended hose on a driveway with water flowing, allowing water to be dispersed in a grossly inefficient manner, regardless of the type of water use; for example, allowing landscape irrigation water to unnecessarily fall onto pavement, sidewalks and other impervious surfaces; allowing water flow through a broken or malfunctioning water delivery or landscape irrigation system.<<

[[~~(4)~~]]>>(18)<<*Water resource* shall mean water on or beneath the surface of the ground including, but not limited to, natural or artificial watercourses, lakes, ponds, or diffused surface water, and water percolating, standing, or flowing beneath the surface of the ground.

[[~~(5) *Low-volume irrigation* shall mean the use of equipment and devices specifically designed to~~

~~allow the volume of water delivered to be limited to a level consistent with the water requirement of the plant being irrigated and to allow that water to be placed with a high degree of efficiency in the root zone of the plant including, but not limited to, water use in mist houses and similar establishments for plant propagation.~~]]

(c) *Application of section:* The provisions of this section shall apply to all [[~~persons using~~]]>>users of<< any water resource within Miami-Dade County, whether from publicly or privately owned water utility systems, private wells, or private connections with surface water bodies. >>The provisions of this section shall not apply to athletic play areas and public gardens as defined herein and users under water use permits issued pursuant to Chapter 40E-2 and 40E-20, F.A.C.<<

(d) *Permanent landscape irrigation restrictions:*

(i) [[~~It shall be unlawful for any person to irrigate or to cause, let, permit, allow or suffer the irrigation of any residential, commercial, institutional, governmental or industrial landscape areas between the hours of 9:00 a.m. and 5:00 p.m. daily.~~]]>>It shall be the duty of each user to keep informed as to the landscape irrigation conservation measures presented within this section, which affect each particular water use.<<

(ii) >>The following requirements shall apply to all users unless specified otherwise herein:

(1) Irrigation of existing landscaping shall comply with the following:<<

[[~~(i)~~]]>>(a)<<It shall be unlawful for any [[~~person~~]] >>user<< to irrigate or to cause, let, permit, allow or suffer the irrigation of any residential, commercial, institutional, governmental or industrial landscape areas between the hours of [[~~9:00 a.m. and 5:00 p.m.~~]] >>10:00 am and 4:00 pm daily except as otherwise provided herein.<<

[[~~(ii)~~]] >>(b)<<It shall be unlawful for any [[~~person~~]]>>user<< to operate or cause, let, permit, allow or suffer the operation of any irrigation system or device in a >>wasteful and unnecessary<< manner [[~~causing water to be wasted~~]] including, but not limited to, watering paved areas, sidewalks, driveways, and parking lots.

>>(c) Even addresses, installations with irrigation systems that irrigate both even and odd addresses within the same zones, including multi-family units and homeowners' associations, and rights-of-way or other locations with no address, as defined in this section shall only conduct necessary landscaping irrigation on Thursday or Sunday or both Thursday and Sunday.

(d) Odd addresses as defined in this section shall only conduct necessary landscape irrigation on Wednesday or Saturday or both Wednesday and Saturday.

(2) Users irrigating new landscaping shall comply with the following:

(a) Irrigation of new landscaping shall be prohibited between the hours of 10:00 a.m. and 4:00 p.m. daily, except as otherwise provided herein.

(b) On the day the new landscaping is installed, the new landscaping may be irrigated once without regard to the normally allowable watering days and times. Irrigation of the soil immediately prior to the installation of the new landscaping is also

allowable without regard to the normal allowable watering days and times.

(c) Irrigation of new landscaping which has been purchased for ninety (90) days or less may be conducted on any day except Friday.

(d) The date of purchase of new landscaping may be demonstrated with a dated receipt or invoice.

(e) Irrigation of new landscaping is limited to areas containing the new landscaping only. An entire zone of an irrigation system shall only be utilized for landscape irrigation under this paragraph if the zone in question is for an area that contains at least 50% new landscaping. If a zone contains less than 50% new landscaping, or if the new landscaping is in an area that will not typically be irrigated by an irrigation system, only the individual new plantings are eligible for additional irrigation under this paragraph. Targeted watering may be accomplished by low volume hand watering, or any appropriate method which isolates and waters only the new landscaping.

(3) Landscape irrigation systems may be operated during restricted days and times for cleaning, maintenance, and repair purposes with an attendant on site in the area being tested. Landscape irrigation systems may routinely be operated for such purposes no more than once per week, and the run time for any one test should not exceed 10 minutes per zone.

(4) Landscape irrigation for the purpose of watering-in fertilizers, insecticides, pesticides, fungicides and herbicides, where such watering-in is recommended by the manufacturer, or by federal, state or local law, or by Florida Green Industries Best Management Practices for Protection of Florida Water Resources Manual, shall be allowed under the following conditions:

(a) Such watering-in shall be limited to one application unless the need for more than one application is stated in the directions for application specified by the manufacturer; and

(b) Such watering-in shall be accomplished during normally allowable watering days and times set forth in paragraphs (d)(ii)(1)(c) and (d)(ii)(1)(d) unless a professional licensed applicator has posted a temporary sign containing the date of application and the date(s) of needed watering-in activity.

(5) Any landscaping may be irrigated using low volume irrigation, micro-irrigation, low-volume hand watering methods including but not limited to the use of a hose with a self-canceling or closing nozzle, rain barrels, cisterns, or other similar rain-harvesting devices without regard to the watering days or times allowed pursuant to this section.

(6) Any landscaping may be irrigated with reclaimed water in accordance with federal, State and local water reuse quality standards, or the use of saltwater without regard to the watering days or times allowed pursuant to this section.

(7) Irrigation of new lawns and landscaping shall be allowed between 11:00 a.m. and 12:01 p.m. daily for a period of thirty (30)

days or until the lawn or landscaping is considered established, whichever period is shorter. <<

[[(iii) The following shall be exempt from the requirements of Section 32-8.2(d)[[(i):

1. Low-volume irrigation systems and hand-watering including but not limited to the use of a hose with a self-canceling or closing nozzle.

2. Irrigation with treated wastewater effluent, in accordance with federal, State and local water reuse quality standards, or the use of saltwater.

3. Irrigation of landscaping for purposes of watering in fungicides, insecticides and herbicides, where watering is required by the manufacturer or by federal, State or local laws. This exemption shall apply only to licensed pest control applicators and shall be limited to the minimum amount specified by the manufacturer's recommendations for the products applied.

4. The operation of irrigation systems for installation, cleaning, repairs, and maintenance purposes by a licensed irrigation contractor or the property owner(s). Each irrigation zone may be tested no more than once a week by the property owner(s) and more frequently by a licensed irrigation contractor. However, such testing shall be limited to the minimum necessary to maintain efficient operation of the system.

5. Irrigation of new lawns and landscaping between 11:00 a.m. and 12:01 p.m. daily for a period of thirty (30) days or until the lawn or landscaping is considered established, whichever period is shorter.]]

>>(e) *Enforcement.*

Every police officer or sheriff having jurisdiction in the area governed by this section shall, in connection with all other duties imposed by law, diligently enforce the provisions of this section. Officers may provide violators with no more than one (1) written warning. This section shall also be enforceable in accordance with the provisions of Chapter 8CC of this code. The County may take any appropriate legal action, including but not limited to emergency prohibitory and mandatory injunctive action to enforce the provisions of this section.

(f) *Penalties.*

Violations of any provision of this section shall be subject to the following penalties:

First violation: Seventy-five ($75.00) fine.

Second and subsequent violations: Fine not to exceed five hundred dollars ($500.00) and/or imprisonment in the County jail not to exceed sixty (60) days.

Each day in violation of this section shall constitute a separate offense.<<

Section 2. Chapter 8CC of the Code of Miami-Dade County, Florida, is hereby amended to read as follows:

Sec. 8CC-10. Schedule of civil penalties.

Code Section	*Description of Violation*	*Civil Penalty*
>>32-8.2	Violation of Permanent Landscape Irrigation Restrictions	$75.00<<

Section 3. If any section, subsection, sentence, clause or provision of this ordinance is held invalid, the remainder of this ordinance shall not be affected by such invalidity.

Section 4. It is the intention of the Board of County Commissioners, and it is hereby ordained that the provisions of this ordinance, including any sunset provision, shall become and be made a part of the Code of Miami-Dade County, Florida. The sections of this ordinance may be renumbered or relettered to accomplish such intention, and the word "ordinance" may be changed to "section," "article," or other appropriate word.

Section 5. This ordinance shall become effective ten (10) days after the date of enactment unless vetoed by the Mayor, and if vetoed, shall become effective only upon an override by this Board.

PASSED AND ADOPTED:

Approved by County Attorney as
to form and legal sufficiency:

Prepared by:

Henry N. Gillman

Prime Sponsor: Commissioner Natasha Seijas

OFFICIAL FILE COPY
CLERK OF THE BOARD
OF COUNTY COMMISSIONERS
MIAMI-DADE COUNTY, FLORIDA

Memorandum

MIAMI-DADE COUNTY

(Second Reading 12-05-06)

Date: September 26, 2006

Agenda Item No. 7(D)

To: Honorable Chairman Joe A. Martinez and Members, Board of County Commissioners

From: George M. Burgess, County Manager

Subject: Ordinance Creating Sections 32-83.1 of the Miami-Dade County Code

O#06-177

RECOMMENDATION

It is recommended that the Board of County Commissioners (Board) approve and adopt the attached ordinance creating Sections 32-83.1 of the Miami-Dade County Code. This new section will require for publicly owned water distribution systems served by the Miami-Dade Water and Sewer Department (MDWASD) to prepare water conservation plans and submit same to the County.

BACKGROUND

The Water Use Efficiency Five-Year Plan adopted by the Board through Resolution R-468-06 includes requirements for water conservation planning, implementation and reporting by wholesale customers (Section 4.2.9). MDWASD has existing contracts with the fifteen (15) wholesale customers; these contracts contain language relating to water conservation, most particularly in drought situations. The essence of the agreement is that if there is a shortage in the supply of water, wholesale customers will curtail their usage to the same extent as MDWASD. At this time there are no specific conservation requirements beyond the drought scenario.

MDWASD is presently developing a twenty-year water conservation plan as a requirement of the Interim Consumptive Use Authorization and Agreement with the South Florida Water Management District (SFWMD). In order to accurately determine the water demand projections and propose water demand reduction goals it is necessary to account for all water produced by MDWASD. In order to accomplish this task it is necessary to have the wholesale customers develop plans similar to the one developed for MDWASD's retail service area.

The 20-year plan presently under development by MDWASD utilizes the Department of Environmental Protection web-based Conserve Florida Guide. The wholesale customers would be required to use this tool in the development of their plans to allow MDWASD to consolidate the plans of the wholesale customers and combine them with the 20-year plan. This practice will also facilitate the annual reporting to the Board and the SFWMD. MDWASD will provide assistance to the wholesalers in the development of their water conservation plans and in the use of the Conserve Florida Guide. The adoption of this ordinance will provide a strategic advancement in water conservation effectiveness to MDWASD. Historically, utilities with wholesale customers have typically been ultimately responsible for the implementation of water conservation measures and best management practices, and general demand management that are required by consumptive use permits. Yet, there has been no authority to require their wholesale customers to help them meet demand management goals.

Assistant County Manager

Memorandum

MIAMI-DADE COUNTY

Date: December 5, 2006

To: Honorable Chairman Joe A. Martinez
and Members, Board of County Commissioners

From: George M. Burgess
County Manager

Subject: Ordinance Creating Section 32-83.1 of the Miami-Dade County Code

---

The ordinance creating Section 32-83.1 of the Miami-Dade County Code requires publicly owned water distribution systems served by the Miami-Dade Water and Sewer Department to prepare water conservation plans and to submit the plans to Miami-Dade County.

The ordinance will not have a fiscal impact to Miami-Dade County. However, wholesale customers may incur expenses developing the plans.

Assistant County Manager

Fls00206

MEMORANDUM
(Revised)

TO: Honorable Chairman Joe A. Martinez and Members, Board of County Commissioners

DATE: December 5, 2006

FROM: Murray A. Greenberg
County Attorney

SUBJECT: Agenda Item No. 7(D)

Please note any items checked.

____	**"4-Day Rule" ("3-Day Rule" for committees) applicable if raised**
√	**6 weeks required between first reading and public hearing**
√	**4 weeks notification to municipal officials required prior to public hearing**
____	**Decreases revenues or increases expenditures without balancing budget**
____	**Budget required**
____	**Statement of fiscal impact required**
____	**Bid waiver requiring County Manager's written recommendation**
____	**Ordinance creating a new board requires detailed County Manager's report for public hearing**
____	**Housekeeping item (no policy decision required)**
____	**No committee review**

Approved _____ Mayor
Veto _____
Override _____

Agenda Item No. 7(D)
12-05-06

ORDINANCE NO. 06-177

ORDINANCE CREATING SECTION 32-83.1 OF THE CODE OF MIAMI-DADE COUNTY; PROVIDING FOR PUBLICLY OWNED WATER DISTRIBUTION SYSTEMS TO PREPARE WATER CONSERVATION PLANS AND SUBMIT SAME TO THE COUNTY; PROVIDING ENFORCEMENT PROCEDURE AND REMEDY; PROVIDING SEVERABILITY, INCLUSION IN THE CODE AND AN EFFECTIVE DATE

BE IT ORDAINED BY THE BOARD OF COUNTY COMMISSIONERS OF MIAMI-DADE COUNTY, FLORIDA:

Section 1. Section 32-83.1 of the Code of Miami-Dade County, Florida, is hereby created to read as follows[1]

>>32-83.1 Water Conservation Plans

A) *Submission of Water Conservation Plan*

Every publicly owned or operated water distribution system supplied potable water, in whole or in part, by Miami-Dade County, shall submit a water conservation plan to the County. All water conservation plans submitted must comply with the South Florida Water Management District Basis of Review for Consumptive Use Permit Application and the Florida Department of Environmental Protection Conserve Florida Guide, as well as the Environmental Protection Agency WaterSense Program. Said Plan shall be updated for the County's approval every five years following submittal and Conserve Florida Guide generated reports shall be filed annually at the close of the fiscal year. All water conservation plans submitted shall consider a twenty year horizon. In the event a publicly owned or operated water distribution system fails to provide its water

[1] Words Stricken through and/or [[double bracketed]] shall be deleted. Words underscored and/or >>double arrowed<< constitute the amendment proposed. Remaining provisions are now in effect and remain unchanged.

conservation plan by the close of the fiscal year, the County shall determine and establish the conservation measures to be implemented by said system and the amount of water supplied to such system by the County which could be conserved via implementation of such measures, and such system shall be bound by such determination and the publicly owned or operated water distribution system shall be subject to the provisions in subsection (B).

B) *Enforcement; procedure; remedies*

Where the County has, pursuant to Subsection (A), established the conservation measures and the amount of water supplied to a water distribution system which could be conserved through the implementation of such measures, the owner or operator of such system shall be required to pay additional fees, in accordance with the Miami-Dade Water and Sewer Department's schedule of rates, fees and charges, as amended, for continued use of the water which could be conserved through implementation of the specified conservation measures. The Miami Dade Water and Sewer Department shall develop a water conservation plan for the water distribution system documenting the proposed measures, best management practices and projected water savings, <<

Section 2. If any section, subsection, sentence, clause or provision of this ordinance is held invalid, the remainder of this ordinance shall not be affected by such invalidity.

Section 3. It is the intention of the Board of County Commissioners, and it is hereby ordained that the provisions of this ordinance, including any Sunset provision, shall become and be made a part of the Code of Miami-Dade County, Florida. The sections of this ordinance may be renumbered or relettered to accomplish such intention and the word "ordinance" may be changed to "section", "article" or other appropriate word.

Section 4. This ordinance shall become effective ten (10) days after the date of enactment unless vetoed by the Mayor, and if vetoed, shall become effective only upon an override by this Board.

PASSED AND ADOPTED: December 5, 2006

Approved by County Attorney as to form and legal sufficiency.

Prepared by:

David M. Murray

APPENDIX E

Table 5: Countywide Water Conservation BMPs

Miami-Dade Water and Sewer Department Water Conservation Best Management Practices (BMPs) June 2020			
Water Saving BMPs	Gallons per Day (GPD) Savings Per BMP	Annual Target Rebates	Annual GPD Target
OTHER			
Faucet Aerators	12	100	1,200
INDOOR			
Showerhead Exchange	35	700	24,500
REBATES			
High Efficiency Toilet Rebates	29	2180	63,220
High Efficiency Showerheads	35	352	12,320
High Efficiency Faucets	12	650	7,800
LANDSCAPE & IRRIGATION EVALUATIONS			
Water-Efficient Landscape and Irrigation Evaluation and Rebates-Single Family Homes (GPD/Per Property)	233	90	20,970
Water-Efficient Landscape and Irrigation Evaluation and Rebates-Non Single Family Homes (GPD/Per Acre)	1,400	45	130,000
TOTAL			**260,010**

APPENDIX F

Water Conservation Plan
2019 Annual Report

MIAMI-DADE COUNTY
miamidade.gov

Water and Sewer
PO Box 330316 • 3071 SW 38 Avenue
Miami, Florida 33233-0316
T 305-665-7471

May 15, 2020

Electronic Correspondence
SFWMD eCompliance
CCN: 63204
File Nos. 8DC.19.17

Mr. Richard Illsley
Compliance Analyst – Water Use Bureau
South Florida Water Management District
3301 Gun Club Road
West Palm Beach, FL 33416-4680
Email: rillsley@sfwmd.gov

Subject: Miami-Dade County Consolidated PWS, Water Use Permit No. 13-00017-W, 2019 Annual Report on the Water Conservation Plan, Special Permit Condition 17

Dear Mr. Illsley:

In accordance with Special Permit Condition 17 of Water Use Permit No. 13-00017-W and the extension granted to submit this report by May 15, 2020, attached is 2019 Annual Report on the Water Conservation Plan.

If you have any questions regarding this submittal, please feel free to call me at (786) 552-8884 or Richard O'Rourke at (786) 552-8123.

Sincerely,

Josenrique Cueto, P.E., ENV SP, LEED® Green Associate
Assistant Director, Planning and Regulatory Compliance

JC/ro

Attachment

ec: Hardeep Anand, P.E., WASD, Hardeep.Anand@miamidade.gov

L20085SFWMD-SC17-WCP

Water Use Permit 13-00017-W, Annual Report Water Conservation Plan, Special Condition 17

ebc: K. Lynskey
A. Penaloza
L. Ramirez
A. Cotarelo
F. Martinez
S. Carballo
H. Anand
D. Griner
P. Martin
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A. Mannix
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I. MacFarlane
S. Villamil
N. Ojeda
I. Gonzalez

MIAMI-DADE COUNTY

Miami-Dade Water & Sewer Department

Miami-Dade Consolidated PWS
Water Use Permit No. 13-00017-W

Water Conservation Plan
2019 Annual Report

January 1, 2019 - December 31, 2019

Miami-Dade Water & Sewer Department
3071 SW 38th Avenue
Miami, FL 33146

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INTRODUCTION

On November 15, 2007, the South Florida Water Management District (SFWMD) Governing Board approved the Miami-Dade Consolidated Water Use Permit (WUP) which required Miami Dade Water & Sewer Dept. (WASD) to develop a 20-year Water Use Efficiency Plan (Plan) to conserve 19.6 million gallons a day (MGD) of water by 2026. The following is a summary of changes to the WUP since the approval of the permit:

On November 1, 2010, SFWMD reissued the permit extending the WUP an additional three years; on December 16, 2012, the permit was again reissued to increase the permitted allocation and to modify the water supply for the South Miami Heights Water Treatment Plant to include allocation from the Floridan Aquifer. On February 9, 2015, SFWMD issued a modification to the WUP, extending the expiration date to February 9, 2035. The permit was again re-issued on September 21, 2015 due to revisions of certain special permit conditions (specifically 12, 13, 16, 22, 26 through 35 and 38).

To comply with the original WUP requirements, WASD developed the Plan using Florida Department of Environmental Protection's Conserve Florida EZ Guide (Guide). The Guide was developed as a web-based application for goal-based water conservation planning. WASD was the first utility in the state to use the Guide to develop, administer and report its water conservation program.

Implementation of the Guide's Best Management Practices (BMPs) assists WASD with meeting the projected 19.62 MGD water savings target by 2026, as required by the WUP. As of December 31, 2019, cumulative water savings from BMPs are 15.80 MGD, exceeding the 2019 water savings goal of 14.08 MGD.

WASD hereby submits the thirteenth Water Conservation Plan Annual Progress Report detailing Miami Dade County's (COUNTY) actions and efforts to comply with Special Permit Condition No. 17 of the modified WUP.

SUMMARY

The Plan was created utilizing the Guide to develop and implement BMPs. The use of quantifiable BMPs has assisted in reviewing and evaluating planned and reported water savings on an annual basis to ensure the implementation of a cost-effective conservation program.

BMPs developed by the Guide included in the Plan are measured and counted toward the 2026 water savings goal of 19.62 MGD. These BMPs include financial rebates for the purchase and installation of high efficiency fixtures including toilets, faucets and showerheads for properties constructed prior to 1996. Toilets must be Environmental Protection Agency (EPA) WaterSense certified not to exceed 1.28 gallons per flush and showerheads and faucets can either be EPA WaterSense certified or have a flowrate that cannot exceed 1.5 gallons per minute (gpm). The high efficiency fixture rebate program provides rebates to single and multi-family residential properties of $50, $25 and $25 for toilets, faucets and showerheads, respectively. The senior high efficiency toilet rebate program implemented in 2016 provides up to $200 for the purchase and installation of one toilet or up to $300 for the purchase and installation of two high efficiency toilets to low income senior homeowners of the COUNTY. The commercial program provides $50 rebates on certified flushometer valve toilets and urinals to commercial, institutional and industrial restrooms such as airports, theaters, stadiums, schools and office buildings. The lodging program provides $50 toward the purchase and installation of certified high efficiency toilets for qualified hotels and motels.

To reduce outdoor water use, the COUNTY offers free landscape irrigation evaluations to single family homeowners and large property owners (i.e. condominium associations, commercial properties, etc.) that have an existing, functioning in-ground irrigation system in place. Rebates are available toward the purchase and installation of retrofits recommended in the evaluation. Single family property owners can receive rebates up to $500 each year for five years while large property owners can receive up to $2,850 per property. In addition, the County provides free smart controllers to qualified single family and large property owners or a rebate toward the purchase of one.

In addition to the above BMPs, other water conservation efforts have been developed to assist WASD to reach its water saving goals. They include: 1) free showerhead exchanges – COUNTY residents can exchange their old water wasting showerhead for a new, high efficiency model; 2) free multi-family showerhead distribution – property owners and managers of multi-family residences constructed before 1996 are eligible for a free large volume showerhead distribution; 3) free lodging showerhead distribution – hotels and motels constructed prior to 1996 are eligible for a free large volume showerhead distribution; 4) water conservation kits – residents concerned about high water bills can obtain a free water conservation kit which includes a high efficiency showerhead, kitchen swivel faucet aerator, 1.0 gpm bathroom aerator and leak detection dye tablets.

In addition to the Plan, the COUNTY created a water use efficiency standards manual in January 2009, detailing specific code changes regarding high efficiency flow rate requirements for bathroom and kitchen fixtures. It provides guidance and recommendations with the intent of achieving maximum water savings in new residential and commercial developments in both incorporated and unincorporated areas of the COUNTY.

The COUNTY also continues to enforce the permanent landscape irrigation restrictions adopted and listed under Section 32-8.2 of the COUNTY code limiting landscape irrigation to

two days per week. A written advisory notice is sent to follow up on formal complaints that are received through either the COUNTY's 3-1-1 system or via a web-based e-mail system.

The COUNTY has also enacted a tiered water rate structure which includes increasing water rates for higher water use to encourage conservation. Rates can be viewed at: https://www.miamidade.gov/global/water/rates.page.

Educational outreach is an important component of the COUNTY's water conservation efforts. During 2019, WASD participated in 44 outreach and education events providing information to residents about the region's water resources and the importance of conserving it. Free giveaways are provided encouraging participants to learn about WASD's incentives (BMPs) to save water. Free reusable water bottles, chip clips, fans, shower timers, aerators (all with water conservation messaging) are an example of items provided. In addition, WASD partners with Dream in Green (DIG), a local not for profit environmental educational organization. DIG's Water + Energy + Learning + Behavior (WELAB) workshops educate residents about the importance of conserving water and energy and their inter-dependent relationship (water/energy nexus). Participants are provided a free toolkit including a high efficiency showerhead, lightbulb, reusable water bottle and showertimer contributed by WASD. In addition, WASD conducts lightbulb and showerhead exchanges during the year at COUNTY-wide outreach events (i.e. Adopt a Tree events) to educate residents on the water/energy nexus connection. Residents can exchange up to three incandescent lightbulbs and two old showerheads for energy efficient Compact Fluorescent Lamp (CFLs) lightbulbs and high efficiency showerheads free of charge.

Education outreach also includes WASD's annual *Every Drop Counts Poster Contest* which invites K-5th grade students to submit a poster conveying a water conservation theme. To incentivize participation, each child that submits a poster receives an Every *Drop Counts* t-shirt. Thirteen winners, one from each COUNTY commission district is selected and awarded gifts and prizes and invited to an awards ceremony at a Board of County Commission meeting for their efforts. This year's event (2020) drew 4,566 submittals from 112 schools located COUNTY wide. A calendar is created each year depicting the thirteen winner's posters conveying the message of water conservation and its importance to the COUNTY's water supply. Visit https://www.miamidade.gov/global/water/conservation/kids-poster-contest.page to view the winning posters.

During 2018, the Board of County Commissioners, considering climate change and rising sea levels, adopted a resolution recognizing the link between conserving water and preventing the advancement of saltwater intrusion into the Biscayne Aquifer, the County's primary source of drinking water. The resolution required the creation of education materials highlighting this link so residents can understand issues affecting the COUNTY, its water resources and how water conservation can lessen the effect. In addition, the County's Office of Resilience created a sea level rise story map at:
https://mdc.maps.arcgis.com/apps/Cascade/index.html?appid=6ff1c86445114dc7b82e13b67b439093
which describes how water conservation can reduce the impact of sea level rise on the Biscayne Aquifer. The COUNTY has also developed a website that provides information on water conservation. Visit http://www.miamidade.gov/waterconservation/home.asp to learn more.

Because of these efforts, as of December 31, 2019 the COUNTY is currently experiencing actual finished water demands of 323.0 MGD which is approx. 19 MGD lower than 2006 actual

finished water demands of 341.62 MGD (as of 12/31/2006, the year prior to the implementation of the WUE Plan).

SECTION I - PLAN IMPLEMENTATION

BMPs implemented since the plan inception are shown in Appendix A. As a result, the COUNTY has experienced declining per capita water consumption. Figure 1 reflects the historical systemwide per capita, showing the effectiveness of WASD's water efficiency strategies. Please note that per capita calculations are revised each year based on current population data from the Miami-Dade COUNTY Planning Division of the Department of Regulatory and Economic Resources.

Figure 1. Miami Dade Water & Sewer Dept. Historical Systemwide Average Finished Water Per Capita

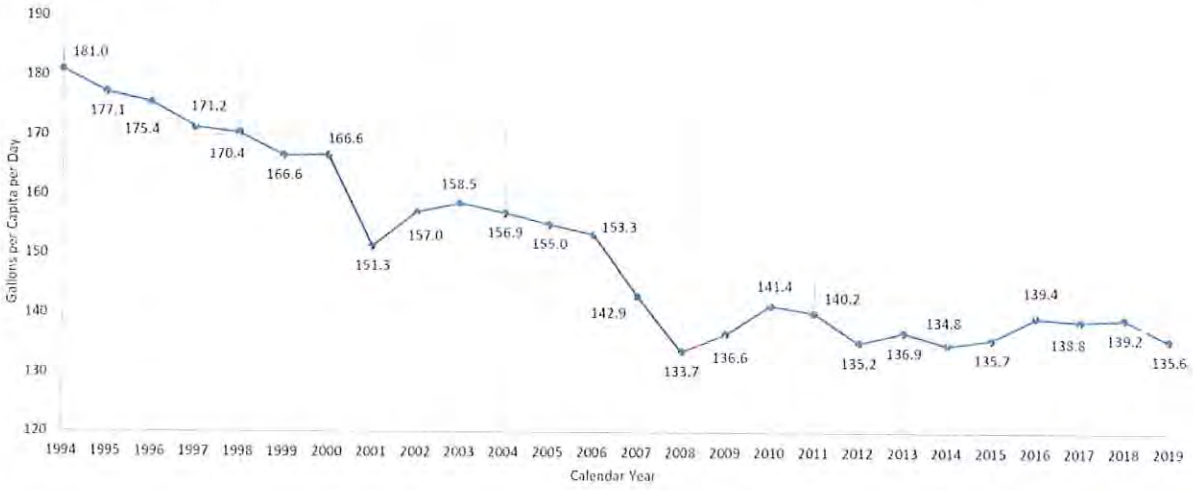

Table 1 shows both the estimated water savings achieved through implementation of the BMPs vs. annual planned goals for water savings. As of December 31, 2019, estimated water savings from implementation of BMPs are approx. 15.80 MGD, exceeding the water savings target set for that year of 14.08 MGD.

Table 1. Water Savings Report Summary

YEAR	WATER SAVINGS (MGD)		MGD SAVINGS/YR (fiscal year)
	Planned	Reported	
2007	1.09	1.21	
2008	2.24	3.48	2.26
2009	3.53	4.90	1.43
2010	4.82	6.54	1.64
2011	6.10	8.47	1.92
2012	7.22	10.07	1.61
2013	8.42	11.23	1.15
2014	9.54	12.34	1.12
2015	10.66	14.14	1.80
2016	11.70	15.05	0.91
2017	12.49	15.32	0.27
2018	13.28	15.51	0.19
2019	14.08	15.80	0.29

APPENDIX A - BMP IMPLEMENTATION THROUGH DECEMBER 31, 2019

BMP: Residential High Efficiency Toilet (HET) Rebate
Cost: $50/rebate

Year		Units	Savings/Account gallons per account per day	Total Savings (gal/day)
2007	Planned	750	29	21,750
	Reported	971	29	28,159
	Difference	221		6,409
2008	Planned	750	29	21,750
	Reported	1253	29	36,337
	Difference	503		14,587
2009	Planned	1000	29	29,000
	Reported	3478	29	100,862
	Difference	2478		71,862
2010	Planned	2000	29	58,000
	Reported	2622	29	76,038
	Difference	622		18,038
2011	Planned	2000	29	58,000
	Reported	2566	29	74,414
	Difference	566		16,414
2012	Planned	1200	29	34,800
	Reported	1220	29	35,380
	Difference	20		580
2013	Planned	1500	29	43,500
	Reported	1547	29	44,863
	Difference	75		2,175
2014	Planned	1500	29	43,500
	Reported	1558	29	45,182
	Difference	58		1,682
2015	Planned	1450	29	42,050
	Reported	1887	29	54,723
	Difference	437		12,673

2016	Planned	1450	29	42,050
	Reported	1772	29	51,388
	Difference	322		9,338
2017	Planned	2400	29	69,600
	Reported	1469	29	42,601
	Difference	-931		-26,999
2018	Planned	1500	29	43,500
	Reported	1466	29	42,514
	Difference	-34		-986
2019	Planned	1,380	29	40,020
	Reported	1,898	29	55,042
	Difference	518		15,022

BMP: Multifamily High Efficiency Toilet (HET) Rebate
Cost: $50/rebate[1]

Year		Units	Savings/Unit Gallons per multi-family unit per day	Total Savings (gal/day)
2007	Planned	0	64	0
	Reported	0	64	0
	Difference	0		
2008	Planned	0	64	0
	Reported	0	64	0
	Difference	0		
2009	Planned	310	64	19,840
	Reported	315	64	20,160
	Difference	5		320
2010	Planned	0	64	0
	Reported	0	64	0
	Difference	0		
2011	Planned	0	64	0
	Reported	0	64	0
	Difference	0		
2012	Planned	0	64	0
	Reported	0	64	0
	Difference	0		0
2013	Planned	0	64	0
	Reported	0	64	0
	Difference	0		0
2014	Planned	0	64	0
	Reported	0	64	0
	Difference	0		0
2015	Planned	80	29	2,320
	Reported	588	29	17,052
	Difference	508		14,732

2016	Planned	80	29	2,320
	Reported	519	29	15,051
	Difference	439		12,731
2017	Planned	120	29	3,480
	Reported	635	29	18,415
	Difference	515		14,935
2018	Planned	300	29	8,700
	Reported	235	29	6,815
	Difference	-65		-1,885
2019	Planned	180	29	5,220
	Reported	480	29	13,920
	Difference	300		8,700

[1]Incorrectly combined with Residential High Efficiency Toilet Rebates prior to 2015

BMP: Senior High Efficiency Toilet (HET) Rebate
Cost: $200 for purchase and installation of one toilet/$300 for purchase and installation of two toilets

Year		Units	Savings/Account gallons per account per day	Total Savings (gal/day)
2016	Planned	0	29	0
	Reported	41	29	1,189
	Difference	41		1,189
2017	Planned	480	29	13,920
	Reported	191	29	5,539
	Difference	-289		-8,381
2018	Planned	204	29	5,916
	Reported	120	29	3,480
	Difference	-84		-2,436
2019	Planned	120	29	3,480
	Reported	115	29	3,335
	Difference	-5		-145

BMP: Single Family High Efficiency Showerhead Rebate
Cost: $25/rebate[1]

Year		Units	Savings/Measure Gallons/Unit/Day	Total Savings Gallons Per Day (gal/day)
2007	Planned	0	35	0
	Reported	0	35	0
	Difference	0		0
2008	Planned	0	35	0
	Reported	0	35	0
	Difference	0	35	0
2009	Planned	0	35	0
	Reported	0	35	0
	Difference	0		0
2010	Planned	0	35	0
	Reported	0	35	0
	Difference	0		0
2011	Planned	0	35	0
	Reported	0	35	0
	Difference	0		0
2012	Planned	50	35	1750
	Reported	23	35	805
	Difference	-27		-945
2013	Planned	50	35	1750
	Reported	46	35	1610
	Difference	-4		-140
2014	Planned	0	35	0
	Reported	59	35	2,065
	Difference	59		2,065
2015	Planned	0	35	0
	Reported	167	35	5,845

	Difference	167		5,845
2016	Planned	0	35	0
	Reported	279	35	9,765
	Difference	279		9,660
2017	Planned	300	35	10,500
	Reported	317	35	11,095
	Difference	17		595
2018	Planned	300	35	10,500
	Reported	326	35	11,410
	Difference	26		910
2019	Planned	300	35	10,500
	Reported	440	35	15,400
	Difference	140		4,900

[1]Note: originally $10/rebate

BMP: Single Family High Efficiency Faucet Rebate
Cost: $25/rebate[1]

Year		Units	Savings/Measure Gallons/Unit/Day	Total Savings Gallons Per Day (gal/day)
2007	Planned	0	12	0
	Reported	0	12	0
	Difference	0		0
2008	Planned	0	12	0
	Reported	0	12	0
	Difference	0		0
2009	Planned	0	12	0
	Reported	0	12	0
	Difference	0		0
2010	Planned	0	12	0
	Reported	0	12	0
	Difference	0		0
2011	Planned	0	12	0
	Reported	0	12	0
	Difference	0		0
2012	Planned	50	12	600
	Reported	107	12	1284
	Difference	57		684
2013	Planned	50	12	600
	Reported	120	12	1440
	Difference	70		840
2014	Planned	0	12	0
	Reported	151	12	1,812
	Difference	151		1,812
2015	Planned	0	12	0
	Reported	433	12	5,196

	Difference	433		5,196
2016	Planned	0	12	0
	Reported	564	12	6,768
	Difference	564		6,768
2017	Planned	600	12	7,200
	Reported	584	12	7,008
	Difference	-16	12	-192
2018	Planned	600	12	7,200
	Reported	639	12	7,668
	Difference	-16	12	468
2019	Planned	600	12	7,200
	Reported	680	12	8,160
	Difference	80	12	960

[1]Note: originally $10/rebate

BMP: Large Property Landscape Irrigation Evaluation Rebate
Cost: $2,850/rebate

Year		Units	Savings/Account Gallons/account/day	Total Savings (gal/day)
2007	Planned	20	35,000	700,000
	Reported	20	35,000	700,000
	Difference	0		
2008	Planned	20	35,000	700,000
	Reported	50	35,000	1,750,000
	Difference	30		1,050,000
2009	Planned	20	35,000	700,000
	Reported	25	35,000	875,000
	Difference	5		175,000
2010	Planned	25	35,000	875,000
	Reported	26	35,000	910,000
	Difference	1		35,000
2011	Planned	35	35,000	1,225,000
	Reported	44	35,000	1,540,000
	Difference	9		315,000
2012	Planned	25	35,000	875,000
	Reported	36	35,000	1,260,000
	Difference	11		385,000
2013	Planned	26	35,000	910,000
	Reported	28	35,000	980,000
	Difference	2		70,000
2014	Planned	27	35,000	945,000
	Reported	25	35,000	875,000
	Difference	-2		-70,000
2015	Planned	69	35,000	2,415,000
	Reported	42	35,000	1,470,000
	Difference	-27		-945,000

2016	Planned	69	various	-
	Reported	23	various	770,448
	Difference	-46		-
2017	Planned	24	various	33,600
	Reported	37	various	75,432
	Difference	13		41,832
2018	Planned	24	various	33,600
	Reported	38	various	61,054
	Difference	13		27,454
2019	Planned	30	various	42,000
	Reported	27	various	112,000
	Difference	-3		-70,000

BMP: Single Family Home Landscape Irrigation Evaluation Rebate
Cost: $500/rebate

Year		Units	Savings/Account Gallons/account/day	Total Savings (gal/day)
2007	Planned	0	233	0
	Reported	0	233	0
	Difference	0		
2008	Planned	0	233	0
	Reported	0	233	0
	Difference	0		
2009	Planned	200	233	46,600
	Reported	200	233	46,600
	Difference	0		
2010	Planned	120	233	27,960
	Reported	131	233	30523
	Difference	11		2563
2011	Planned	120	233	27,960
	Reported	145	233	33,785
	Difference	25		5,825
2012	Planned	100	233	23,300
	Reported	81	233	18,873
	Difference	-19		-4427
2013	Planned	75	233	17,475
	Reported	58	233	13,514
	Difference	17		-3961
2014	Planned	75	233	17,475
	Reported	75	233	17,475
	Difference	17		0
2015	Planned	195	233	45,435
	Reported	84	233	19,572
	Difference	-111		-25,863

2016	Planned	195	233	45,435
	Reported	73	233	17,009
	Difference	-122		-28,426
2017	Planned	60	233	13,980
	Reported	84	233	19,572
	Difference	24		5,592
2018	Planned	72	233	16,776
	Reported	95	233	22,135
	Difference	24		5,359
2019	Planned	70	233	16,310
	Reported	113	233	26,329
	Difference	43		10,019

BMP: Single Family – High Efficiency Showerhead Exchange
Cost: $3.50/showerhead

Year		Units	Savings/Measure Gallons/measure/day	Total Savings (gal/day)
2007	Planned	1600	35	56,000
	Reported	4194	35	146,790
	Difference	2594		90,790
2008	Planned	1600	35	56,000
	Reported	2437	35	85,295
	Difference	837		29,295
2009	Planned	1480	35	51,800
	Reported	2163	35	75,705
	Difference	683		23,905
2010	Planned	1500	35	52,500
	Reported	1986	35	69,510
	Difference	486		17,010
2011	Planned	1500	35	52,500
	Reported	1936	35	67,760
	Difference	436		15,260
2012	Planned	1500	35	52,500
	Reported	3158	35	110,530
	Difference	1658		58,030
2013	Planned	1100	35	38,500
	Reported	1228	35	42,980
	Difference	128		4,480
2014	Planned	1500	35	52,500
	Reported	1991	35	69,685
	Difference	491		17,185
2015	Planned	1500	35	52,500
	Reported	2554	35	89,390
	Difference	1,054		36,890
2016	Planned	1500	35	52,500

	Reported	1463	35	51,205
	Difference	-37		-1,295
2017	Planned	900	35	31,500
	Reported	1121	35	39,235
	Difference	221		7,735
2018	Planned	1,104	35	38,640
	Reported	651	35	22,785
	Difference	-453		15,855
2019	Planned	800	35	28,000
	Reported	710	35	24,850
	Difference	-90		-3,150

BMP: Multifamily – High Efficiency Showerhead Exchange
Cost: $3.50/showerhead

Year		Units	Savings/Measure Gallons/Unit/Day	Total Savings Gallons Per Day (gal/day)
2007	Planned	1600	35	56,000
	Reported	4193	35	146,755
	Difference	2593		90,755
2008	Planned	1600	35	56,000
	Reported	4000	35	140,000
	Difference	2400	35	84,000
2009	Planned	2120	35	74,200
	Reported	2130	35	74,550
	Difference	10		350
2010	Planned	5000	35	175,000
	Reported	6519	35	228,165
	Difference	3485		53,165
2011	Planned	2500	35	87,500
	Reported	2857	35	99,995
	Difference	357		12,495
2012	Planned	2000	35	70,000
	Reported	2163	35	75,705
	Difference	163		5,705
2013	Planned	800	35	28,000
	Reported	814	35	28,490
	Difference	14		490
2014	Planned	1000	35	35,000
	Reported	1167	35	40,845
	Difference	67		5,845
2015	Planned	1000	35	35,000
	Reported	0	35	0

	Difference	-1000		-35,000
2016	Planned	2003	35	70,105
	Reported	77	35	2,695
	Difference	-1,926		-67,410
2017	Planned	300	35	10,500
	Reported	1066	35	37,310
	Difference	766		26,810
2018	Planned	804	35	28,140
	Reported	2	35	70
	Difference	-802		-28,070
2019	Planned	100	35	3,500
	Reported	0	35	0
	Difference	-100		-3,500

BMP: Single Family High Efficiency Retrofit Kit (includes bathroom and kitchen faucet aerators and dye tablets)
Cost: $5/kit

Year		Units	Savings/Measure Gallons/measure/day	Total Savings (gal/day)
2007	Planned	1600	12	19,200
	Reported	4194	12	50,328
	Difference	2594		31,128
2008	Planned	1600	12	19,200
	Reported	2437	12	29,244
	Difference	837		10,044
2009	Planned	1480	12	17,760
	Reported	1498	12	17,976
	Difference	18		216
2010	Planned	1000	12	12,000
	Reported	1321	12	15,852
	Difference	321		3,852
2011	Planned	1000	12	12,000
	Reported	1417	12	17,004
	Difference	417		5,004
2012	Planned	1000	12	12,000
	Reported	2576	12	30,912
	Difference	1576		18,912
2013	Planned	800	24	9,600
	Reported	890	24	10,680
	Difference	90		1,080
2014	Planned	1000	24	24,000
	Reported	1893	24	45,432
	Difference	893		21,432
2015	Planned	1000	24	24,000
	Reported	1345	24	32,280

	Difference	345		8,280
2016	Planned	1000	24	24,000
	Reported	160	24	3,840
	Difference	-840		-20,160
2017	Planned	0	24	0
	Reported	0	24	0
	Difference	0		0
2018		N/A		N/A
2019		N/A		N/A

BMP: Multifamily High Efficiency Retrofit Kit (includes bathroom and kitchen faucet aerators and dye tablets)
Cost: $5/kit

Year		Units	Savings/Measure Gallons/measure/day	Total Savings (gal/day)
2007	Planned	1600	12	19,200
	Reported	4193	12	50,316
	Difference	2593		31,116
2008	Planned	1600	12	19,200
	Reported	4000	12	48,000
	Difference	2400		28,800
2009	Planned	2120	12	25,440
	Reported	2130	12	25,560
	Difference	10		120
2010	Planned	2600	12	31,200
	Reported	5657	12	67,884
	Difference	3057		36,684
2011	Planned	2000	12	24,000
	Reported	2618	12	31,416
	Difference	618		7,416
2012	Planned	1500	12	18,000
	Reported	1567	12	18,804
	Difference	67		804
2013	Planned	500	24	12,000
	Reported	662	24	15,888
	Difference	162		3,888
2014	Planned	750	24	18,000
	Reported	576	24	13,824
	Difference	-174		-4,176
2015	Planned	750	24	18,000
	Reported	0	24	0
	Difference	-750		-18,000

2016	Planned	1,250	24	30,000
	Reported	9	24	8,640
	Difference	-1,241		-29,784
2017	Planned	0	24	0
	Reported	0	24	0
	Difference	0		0
2018		N/A		N/A
2019		N/A		N/A

BMP: Single Family Senior and Low Income High Efficiency Toilet & Retrofit Kit*
Cost: N/A
Note: Program ended October 2012

Year		Units	Savings/Account (Address) Gallons/account/day	Total Savings (gal/day)
2007	Planned	750	64	48,000
	Reported	890	64	56,960
	Difference	140		8,960
2008	Planned	1000	64	64,000
	Reported	1124	64	71,936
	Difference	124		7,936
2009	Planned	1000	64	64,000
	Reported	1000	64	64,000
	Difference	0		
2010	Planned	1000	64	64,000
	Reported	845*	64	54,080
	Difference	-155		-9,920
2011	Planned	750	64	48,000
	Reported	706	64	45,184
	Difference	44		-2,816
2012	Planned	750	64	48,000
	Reported	463	64	29,632
	Difference	-287		-18,368
2013		N/A		N/A
2014		N/A		N/A
2015		N/A		N/A
2016		N/A		N/A
2017		N/A		N/A
2018		N/A		N/A
2019		N/A		N/A

*Note: Reported Value is for each address where a retrofit occurred. A retrofit consists of up to 2 HETs, 2 showerheads, 2-bathroom faucet aerators and a kitchen aerator.

BMP: Single Family High Efficiency Clothes Washer Rebates
Cost: N/A
Note: Program ended October 2009

Year		Units	Savings/Measure gallon/measure/day	Total Savings (gal/day)
2007	Planned	0	16.3	0
	Reported	0	16.3	0
	Difference	0		
2008	Planned	150	16.3	2,445
	Reported	849	16.3	13,838.7
	Difference	699		11,393.7
2009	Planned	250	16.3	4,075
	Reported	937	16.3	15,273.1
	Difference	687		11,198.1
2010		N/A		N/A
2011		N/A		N/A
2012		N/A		N/A
2013		N/A		N/A
2014		N/A		N/A
2015		N/A		N/A
2016		N/A		N/A
2017		N/A		N/A
2018		N/A		N/A
2019		N/A		N/A

BMP: Non-Residential High Efficiency Aerators (Industrial, Commercial and Institutional (ICI))
Cost: $0.50/aerator

2014	Planned	0	12	0
	Reported	205	12	2,460
	Difference	205		2,460
2015	Planned	0	12	0
	Reported	0	12	0
	Difference	0		0
2016	Planned	0	12	0
	Reported	0	12	0
	Difference	0		0
2017	Planned	0	12	0
	Reported	0	12	0
	Difference	0		0
2018	Planned	0	12	0
	Reported	85	12	1,020
	Difference	85		1,020
2019	Planned	0	12	0
	Reported	114	12	1,368
	Difference	114		1,368

BMP: Non-Residential COUNTY Owned Facilities Landscape Irrigation Evaluation (no rebate)
Cost: $250/evaluation

Year		Units	Savings/Measure Gallons/measure/day	Total Savings (gal/day)
2007	Planned	22	1,500	33,000
	Reported	22	1,500	33,000
	Difference	0		
2008	Planned	10	1,500	15,000
	Reported	38	1,500	57,000
	Difference	28		42,000
2009	Planned	0	1,500	0
	Reported	0	1,500	0
	Difference	0		
2010	Planned	0	1,500	0
	Reported	3	1,500	4500
	Difference	3		4500
2011	Planned	10	1,500	15000
	Reported	7	1,500	10,500
	Difference	3		-4,500
2012	Planned	0	1500	0
	Reported	16	1500	24,000
	Difference	16		24,000
2013	Planned	0	1500	0
	Reported	0	1500	0
	Difference			
2014	Planned	0	1500	0
	Reported	1	1500	1500
	Difference	1		1500
2015	Planned	0	1500	0
	Reported	0	1500	0
	Difference	0		0

2016	Planned	0	1500	0
	Reported	0	1500	0
	Difference	0		0
2017	Planned	0	1500	0
	Reported	0	1500	0
	Difference	0		0
2018		N/A		N/A
2019		N/A		N/A

BMP: Non-Residential Green Restaurant Evaluation (no rebate)
Cost: $250/evaluation

Year		Units	Savings/Measure Gallons/measure/day	Total Savings (gal/day)
2007	Planned	0	100	0
	Reported	0	100	0
	Difference	0		
2008	Planned	12	100	1,200
	Reported	14	100	1,400
	Difference	2		200
2009	Planned	12	100	1,200
	Reported	12	100	1,200
	Difference	0		
2010	Planned	12	100	1,200
	Reported	11	100	1,100
	Difference	-1		-100
2011	Planned	0	100	0
	Reported	0	100	0
	Difference	0		
2012	Planned	0	100	0
	Reported	0	100	0
	Difference	0		
2013	Planned	0	100	0
	Reported	0	100	0
	Difference	0		
2014	Planned	0	100	0
	Reported	9	100	900
	Difference	0		900
2015	Planned	0	100	0
	Reported	0	100	0
	Difference	0		0

2016	Planned	0	100	0
	Reported	0	100	0
	Difference	0		0
2017	Planned	0	100	0
	Reported	0	100	0
	Difference	0		0
2018	N/A			N/A
2019	N/A			N/A

BMP: Non-Residential Green Lodging Evaluation no rebates
Cost: $250/evaluation

Year		Units	Savings/Measure gallons/measure/day	Total Savings (gal/day)
2007	Planned	0	1,617	0
	Reported	0	1,617	0
	Difference	0		
2008	Planned	12	1,617	19,404
	Reported	17	1,617	27,489
	Difference	5		8,085
2009	Planned	12	1,617	19,404
	Reported	21	1,617	33,957
	Difference	9		14,553
2010	Planned	0	1,617	0
	Reported	4	1,617	6,468
	Difference	4		6,468
2011	Planned	0	1,617	0
	Reported	3	1,617	4,851
	Difference	3		4,851
2012	Planned	0	1,617	0
	Reported	2	1,617	3234
	Difference	2		3234
2013	Planned	0	1,617	0
	Reported	1	1,617	1,617
	Difference	1		1,617
2014	Planned	0	1,617	0
	Reported	1	1,617	1,617
	Difference	1		1,617
2015	Planned	1	1,617	1,617
	Reported	80	1,617	129,360
	Difference	79		127,743

2016	Planned	0	1,617	0
	Reported	0	1,617	0
	Difference	0		0
2017	Planned	0	1,617	0
	Reported	0	1,617	0
	Difference	0		0
2018	N/A			N/A
2019	N/A			N/A

BMP: Non-Residential Industrial, Commercial and Institutional (ICI) Water-Use Evaluation/Implementation
Cost: N/A before 2017; $50 per toilet 2017 and after

Year		Units	Savings/Measure (gpmd)	Total Savings (gal/day)
2007	Planned	22	1,500	33,000
	Reported	22	1,500	33,000
	Difference	0		
2008	Planned	10	1,500	15,000
	Reported	38	1,500	57,000
	Difference	28		42,000
2009	Planned	0	1,500	0
	Reported	0	1,500	0
	Difference	0		
2010	Planned	0	1,500	0
	Reported	0	1,500	0
	Difference	0		
2011	Planned	0	1,500	0
	Reported	0	1,500	0
	Difference	0		
2012	Planned	0	1,500	0
	Reported	0	1,500	0
	Difference	0		
2013	Planned	0	1,500	0
	Reported	0	1,500	0
	Difference	0		
2014	Planned	0	1,500	0
	Reported	0	1,500	0
	Difference	0		0
2015	Planned	0	1,500	0
	Reported	0	1,500	0

	Difference	0		0
2016	Planned	0	1,500	0
	Reported	0	1,500	0
	Difference	0		0
2017	Planned	0	29	0
	Reported	81	29	2,349
	Difference	81		2,349
2018	Planned	0	29	0
	Reported	274	29	7,946
	Difference	274		7,946
2019	Planned	220	29	6,380
	Reported	467	29	13,543
	Difference	247		7,163

APPENDIX G

Public Water Systems

Appendix G - Florida Department of Health
Public Water Systems - Population served less than 25

PERMIT NUMBER	COMPANY NAME	CLASSIFICATION	ADDRESS	ZIP
13-57-00001	Mary's Ranch	Commercial	16301 NW 122 Avenue	33016
13-57-00003	White Rock Quarries	Commercial	18300 NW 122 Avenue	33012
13-57-00005	Botanics Wholesale Inc	Commercial	31701 SW 194 Avenue	33030
13-57-00010	CEMEX Materials LLC	Commercial	13292 NW 118 Avenue	33178
13-57-00011	General Asphalt	Commercial	17200 NW 122 Avenue	33016
13-57-00020	C. J. Kettles	Community	11401 SW 232 Street	33170
13-57-00024	Kotecha Brothers LLC	Commercial	17425 SW 172 Street	33186
13-57-00029	Florida Concrete Products	Registered	15900 SW 408 Street	33034
13-57-00030	Homestead General Aviat	Registered	28000 SW 217 Avenue	33030
13-57-00032	Landrum's Flotation Tires/	Registered	26150 SW 183 Court	33031
13-57-00035	Landrum's Factory	Commercial	26200 SW 183 Court	33031
13-57-00039	Discount Auto Parts III	Registered	16600 S Dixie Highway	33157
13-57-00053	Royal Container Office	Registered	13850 NW 105 Avenue	33016
13-57-00054	Goulds Post Office	Registered	22350 Old Dixie Highway	33170
13-57-00057	Gros Appliance, CORP.	Registered	23095 S Dixie Highway	33032
13-57-00064	OKEECHOBEE RD/US 2	Commercial	P O Box 17870	33310
13-57-00071	Soroa Orchids Inc	Commercial	25750 SW 177 Avenue	33031
13-57-00082	Florida Concrete Products	Registered	15900 SW 408 Street	33034
13-57-00083	Robbie's Feed Supply Inc	Commercial	22390 SW 177 Avenue	33170
13-57-00089	Sunrise G/H 27	Community	19980 SW 286 Street	33030
13-57-00090	PMS/Federal Aviation Ad	Commercial	19200 SW 128 Street	33196
13-57-00102	Caballero Rivero Woodla	Commercial	US 27 NW 186 St	33186
13-57-00104	Sara's Home Care	Community	29100 SW 172nd Avenue	33030
13-57-00107	Iglesia Adventista Del Sep	Commercial	24000 SW 187 Avenue	33031
13-57-00112	Sturon INC.	Registered	15801 SW 216 Street	33170
13-57-00114	Wat Buddharangsi A	Registered	15200 SW 240 Street	33032
13-57-00115	Wat Buddharangsi B	Registered	15200 SW 240 Street	33032
13-57-00120	FDOT TURNPIKE TOLL B	Commercial	14300 NW Circa 114 Avenue	33016
13-57-00131	TILZER RETAIL CENTER	Registered	17528 S Dixie Highway	33157
13-57-00132	Redland Fire Station No 6	Commercial	17605 SW 248 Street	33170
13-57-00133	Ranger Construction Sout	Commercial	18600 NW 122 Avenue	33016
13-57-00135	Cemex-Krome Quarry	Commercial	8800 SW 177 Avenue	33173
13-57-00146	Seven-Up Snapple South	Commercial	5900 NW 72 Avenue	33126
13-57-00150	Manuel Diaz Farm	Commercial	26401 SW 107 Avenue	33032
13-57-00152	The Ticket Clinic	Registered	16590 S Dixie Highway	33157
13-57-00155	Leasa Industries	Registered	2450 NW 76 Street	33147
13-57-00157	CEMEX-Card Sound Dist.	Commercial	15900 SW 408 Street	33034
13-57-00160	Vulcan Materials Compan	Registered	13100 NW 41 Street	33182
13-57-00161	Vulcan Materials Compan	Registered	13100 NW 41 Street	33182
13-57-00162	Royal Container II	Registered	13850 NW 105 Avenue	33018
13-57-00165	KCAZ Acquisitions LLC -	Community	25511-13 SW 107 Court, Lot 1	33032
13-57-00167	Rolando M. Garcia 25501	Community	25501-03 SW 107 Court	33032
13-57-00171	Allapatah 25420	Community	25420-22 SW 107 Court	33032
13-57-00175	Aran 25401-03 SW 107 C	Community	25401-03 SW 107 Court	33032
13-57-00178	Kendall Properties 5800	Commercial	5800 SW 177 Avenue	33193
13-57-00179	Kendall Properties 5816	Registered	5814-16 SW 177 Avenue	33193
13-57-00180	Kendall Properties 5812	Registered	5810 SW 177 Avenue	33193
13-57-00181	Kendall Properties 5808	Commercial	5808 SW 177 Avenue	33193
13-57-00182	Kendall Properties 5806	Commercial	5806 SW 177 Avenue	33193
13-57-00183	Kendall Properties 5804	Registered	5804 SW 177 Avenue	33193
13-57-00184	Kendall Properties 5802	Registered	5802 SW 177 Avenue	33193
13-57-00187	M.C. Velar Construction	Commercial	13950 NW 107 Avenue	33018

Appendix G - Florida Department of Health
Public Water Systems - Population served less than 25

PERMIT NUMBER	COMPANY NAME	CLASSIFICATION	ADDRESS	ZIP
13-57-00188	Baer's Furniture	Commercial	7501 SW 100 Street	33156
13-57-953986	A & A Passion Fruit, LLC	Commercial	18601 SW 177 Avenue	33187
13-57-973911	Iglesia Bautista Manantial	Commercial	13155 SW 232 Street	33170
13-57-1077891	Julie Landin	Community	17301 SW 104 Avenue	33159
13-57-1097237	Homestead Pole Bean	Commercial	26000 S Dixie Highway	33032
13-57-1121077	Diamond R Fertilizer Co.,	Commercial	18375 SW 260 Street	33031
13-57-1286081	Delta Homestead C & D F	Commercial	11695 SW 328 Street	33032
13-57-1299789	First Grace Faith	Commercial	24637 SW 137 Avenue	33032
13-57-1363642	Okeechobee Barrier	Commercial	Okeechobee Florida Turnpike	33010
13-57-1386458	Expedito's ALF, Inc.	Community	18900 SW 197 Avenue	33187
13-57-1495044	Sweet Hope ALF	Community	13551 SW 208 Street	33177
13-57-1498913	Gregory Collins	Community	25430 SW 107 Court	33032
13-57-1517624	SEIS 21 LLC	Community	555-57 NW 94 Street	33150
13-57-1517628	Halley Engineering Contra	Commercial	13901 NW 118 Avenue	33178
13-57-1578252	Airboat Association Of Flo	Commercial	25400 SW 8 ST	33176
13-57-1582859	Florida Concrete Products	Registered	15900 SW 408 Street	33034
13-57-1585729	Culomar Mgt LLC	Community	10525-27 SW 77 Court	33156
13-57-1602174	Sylvia's Senior Home, Inc	Community	23025 SW 120 Avenue	33170
13-57-1639337	Halley Engineering Contra	Registered	13850 NW 118 Avenue	33178
13-57-1644631	Whispering Manes	Commercial	6105 SW 125 Avenue	33183
13-57-1644695	JVC Management Corp	Commercial	10350 NW 142 Street	33017
13-57-1647703	CEMEX Training Center	Commercial	13292 NW 118 Avenue	33178
13-57-1684977	ALF An Excellent Care	Community	16251 SW 248 Street	33031
13-57-1690908	Hacienda Los Robles	Community	19050 SW 194 Avenue	33187
13-57-1702044	Bernecker's Nursery	Commercial	16900 SW 216 Street	33170
13-57-1706434	Atlas Material Testing	Commercial	16100 SW 216 Street	33170
13-57-1725052	Sunrise Adult Group Hom	Community	15190 SW 272 Street	33170
13-57-1773297	29790 Old Dixie INC.	Commercial	29790 Old Dixie Highway	33031
13-57-1778469	La Finca ALF	Community	17705 SW 218 Street	33170
13-57-1781402	JR Home Ranch 1	Community	19651 SW 165 Avenue	33187
13-57-1800281	Curaleaf Florida LLC	Commercial	19000 SW 192 Street	33187
13-57-1815880	Pure Beauty Farms	Commercial	16350 SW 200 Street	33187
13-57-1825082	KSGNF, LLC	Commercial	35701 SW 202 Avenue	33034
13-57-1837580	Tropical Produce	Commercial	19855 SW 272 Street	33031
13-57-1889260	Sunrise Community Inc 19	Community	19335 SW 310 Street	33030
13-57-1917815	Owls In The Box, LLC	Commercial	17925 SW 208 Street	33187
13-57-1926736	Group Home Service, Inc	Community	14821 SW 202 Avenue	33196
13-57-1949623	Ozinga Vulcan	Commercial	2550 NW 117 Avenue	33182
13-57-1952980	Familia Rivero Nursery Se	Commercial	24394 SW 214 Place	33030
13-57-1953499	Pine Island Nursery	Commercial	16380 SW 192 Street	33187
13-57-2039910 (in progress)	Bills Nursery, INC.	Commercial	30010 SW 205 Avenue	33090
13-57-2040060 (in progress)	The Honey Green Villa	Community	20200 SW 198 Avenue	33187

Source: Florida Department of Health, February 2020.

Appendix G - Florida Department of Environmental Protection (Delegated to FDOH)

Public Water Systems - Population served greater than 25

PWS ID	Mailing Name	Mailing Street1	City	PWS Type	
4130077	BAL HARBOUR VILLAGE	655 96TH ST	BAL HARBOUR	C (COMMUNITY PWS)	CONSECUTIVE SYSTEM, NO WELLS
4130089	BAY HARBOR ISLANDS TOWN OF	9665 BAY HARBOR TERRACE	BAY HARBOR ISLANDS	C (COMMUNITY PWS)	CONSECUTIVE SYSTEM, NO WELLS
4130255	FLORIDA CITY	461 NW 6 AVENUE	FLORIDA CITY	C (COMMUNITY PWS)	WITH WELLS
4130588	REDLANDS MOBILE HOME PARK	17360 S.W. 232 STREET	MIAMI	C (COMMUNITY PWS)	WITH WELLS
4130604	HIALEAH CITY OF	3700 W 4TH AVE	HIALEAH	C (COMMUNITY PWS)	WITH WELLS
4130645	HOMESTEAD CITY OF	505 NW 9 ST. EMERGENCY: 305-247-4116	HOMESTEAD	C (COMMUNITY PWS)	WITH WELLS
4130662	INDIAN CREEK VILLAGE	50 INDIAN CREEK DRIVE	MIAMI BEACH	C (COMMUNITY PWS)	CONSECUTIVE SYSTEM, NO WELLS
4130833	JONES' TRAILER PARK	14601 NW 185TH STREET #11	MIAMI	C (COMMUNITY PWS)	WITH WELLS
4130871	MDWASA - MAIN SYSTEM	3071 SW 38 AVENUE	MIAMI	C (COMMUNITY PWS)	WITH WELLS
4130901	MIAMI BEACH CITY OF	1700 CONVENTION CENTER DR.	MIAMI BEACH	C (COMMUNITY PWS)	CONSECUTIVE SYSTEM, NO WELLS
4130970	NORTH BAY VILLAGE CITY OF	1666 KENNEDY DRIVE	NORTH BAY VILLAGE	C (COMMUNITY PWS)	CONSECUTIVE SYSTEM, NO WELLS
4130977	NORTH MIAMI CITY OF	12098 NW 11 AVE (PLANT)	NORTH MIAMI	C (COMMUNITY PWS)	WITH WELLS
4131001	OPA LOCKA CITY OF	1021 BURLINGTON ST	OPA LOCKA	C (COMMUNITY PWS)	CONSECUTIVE SYSTEM, NO WELLS
4131202	MDWASA/REX UTILITIES	P.O. BOX 316	MIAMI	C (COMMUNITY PWS)	WITH WELLS
4131206	REX UTILITIES INC/REDAVO	15225 SW HARDING LANE	HOMESTEAD	C (COMMUNITY PWS)	CONSECUTIVE SYSTEM, NO WELLS
4131312	SILVER PALM MOBILE HOMES	17350 SW 232 STREET	MIAMI	C (COMMUNITY PWS)	WITH WELLS
4131403	AMERICANA VILLAGE	19800 SW 180 AVE. #602	MIAMI	C (COMMUNITY PWS)	WITH WELLS
4131424	SURFSIDE TOWN OF	9293 HARDING AVE	SURFSIDE	C (COMMUNITY PWS)	CONSECUTIVE SYSTEM, NO WELLS
4131474	MEDLEY WATER DEPARTMENT	7777 NW 72 AVE	MEDLEY	C (COMMUNITY PWS)	CONSECUTIVE SYSTEM, NO WELLS
4131531	VIRGINIA GARDENS VILLAGE OF	6498 NW 38 TERRACE	VIRGINIA GARDENS	C (COMMUNITY PWS)	CONSECUTIVE SYSTEM, NO WELLS
4131558	WEST MIAMI CITY OF	901 SW 62ND AVE	WEST MIAMI	C (COMMUNITY PWS)	CONSECUTIVE SYSTEM, NO WELLS
4131618	NORTH MIAMI BEACH	19150 NW 8 AVENUE	NORTH MIAMI BEACH	C (COMMUNITY PWS)	WITH WELLS
4134357	FKAA J. ROBERT DEAN W.T.P.	19201 SW 354 ST	FLORIDA CITY	C (COMMUNITY PWS)	WITH WELLS
4134365	HIALEAH GARDENS	13601 NW 107 AVE	HIALEAH GARDENS	C (COMMUNITY PWS)	CONSECUTIVE SYSTEM, NO WELLS
4130048	LAS MERCEDES ENTERPRISE INC.	15730 SW 232 STREET	MIAMI	N (TRANSIENT PWS)	WELL
4130053	OLD CUTLER BAIT AND TACKLE	20264 OLD CUTLER ROAD	MIAMI	N (TRANSIENT PWS)	WELL
4130112	BENSON LIGHTING	12955 SW 87 AVE	MIAMI	N (TRANSIENT PWS)	WELL
4130159	BROOKS (J R) & SON	18400-50 SW 256 STREET	HOMESTEAD	N (TRANSIENT PWS)	WELL
4130320	CAMP OWAISSA BAUER	17001 SW 264 STREET	HOMESTEAD	N (TRANSIENT PWS)	WELL
4130496	FRANKSHER BUILDING	9300 SOUTH DIXIE HIGHWAY	MIAMI	N (TRANSIENT PWS)	WELL
4130721	MIAMI EVERGLADES CAMPGROUND	20675 SW 162 AVENUE	MIAMI	N (TRANSIENT PWS)	WELL
4130793	DELUXE MOTEL	28475 SOUTH DIXIE HIGHWAY	HOMESTEAD	N (TRANSIENT PWS)	WELL
4130891	ROBERTS AIR	28701 SW 219 AVENUE	HOMESTEAD	N (TRANSIENT PWS)	WELL
4130893	DADE HOMESTEAD GAA - ADMIN.	28700 SW 217TH AVENUE	HOMESTEAD	N (TRANSIENT PWS)	WELL
4130894	DADE HOMESTEAD GAA SKYDIVE	28700 SW 217 AVENUE	HOMESTEAD	N (TRANSIENT PWS)	WELL
4130897	DADE LANDSCAPE NURSERY	22200 SW 137 AVENUE HOMESTEAD FL 33031	MIAMI	N (TRANSIENT PWS)	WELL
4130900	HOMESTEAD EXECUTIVE JET CENTER	28700 SW 217 AVENUE	HOMESTEAD	N (TRANSIENT PWS)	WELL
4130933	MONKEY JUNGLE	14805 SW 216 ST	MIAMI	N (TRANSIENT PWS)	WELL
4130951	LAST CHANCE LOUNGE	35800 SOUTH DIXIE HIGHWAY	FLORIDA CITY	N (TRANSIENT PWS)	WELL
4131185	LA MISION HOSTEL AND LODGE	22540 S.W. 177 AVENUE	MIAMI	N (TRANSIENT PWS)	WELL
4131192	REDLAND GOLF & COUNTRY CLUB	24451 SW 177 AVENUE	HOMESTEAD	N (TRANSIENT PWS)	WELL
4131313	SILVER PALMS METHODIST CHURCH	15855 SOUTHWEST 248 STREET	HOMESTEAD	N (TRANSIENT PWS)	WELL
4131923	BISC NATL PK-ELLIOTT KEY	9700 SW 328 STREET	HOMESTEAD	N (TRANSIENT PWS)	WELL
4131961	REDLAND FRUIT AND SPICE PARK	24801 SW 187TH AVENUE	MIAMI	N (TRANSIENT PWS)	WELL
4131962	CASTELLOW HAMMOCK PARK	22301 SW 162 AVE	MIAMI	N (TRANSIENT PWS)	WELL

Appendix G - Florida Department of Environmental Protection (Delegated to FDOH)

Public Water Systems - Population served greater than 25

PWS ID	Mailing Name	Mailing Street1	City	PWS Type	
4134228	CHEVRON 24800	24800 SW 177 AVE.	HOMESTEAD	N (TRANSIENT PWS)	WELL
4134234	CEMEX MATERIALS - SWEETWATER	1200 N.W. 137TH AVENUE	MIAMI	N (TRANSIENT PWS)	WELL
4134239	EXPREZO (STOP N' SHOP)	24791 SW 177 AVENUE	HOMESTEAD	N (TRANSIENT PWS)	WELL
4134301	IGLESIA BUEN SAMARITANO	25795 SW 137 AVE	HOMESTEAD	N (TRANSIENT PWS)	WELL
4134328	DIAMOND R. FERTILIZER	18375 SW 260 ST	HOMESTEAD	N (TRANSIENT PWS)	WELL
4134334	COSTA PREMIERE (NURSERY II)	18201 SW 216 ST	MIAMI	N (TRANSIENT PWS)	WELL
4134338	BENITO JUAREZ PARK	19825 SW 376 STREET	HOMESTEAD	N (TRANSIENT PWS)	WELL
4134363	HOMESTEAD JEHOVAH'S WITNESS	18505 SW 288 STREET	HOMESTEAD	N (TRANSIENT PWS)	WELL
4134370	EVERGLADES PK-HIDDEN LK	PO BOX 279	HOMESTEAD	N (TRANSIENT PWS)	WELL
4134372	EVERGLADES PK-LONG PINE KEY	40000 SR 9336	HOMESTEAD	N (TRANSIENT PWS)	WELL
4134373	EVERGLADES NATIONAL PARK BILL ROBERTSON	40000 S.R. 9336	HOMESTEAD	N (TRANSIENT PWS)	WELL
4134374	EVERGLADES PK-ROYAL PALM	40000 S.R. 9336	HOMESTEAD	N (TRANSIENT PWS)	WELL
4134376	EVERGLADES SHARK VALLEY	40000 SR 9336	HOMESTEAD	N (TRANSIENT PWS)	WELL
4134382	BUTLER'S NURSERY	15870 SW 216 STREET	MIAMI	N (TRANSIENT PWS)	WELL
4134384	CAULEY SQUARE I	22400 OLD DIXIE HWY	MIAMI	N (TRANSIENT PWS)	WELL
4134387	RMC 4HH (COCONUT PALM TRADING)	24814 SW 177 AVENUE	HOMESTEAD	N (TRANSIENT PWS)	WELL
4134388	BEEZ KWIK STOP	20090 SW 177 AVENUE	MIAMI	N (TRANSIENT PWS)	WELL
4134393	COOPERTOWN	22700 SW 8 ST	MIAMI	N (TRANSIENT PWS)	WELL
4134394	COSTA NURSERY	22290 SW 162 AVENUE	MIAMI	N (TRANSIENT PWS)	WELL
4134402	GREENLEAF NURSERY	19355 SW 304 STREET	HOMESTEAD	N (TRANSIENT PWS)	WELL
4134404	GULFSTREAM TOMATO GROWERS	21150 SW 167 AVENUE	MIAMI	N (TRANSIENT PWS)	WELL
4134420	SAFARI RESTAURANT	26700 SW 8 ST	MIAMI	N (TRANSIENT PWS)	WELL
4134431	REDLAND MARATHON	14695 SW 216 STREET	MIAMI	N (TRANSIENT PWS)	WELL
4134434	COMMUNITY ASPHALT	14001 N.W. 186 STREET	HIALEAH	N (TRANSIENT PWS)	WELL
4134439	CEMEX-F.E.C. OFFICE	13292 NW 118 AVENUE	HIALEAH	N (TRANSIENT PWS)	WELL
4134442	REDLAND COMMUNITY CHURCH	14601 SW 248 ST.	MIAMI	N (TRANSIENT PWS)	WELL
4134443	COMCAST REDLANDS	20800 SW 167 AVE.	MIAMI	N (TRANSIENT PWS)	WELL
4134448	PALMS PROFESSIONAL CENTER	18430 S. DIXIE HWY.	MIAMI	N (TRANSIENT PWS)	WELL
4134451	FARM CREDIT	24700 SW 177 AVENUE	HOMESTEAD FL 33090	N (TRANSIENT PWS)	WELL
4134453	CEMEX-F.E.C. SHOP	12155 NW 136 STREET	HIALEAH	N (TRANSIENT PWS)	WELL
4134459	CIRCLE D FARMS	32700 SW 217 AVENUE	HOMESTEAD	N (TRANSIENT PWS)	WELL
4134462	REDLANDS GROCERY	26400 SW 187 AVENUE	HOMESTEAD	N (TRANSIENT PWS)	WELL
4134468	U-HAUL RENTAL & SERVICES	16500 SO. DIXIE HIGHWAY	MIAMI	N (TRANSIENT PWS)	WELL
4134499	OUR LADY OF MERCY CEMETERY ADM.	11411 NW 25 STREET	DORAL	N (TRANSIENT PWS)	WELL
4134506	CHRIST FELLOWSHIP	16390 SW 248 STREET	HOMESTEAD	N (TRANSIENT PWS)	WELL
4134512	DE LEON BROMELIADS	13745 S.W. 216TH ST.	MIAMI	N (TRANSIENT PWS)	WELL
4134516	TOM THUMB 127	18400 SW 177 AVENUE MIAMI 33187	HIALEAH	N (TRANSIENT PWS)	WELL
4134520	RANCHO GASPAR	16480 NW 117 AVENUE	MIAMI	N (TRANSIENT PWS)	WELL
4134522	1ST BAPTIST CHURCH OF HOMESTEAD	29050 KROME AVE. MAIL: POBOX 900428	HOMESTEAD	N (TRANSIENT PWS)	WELL
4134523	WOMEN'S CLUB OF HOMESTEAD	17905 SW 292 STREET	HOMESTEAD	N (TRANSIENT PWS)	WELL
4134524	KROME AVENUE CHURCH	22755 SW 177 AVENUE	MIAMI	N (TRANSIENT PWS)	WELL
4134525	RINKER HYDRO-CONDUIT	13100 NW 118TH AVENUE	MIAMI	N (TRANSIENT PWS)	WELL
4134527	CEMEX EMPLOYEES	12150 NW 136 ST	MIAMI	N (TRANSIENT PWS)	WELL
4134528	EL GALLO AZUL	16751 KROME AVENUE	MIAMI	N (TRANSIENT PWS)	WELL
4134531	TOM THUMB 131	24790 SW 177 AVE	HOMESTEAD	N (TRANSIENT PWS)	WELL

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PWS ID	Mailing Name	Mailing Street1	City	PWS Type	
4134532	SUNOCO KROME	26400 SW 177 AVE	HOMESTEAD	N (TRANSIENT PWS)	WELL
4134533	GATOR PARK	24050 SW 8 STREET	MIAMI	N (TRANSIENT PWS)	WELL
4134537	MANNHEIMER FOUNDATION	20255 SW 360 STREET	HOMESTEAD	N (TRANSIENT PWS)	WELL
4134540	FOOD EXPRESS	23150 SW 177 AVE	MIAMI	N (TRANSIENT PWS)	WELL
4134542	REDLAND PLAZA SHOPPING CENTER	19130 SW 177 AVENUE	MIAMI	N (TRANSIENT PWS)	WELL
4134543	SCHNEBLY WINERY	30205 SW 217 AVENUE	HOMESTEAD	N (TRANSIENT PWS)	WELL
4134547	GLASER FARMS	19100 SW 137 AVENUE	MIAMI	N (TRANSIENT PWS)	WELL
4134549	ROBERT IS HERE	19200 SW 344 STREET	FLORIDA CITY	N (TRANSIENT PWS)	WELL
4134551	TROPICAL VILLAGE FARM	22601 SW 177 AVE	MIAMI	N (TRANSIENT PWS)	WELL
4134552	JALARAM PRODUCE	18850 SW 360 STREET	HOMESTEAD	N (TRANSIENT PWS)	WELL
4134553	COSTA FARMS ORCHID HOUSE	24000 SW 162 AVENUE	HOMESTEAD	N (TRANSIENT PWS)	WELL
4134554	FARMER'S MARKET SAN GERMAN	17800 SW 100 ST	MIAMI	N (TRANSIENT PWS)	WELL
4134555	ASCENCION ONE	11411 NW 25 STREET	DORAL	N (TRANSIENT PWS)	WELL
4134556	EVERGLADES GATOR GRILL	36600 SW 192 AVENUE	HOMESTEAD	N (TRANSIENT PWS)	WELL
4134557	OUR LADY OF MERCY MAUSOLEUM	11411 NW 25 STREET	DORAL	N (TRANSIENT PWS)	WELL
4134558	OUR LADY OF MERCY CHAPEL	11411 NW 25 STREET	DORAL	N (TRANSIENT PWS)	WELL
4134560	CAULEY SQUARE II	22400 OLD DIXIE HWY	MIAMI	N (TRANSIENT PWS)	WELL
4134563	VALUE PAWN AND JEWELRY	18494 SOUTH DIXIE HWY	MIAMI	N (TRANSIENT PWS)	WELL
4134564	KROME BREWING	17480 SW 232 STREET	MIAMI	N (TRANSIENT PWS)	WELL
4134565	PINTO'S FARM	14890 SW 216 STREET	MIAMI	N (TRANSIENT PWS)	WELL
4134566	FARMERS MARKET FOOD 4 LESS	15390 SW 184 STREET	MIAMI	N (TRANSIENT PWS)	WELL
4134567	REDLAND RANCH INC.	14655 SW 232 STREET	MIAMI	N (TRANSIENT PWS)	WELL
4134569	FRUIT STAND BY BROTHERS	15515 SW 177 AVENUE	MIAMI	N (TRANSIENT PWS)	WELL
4134570	BERNECKER PACKING	16900 SW 216 STREET	MIAMI	N (TRANSIENT PWS)	WELL
4134571	COSTA MIKE COSTA	14201 SW 216 STREET	MIAMI	N (TRANSIENT PWS)	WELL
4134572	COSTA FARM FANCY FLORA	19950 SW 216 STREET	MIAMI	N (TRANSIENT PWS)	WELL
4134573	COSTA COLOR OFFICE	19595 SW 194 AVE	MIAMI	N (TRANSIENT PWS)	WELL
4134574	COSTA COLOR PACKING	19995 SW 194 AVENUE	MIAMI	N (TRANSIENT PWS)	WELL
4134575	COSTA COLOR PARKING	19995 SW 194 AVENUE	MIAMI	N (TRANSIENT PWS)	WELL
4134576	COSTA FARM GEERLING'S	19901 SW 248 STREET	HOMESTEAD	N (TRANSIENT PWS)	WELL
4134577	COSTA FARM RIO	21840 SW 258 STREET	HOMESTEAD	N (TRANSIENT PWS)	WELL
4134578	COSTA FARM SUNSHINE	17950 SW 264 STREET	HOMESTEAD	N (TRANSIENT PWS)	WELL
4134581	EVERGLADES ALLIGATOR FARM	40351 SW 192 AVENUE	FLORIDA CITY	N (TRANSIENT PWS)	WELL
4134582	FAMILY PAINTBALL CENTER	220 NW 137 AVENUE	MIAMI-DADE	N (TRANSIENT PWS)	WELL
4134583	M&M FARM	14945 SW 197 AVENUE	MIAMI	N (TRANSIENT PWS)	WELL
4134584	PURE BEAUTY FARMS	16350 SW 200 STREET MIAMI FL	MIAMI	N (TRANSIENT PWS)	WELL
4134588	NEPTUNE CIGARS	9308 SOUTH DIXIE HWY	MIAMI	N (TRANSIENT PWS)	WELL
4134589	THE LITTLE FARM.US	13401 SW 224 STREET	MIAMI	N (TRANSIENT PWS)	WELL
4134591	FARMHOUSE MIAMI	16901 SW 177 AVENUE	MIAMI-DADE	N (TRANSIENT PWS)	WELL
4134593	FARM STORE 1202	970 SW 87 AVENUE	MIAMI	N (TRANSIENT PWS)	WELL
4134594	FARM STORE 2406	12075 SOUTH DIXIE HWY	PINECREST	N (TRANSIENT PWS)	WELL
4134595	MOE'S TREEHOUSE CREAMERY	12375 SW 224 STREET UNIT B	MIAMI	N (TRANSIENT PWS)	WELL
4134596	HORSE COUNTRY FARMERS MARKET	12320 SW 56 STREET	MIAMI	N (TRANSIENT PWS)	WELL
4134597	AGUACATE LLC	12100 SW 43 STREET	MIAMI	N (TRANSIENT PWS)	WELL
4130322	REDLAND MIDDLE SCHOOL	16001 SW 248 ST	HOMESTEAD	P (NON TRANSIENT PWS)	WELL

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PWS ID	Mailing Name	Mailing Street1	City	PWS Type	
4130445	TROPICAL RESEARCH & EDUCATION CENTER	18905 SW 280 STREET	HOMESTEAD	P (NON TRANSIENT PWS)	WELL
4130934	KINGSWOOD MONTESSORI ACADEMY INC.	20130 SW 304 ST	HOMESTEAD	P (NON TRANSIENT PWS)	WELL
4131631	HOMESTEAD AIR FORCE BASE	31 CES/DEMW WATER PLANT	HOMESTEAD	P (NON TRANSIENT PWS)	CONSECUTIVE SYSTEM, NO WELLS
4131958	SUNRISE COMMUNITY	22300 S.W. 162 AVENUE	MIAMI	P (NON TRANSIENT PWS)	WELL
4134300	REDLAND CHRISTIAN ACADEMY	17700 SW 280 ST	HOMESTEAD	P (NON TRANSIENT PWS)	WELL
4134368	EVERGLADES PK-PINE ISLAND	40000 SR 9336	HOMESTEAD	P (NON TRANSIENT PWS)	WELL
4134369	EVERGLADES PK-HEADQTRS	40000 SR 9336	HOMESTEAD	P (NON TRANSIENT PWS)	WELL
4134371	EVERGLADES PK-DAN BEARD	40000 S.R. 9336	HOMESTEAD	P (NON TRANSIENT PWS)	WELL
4134465	SUNRISE ADULT SERVICES (29800)	29800 OLD DIXIE HWY	HOMESTEAD	P (NON TRANSIENT PWS)	WELL
4134498	CREATIVE YEARS	15680 SW 232 STREET	MIAMI	P (NON TRANSIENT PWS)	WELL
4134502	LIFE POINTE CHURCH	27550 OLD DIXIE HIGHWAY	HOMESTEAD	P (NON TRANSIENT PWS)	WELL
4134513	MIAMI INTL AIRPORT	P.O. BOX 592075	MIAMI	P (NON TRANSIENT PWS)	CONSECUTIVE SYSTEM, NO WELLS
4134546	MY LITTLE ANGELS DAYCARE	29400 OLD DIXIE HWY	HOMESTEAD	P (NON TRANSIENT PWS)	WELL
4134562	COSTA FARMS	21800 SW 162 AVENUE	MIAMI	P (NON TRANSIENT PWS)	WELL

Source: Florida Department of Health (FDOH), February 2020