

CITY OF Coral Gables, FLORIDA

10 YEAR WATER SUPPLY FACILITIES WORK PLAN

Prepared By:

City of Coral Gables Planning Department

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1.0 INTRODUCTION

The purpose of the City of Coral Gables 10 Year Water Supply Facilities Work Plan (Work Plan) is to identify and plan for the water supply sources and facilities needed to serve existing and new development within the local government's jurisdiction. Chapter 163, Part II, F.S., requires local governments to prepare and adopt Work Plans into their comprehensive plans within 18 months after the water management district approves a regional water supply plan or its update. The *Lower East Coast Water Supply Plan Update* was approved by the South Florida Water Management District (SFWMD) on February 15, 2007. Therefore, the deadline for local governments within the Lower East Coast jurisdiction to amend their comprehensive plans to adopt a Work Plan is August 15, 2008.

Residents of the City of Coral Gables obtain their water directly from the Miami-Dade County Water and Sewer Department (WASD), which is responsible for ensuring that enough capacity is available for existing and future customers.

The City of Coral Gables 10 Year Water Supply Facilities Work Plan (Work Plan) will reference the initiatives already identified in Miami-Dade County's 20-year Work Plan since the City is a retail buyer. According to state guidelines, the Work Plan and the comprehensive plan amendment must address the development of traditional and alternative water supplies, bulk sales agreements and conservation and reuse programs that are necessary to serve existing and new development for at least a 10-year planning period. The City of Coral Gables Work Plan will comply with this standard and will be incorporated into the Comprehensive Plan as a sub-element of the Community Services and Facilities Element. Additionally, new and revised objectives and policies will be incorporated into the comprehensive plan to ensure consistency with the Work Plan.

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

Section 1 – Introduction

Section 2 – Background Information

Section 3 – Data and Analysis

Section 4 – Work Plan Projects/Capital Improvement Element/Schedule

Section 5 – Goals, Objectives, Policies

1.1 Statutory History

The Florida Legislature has enacted bills in the 2002, 2004, and 2005 sessions to address the state's water supply needs. These bills, especially Senate Bills 360 and 444 (2005 legislative session), significantly changed Chapter 163 and 373 Florida Statutes (F.S.) by strengthening the statutory links between the regional water supply plans prepared by the water management districts and the comprehensive plans prepared by local governments. In addition, these bills established the basis for improving coordination between the local land use planning and water supply planning.

1.2 Statutory Requirements

Each local government must comply with the following requirements:

1. Coordinate appropriate aspects of its comprehensive plan with the appropriate water management district's regional water supply plan, [163.3177(4)(a), F.S.]
2. Ensure that its future land use plan is based upon availability of adequate water supplies and public facilities and services [s.163.3177(6)(a), F.S., effective July 1, 2005]. Data and analysis demonstrating that adequate water supplies and associated public facilities will be available to meet projected growth demands must accompany all proposed Future Land Use Map amendments submitted to the Department for review. The submitted package must also include an amendment to the Capital Improvements Element, if necessary, to demonstrate that adequate public facilities will be available to serve the proposed Future Land Use Map modification.
3. 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 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]. This "water supply concurrency" is now in effect, and local governments should be complying with the requirement for all new development proposals. In addition, local governments should update their comprehensive plans and land development regulations as soon as possible to address these statutory requirements. The latest point at which the comprehensive plan must be revised to reflect the concurrency requirements is at the time the local government adopts plan amendments to implement the recommendations of the Evaluation and Appraisal Report (EAR).
4. For local governments subject to a regional water supply plan, revise the General Sanitary Sewer, Solid Waste, Drainage, Potable Water, and Natural Groundwater Aquifer Recharge Element (the "City of Coral Gables Community Services and Facilities Element"), within 18 months after the water management district approves an updated regional water supply plan, to:
 - a. Identify and incorporate the alternative water supply project(s) selected by the local government from projects identified in the updated regional water supply plan, or the alternative project proposed by the local government under s. 373.0361(7), F.S. [s. 163.3177(6)(c), F.S.];
 - b. Identify the traditional and alternative water supply projects, bulk sales agreements, and the conservation and reuse programs necessary to meet current and future water use demands within the local government's jurisdiction [s. 163.3177(6)(c), F.S.]; and
 - c. Include a water supply facilities work plan for at least a 10-year planning period for constructing the public, private, and regional water supply facilities identified in the element as necessary to serve existing and new development. [s. 163.3177(6)(c), F.S.] Amendments to incorporate the water supply facilities work plan into the comprehensive plan are exempt from the twice-a-year amendment limitation. [s. 163.3177(6)(c), F.S.]

5. Revise the Five-Year Schedule of Capital Improvements to include any water supply, reuse, and conservation projects and programs to be implemented during the five-year period.
6. To the extent necessary to maintain internal consistency after making changes described in Paragraph 1 through 5 above, revise the Conservation Element (City of Coral Gables Natural Resources Element) to assess projected water needs and sources for at least a 10-year planning period, considering the appropriate regional water supply plan, the applicable District Water Management Plan, as well as applicable consumptive use permit(s). [s.163.3177 (6)(d), F.S.]

If the established planning period of a comprehensive plan is greater than ten years, the plan must address the water supply sources necessary to meet and achieve the existing and projected water use demand for established planning period, considering the appropriate regional water supply plan. [s.163.3167 (13), F.S.]

7. To the extent necessary to maintain internal consistency after making changes described in Paragraphs 1 through 5 above, revise the Intergovernmental Coordination Element to ensure coordination of the comprehensive plan with applicable regional water supply plans and regional water supply authorities' plans. [s.163.3177(6)(h)1., F.S.]
8. Address in the EAR, the extent to which the local government has implemented the 10-year water supply facilities work plan, including the development of alternative water supplies, and determine whether the identified alternative water supply projects, traditional water supply projects, bulk sales agreements, and conservation and reuse programs are meeting local water use demands. [s.163.3191 (2)(1), F.S.]

2.0 BACKGROUND INFORMATION

2.1 Overview

The City of Coral Gables boundaries encompass an area approximately 14 square miles bounded generally by SW 37th Avenue, LeJuene Road, and Biscayne Bay to the east and south, Red Road to the west, and SW 8th Street to the north. The City's is surrounded by unincorporated Miami-Dade County, West Miami, South Miami, Pinecrest and Palmetto Bay to the west, The City of Miami to the north and east, and Biscayne Bay to the south and east.

The City is substantially built-out. Between 1990 and 2000, the City's population grew from 41,436 to 42,202, an increase of 1.8 percent. In the 2007 EAR it was estimated that the City's population has increased to 46,561 residents. This population growth is reflective of the fact that the City is substantially built-out, with future development potential and population growth limited by the scarcity of vacant and some redevelopment opportunities. The potential expansion of the City's current boundaries through annexations is the only factor which might result in significant population increase during the planning period although this is not likely to occur.

In 2007, an evaluation of existing gross acreage by land uses revealed that 3,671 acres or 53.9% of the total gross acreage in the city is dedicated to residential use. The remaining gross acreages are allocated to non-residential such as commercial (4%); university (3.3%); industrial (0.9%); educational (1.1%); park and recreation, (14.7%); open space (0.7%); conservation (17.5%); public buildings and grounds (0.8%); hospital (0.1%); and; religious/institutional (2.3%). The City does not anticipate substantial increases in land area in the near future due to annexation. In the meantime, the residential and non-residential growth rate is anticipated to be minimal for the next 10 to 20 years. In 2007, the City's Building Department records indicated that 50 permits were issued for new residential construction, 2 permits for commercial construction and 1 permit for mixed-use construction.

2.2 Relevant Regional Issues

As the state agency responsible for water supply in the Lower East Coast planning area, the SFWMD plays a pivotal role in resource protection, through criteria used for Consumptive Use Permitting. As pressure increased on the Everglades ecosystem resource, the Governing Board initiated rule making to limit increased allocations dependent on the Everglades system. As a result, the Regional Water Availability Rule was adopted by the Governing Board on February 15, 2007 as part of the SFWMD's water use permit program. This reduced reliance on the regional system for future water supply needs, mandates the development of alternative water supplies, and increasing conservation and reuse.

3. DATA AND ANALYSIS

3.1 Population Projection Information

The City's existing and future population figures are derived from Miami-Dade County Planning and Zoning Department and BEBR. Between 1990 and 2000, the City of Coral Gables population grew from 41,436 to 42,202, an increase of 1.8 percent. By 2010, the City's population is anticipated to increase to 46,916; 2015 to 49,022; and 2020 to 51,036 (source: University of Florida, BEBR, Shimberg Center for Housing Studies). This relatively minor population growth is reflective of the fact that the City is substantially built-out, with future development potential and population growth limited by the scarcity of vacant and developable land.

The Miami-Dade County's 20-year Water Supply Facilities Work Plan population projections for the City of Coral are found in Exhibit C-1 "Water Supply Service Area, Retail Customers by Municipality" of the County's Water Supply Work Plan and are not consistent with the population projections from the University of Florida, see Table A below.

Table A

**Population Projection
Comparison for Coral Gables**

Year	Estimates for City of Coral Gables from Shimberg Center of UF	MDWASD 20-year Water Supply Facilities Work Plan
2007	46,561*	50,817
2010	46,916	51,360
2015	49,022	52,265
2020	51,036	53,007

*Estimate from 2007 City of Coral Gables adopted EAR

For the purposes of water supply planning, the MDWASD population figures will be utilized. The population projections will be revisited after 2010 Census figures are available.

3.2 Maps of Current and Future Areas Served

The map depicting current and future City boundaries served by the MDWASD are provided in Figure 1.

3.3 Potable Water Level of Service Standard

The Coral Gables existing Level of Service standard for potable water and fire protection which will be revised based on this plan, and the EAR Based Amendment, currently are as follows:

Policy 4-4.1.5: WATER SYSTEM LOS STANDARDS. The minimum acceptable Level of Service standards of potable water shall be two-hundred ninety-four (294) gallons per day per capita and such water is to be delivered to users at a pressure of not less than twenty pounds per square inch (psi) and not greater than one-hundred (100) psi. The regional treatment system shall operate with a rated capacity, which is no less than two (2%) above the maximum day flow for the preceding year. Water quality shall meet or exceed all federal, state, and County primary standards for potable water, and system wide storage capacity for finished water shall equal no less than fifteen (15%) of the County wide average daily demand.

Policy 4-4.1.6 LOS STANDARDS FOR FIRE PROTECTION. The minimum acceptable Level of Service standards for fire flows shall be maintained at not less than:

- ***500 gpm in single family residential areas of densities of less than 5.8 units per acre;***

- 750 gpm in single family and duplex residential areas at densities of 5.8 dwelling units per acre or more;
- 1500 gpm in multi-family residential and low intensity commercial areas of two floors or less; and
- 3000 gpm in all other commercial and industrial areas.

Automatic fire suppression systems shall be required in all buildings of six floors or more.

~~Miami-Dade consumption rates are based on an Average Annual Daily Flow (AADF) for finished water of 155 gallons per capita per day (5-Year Water Efficiency Plan Goal). Currently the City of Coral Gables utilizes slightly more potable water than projected on a per capita basis by MDWASD as part of the settlement with SFWMD in order to obtain the Consumptive Use Permit (Re-Issue 13-00017-W).~~

The City's recent consumptive use rates are showing a downward trend based on per capita water usage. The City will continue to encourage the reduction of annual average per person demand pursuant to Objective ____ of the Comprehensive Plan.

Table B
City of Coral Gables
Historic Water Usage Rates

	2005	2006	2007	2008
Population Served	44,558*	45,561**	50,817***	51,000***
Demand per Capita (gallons per day)	184	184 180	175	156
Avg. Daily Demand (million gallons per day)	8.2	8.2	8.9	7.9
Current City LOS standard (million gallons per day)	13.1	13.4	14.9	14.9
MDWASD AADF (million gallons per day)	NA	NA	7.8	7.9
A. Orr Plant Capacity (million gallons per day)	NA	NA	248	248

* Source: Shimberg Center, UF

** Source: City of Coral Gables 2007 EAR

*** MDWASD Water Supply Facilities Work Plan

The existing City of Coral Gables Level of Service standard of 294 gallons per capita per day is much higher than the average daily demand of 156 gallons per capita per day. Furthermore, the City is experiencing a downward trend that is expected to continue due to the area wide mandatory water restrictions in conjunction with other water conservation measures. Therefore the City will adopt a new standard as part of the amendments associated with the Water Supply Work Plan. The new Level of Service Standard will be ~~165~~ **155** gallons per capita per day.

3.4 Population and Potable Water Demand Projections by Each Local Government or Utility

Table C
Existing and Projected Potable Water Demand
for the City of Coral Gables

Source: Miami-Dade County Water Supply Facilities Work Plan, 2008

	2007	2010	2015	2020
Population Served	50,817	51,360	52,265	53,007
Demand per Capita (gallons per day)	175	165 155	165 155	165 155
Avg. Daily Demand (million gallons per day)	8.9	8.5	8.6	8.7
MDWASD Projected AADF (million gallons per day)	7.8	7.9	8.1	8.2
MDWASD System Wide Demand	348.9	354.9	378.0	396.8
Coral Gables Demand as % of County	2.3	2.2	2.1	2.0
A. Orr Plant Capacity (million gallons per day)	248	248	248	248

The City will adopt a new lower LOS level of ~~165~~ **155** gallons per capita per day which is 2% of the total County demand for water. The City will work with the County and the SFWMD to further refine population projections and revisit the LOS standard during the five year update to the 10-Year Water Supply Facilities Work Plan and also through the next scheduled Evaluation and Appraisal Report of the City's Comprehensive Plan.

3.6 Water Supply Provided by Other Entities

The Miami-Dade County 20-Year Water Supply Facilities Work Plan is attached as Appendix A. The intent of the County Work Plan is to meet the statutory requirements mentioned in subsection 1.2 of this plan and to coordinate the WASD's water supply initiatives with the SFWMD's *Lower East Coast Water Supply Plan Update*.

The WASD's service area is all portions of Miami-Dade County within the Urban Development Boundary (UDB), excluding all or portions of North Miami, North Miami Beach, Aventura, Sunny Isles, Biscayne park, Miami Gardens, Homestead and Florida City. The areas within the Urban Expansion are included in the planning horizon after 2015. The following summarizes Miami-Dade County's Work Plan:

- Description of population and water demand projections (Exhibit C-1 and C-2, Water Supply Service Area, Retail and Wholesale Customers, respectively, by Municipality provides municipal population projections and projected AADF "Annual Average Daily Flow" finished water based on 155 gallons per capita per day (gpcd). The population information was derived from Miami-Dade County Department of Planning and Zoning Transportation Analysis Zone (TAZ) 2004 population data. This subsection also provides a brief discussion of WASD's conservation and reuse programs.);
- The Water Supply Facilities Work Plan details the facilities and proposed alternative water supply (AWS) projects that are planned in order to meet the water demands through 2027. These projects are expected to be completed in increments consistent with the projected growth set forth in the Plan. The AWS projects and annual average daily demand (AADD) assumes that all current wholesalers will

remain in the WASD system through 2027, except for the City of North Miami Beach. The AWS projects are included in the County's Capital Improvement Element.

In the 20-Year Work Plan, the WASD is committed to meet the water demand for the municipalities within the service area. The City of Coral Gables is served by the Alexander Orr, Jr. sub-area water treatment plant. This sub-area is comprised of a high pressure system with two major piping loops. This sub-area delivers water to nearly all of Miami-Dade County south of Flagler Street to SW 248th Street, including Virginia Key, Fisher Island, the Village of Key Biscayne and, upon request, to the City of Homestead, and Florida City. The Alexander Orr, Jr. subarea, water treatment plant is supplied by four water supply wellfields (Alexander Orr, Jr.- capacity 74.4 MGD; Snapper Creek – capacity 40.0 MGD; Southwest – capacity 161.16 MGD; and West -32.4 MGD), with a total designed capacity of approximately 308 MGD. In this subarea, there are also Upper Floridan Aquifer wells at two of the wellfields (West Wellfield and the Southwest Wellfield). These wells have a total capacity of 25.20 MGD. WASD anticipates using these wells for storage of fresh Biscayne Aquifer water during the wet season (when operating water levels in the canal allows) for extraction and use in the dry season. In order to use the Upper Floridan Aquifer wells, the WASD designed an ultra-violet (UV) light disinfection system for each ASR site to treat the Biscayne aquifer water before injecting in the Floridan Aquifer.

3.7 Conservation

Typically, water conservation programs are initiated at the local level, by either municipal water utilities or regional governments. Presently, water utilities are saving substantial amounts of water through strategic water-efficiency programs and Best Management Practices (BMP) included in their Water Use Efficiency Plan. The savings from water conservation often translate into more potable water available for residential and non-residential use, capital and operating savings, which allow systems to defer or avoid significant expenditures for water supply facilities and wastewater facilities.

The City of Coral Gables is in full support of the water conservation initiatives adopted by the SFWMD and Miami-Dade County. The County 20-year Water Use Efficiency Plan identifies approximately 20 mgd of water saved through the year 2027. This Plan identifies the County efforts to promote water conservation including BMPs. The BMPs identified in the Plan are based on population characteristics and type of service for each municipal service area. The County anticipates that the implementation of all BMPs in MDWASD's service area will result in a reduction in per capita usage. In addition, the County will establish per capita consumption for all municipalities including those in WASD's retail customer service area. Based on this data, WASD will work with the municipalities to address those with higher than average per capita and will target programs for those areas. The County has also developed recommendations for new development to achieve higher use water savings than currently required by code. The Board of County Commissioners adopted the Water Use Efficiency Ordinance 08-14 which created Section 8-31 of the Code of Miami-Dade County on February 5, 2008, and amended by ordinance on September 2, 2008. These water efficiency recommendations represent an additional

30 percent to the water savings identified in the 20-year Water Use Efficiency Plan. The County anticipates that the implementation of the BMPs identified in the 20-year Water Use Efficiency Plan will result in an adjusted system wide per capita of 147.82 gpcd by year 2027.

While the City is not responsible for the Comprehensive Everglades Restoration Project, it is supportive of the regional water conservation efforts related to this regional rehydration of the Florida Everglades. The City is also supportive of mandating yard water restrictions that have been directed by the South Florida Regional Water Management District. There are no water conservation projects identified in the City's Capital Improvement Element or Capital Improvement Program.

The City will continue to coordinate future water conservation efforts with WASD and SFWMD to ensure that proper techniques are applied. In addition, 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 SFWMD and Miami-Dade County in the implementation and enforcement of new regulations or programs that are designed to conserve water.

3.7.1 County-wide Issues

The Miami-Dade Water Use Efficiency Plan

Currently, the WASD is implementing all Best Management Practices (BMPs) included in the 20-year Water Use Efficiency Plan, which was approved by the South Florida Water Management District in May 2007.

Per Capita Consumption

Furthermore, the WASD will establish per capita consumption for all municipalities including those in its retail customer service area. Based on this data, the WASD will work with the municipalities to address those with higher than average per capita and will target programs for those areas. The County anticipates that the implementation of the BMPs identified in the 20-year Water Use Efficiency Plan will result in an adjusted system wide per capita of 147.82 gpcd by 2027.

3.8 Reuse

The City will support the SFWMD and Miami-Dade County water reuse projects, and implementation of new regulations or programs designed to increase the volume of reclaimed water used and public acceptance of reclaimed water. There are no water reuse projects identified in the City's Capital Improvement Element or Capital Improvement Program.

3.8.1 Regional and County-wide Issues

State law supports reuse efforts. For the past years, Florida's utilities, local governments, and water management districts have led the nation in implementing water reuse programs

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that increase the quantity of reclaimed water used and public acceptance of reuse programs. Section 373.250(1) F.S. 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), F.S., provides that “reuse is a critical component of meeting the state’s existing and future water supply needs while sustaining natural systems.”

The City of Coral Gables supports water reuse initiatives under consideration by both the SFWMD and Miami-Dade County. The County has committed to implement a total of 170 MGD of water reuse as noted in the County’s 20-year water use permit. In the 20-year Work Plan, the County identified a number of water reuse projects and their respective schedule. According to the Plan, “reuse projects to recharge the aquifer with highly treated reclaimed water will be in place before additional withdrawals over the base condition water use are made from the Alexander Orr and South Dade subarea wellfields. In addition, reuse irrigation projects are anticipated for the North and Central District Wastewater Treatment Plants. These projects will be implemented in the Cities of North Miami and North Miami Beach, and are currently under construction for Key Biscayne.”

4.0 CAPITAL IMPROVEMENTS

4.1 Work Plan Projects and Capital Improvements Element/Schedule

The City is within Miami-Dade County WASD service area which provides potable water and sanitary sewer services. As discussed the potable water and sanitary sewer systems have adequate capacity to meet the needs of current and future residents. The City of Coral Gables has no water facility projects planned. The projects listed below are from the Miami-Dade County Work Plan, the Miami-Dade Capital Improvement Element/Schedule and Alternate Water Supply and Wastewater Reuse Projects Table.

Table 1
Alternative Water Supply and Wastewater Reuse Projects 2007-2030

Project No/ CIE Table. ¹	Project Name ²	Project Description	Construction Timeframe	Estimated Cost (\$million)
Alternative Water Supply Projects				
17, Table 12	South Miami Heights WTP and Wellfield (20 MGD)	Reverse osmosis and ultra-filtration membranes provide treatment of 20 MGD of Biscayne aquifer water from 10 wells	2007-2012	158.7
20D, Table 12	Hialeah Floridan Aquifer R.O. WTP	A new upper Floridan aquifer reverse osmosis water treatment plant is to be constructed in the northern part of the County (i.e. Hialeah). The WTP will directly utilize the Floridan Aquifer as the alternative water supply using the RO treatment to remove salt.		
20D, Table 12	Phase 1 (10 MGD)		2007-2012	93
22, Table 12	Phase 2 (5 MGD)		2015-2018	25
23, Table 12	Phase 3 (2.5 MGD)		2025-2028	9.7
20A, Table 12	Floridan Aquifer Blending (and ASR) at Alexander Orr, Jr. Water Treatment Plant (7.4 MGD)	This project uses the brackish Floridan Aquifer water to blend with the fresh Biscayne Aquifer raw water. Also these wells will be used for storage of fresh Biscayne Aquifer water in the Floridan Aquifer during the wet season for extraction and use in the dry season.	2007-2007	6.4
20C, Table 12	Floridan Aquifer Blending at Hialeah-Preston WTP (4.7 MGD)	Construction of two Floridan Aquifer blending wells to supply raw water to the Hialeah-Preston WTP complex. This project will blend Floridan Aquifer water with the raw water supply.	2006-2010	10.3
Wastewater Reclamation Projects				

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28, Table 8	North District WWTP Reuse Projects (1.0 MGD)	Five MGD of this reclaimed water (e.g. purple pipe) irrigation project will be pumped to the City of North Miami Beach and 2 MGD will be used to replace current potable water irrigation in the service area.	2007-2012	26.8
29, Table 8	Central District WWTP Reuse Project (1.0 MGD)	This reclaimed water (e.g. purple pipe) irrigation project will replace potable water irrigation at Crandon Park and certain areas of Key Biscayne.	2007-2012	15.3
30, Table 8	South District WRP Groundwater Recharge Phase 1 (18.6 MGD)	This Groundwater Replenishment project provides advanced treatment to secondary effluent. Technologies include micro-filtration, reverse osmosis and UV light for disinfection. The highly treated reclaimed water would be piped to areas upgradient of the South Miami Heights wellfield and discharged into the groundwater through underground trenches.	2007-2013	357.5
31, Table 8	West District W.R.P. Canal Recharge Phase 2 (21 MGD)	This water reclamation plant project includes the construction of a new wastewater plant incorporating technologies capable of achieving those treatment levels required for canal recharge or any other alternative discharge that may be approved. This plant will be expanded for Phase 3.	2015-2020	298
			2021	217.5
26, Table 8	Biscayne Bay Coastal Wetlands Rehydration (1 MGD)	The Biscayne Bay Coastal Wetland Rehydration program and Aquifer Recharge Pilot studies are projects that will help the County reach its effluent reuse goals. The wetland rehydration process requires thorough removal of nutrients from the reuse water. Results of the pilot project, which will test different treatment technologies and to gain insights in the biological and ecological response of typical wetlands to highly treated effluent, will help to optimize the treatment system and the preferred areas for rehydration to maximize the benefits to the wetlands and to the Bay. The pilot project will lay the foundation for the full scale rehydration project.	2006-2011	19.2
27, Table 8	Aquifer Recharge Pilot Study (20,000 GPD)		2006-2010	1.02
33, Table 8	Biscayne Bay Coastal Wetlands Rehydration Demonstration Project (75.7 MGD)		2010-2021	621

¹ CIE Table References are per Miami-Dade County CIE adopted 3/28/07 and revised by Ordinance No 07-73 adopted on 6/5/07

² Project Names are per Miami-Dade County Water Use Permit approved 11/15/07

Source: Miami-Dade County CDMP Water and Sewer Subelement, Table 1

Floridian Aquifer Blending (and ASR) at Alexander Orr, Jr. Water Treatment Plant (7.2 MGD)

Project Schedule:

Start 2007

Finish 2007

The Upper Floridian Aquifer wells are in service and the blending of brackish and fresh water is underway in 2007. The anticipated UFA quantity is 7.2 MGD of blending AADD capacity to the County's water supply. This project uses the brackish Floridian Aquifer water to blend with the fresh Biscayne Aquifer raw water. MDWASD also anticipates using these wells for occasional storage of fresh Biscayne Aquifer water in the Floridian Aquifer during the wet season for extraction and use in the dry season. To do so, MDWASD designed a ultra-violet (UV) light disinfection system for each ASR site. Project construction costs totaled \$6.4 million (for the UV System).

Source: Miami Dade County Water Supply Facilities Work Plan, 2008, Table 5-1

South District WRP Groundwater Recharge - Phase 1 (18 MGD)

Project Schedule:

Start 2007

Finish 2013

Phase 1 of the Groundwater Replenishment (GWR) project at the South Miami Heights WTP is scheduled to be ready for implementation by 2014 expanding the finished water

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AADD by 18 MGD at a cost of \$357.5 million. MDWASD has prepared a NTPC for selecting a Consultant to design the project, and will take the requests to advertise to the December 2007 Government Operations and Environment Committee Meeting. Design could be completed by mid-2009. This potential certified project will provide advanced treatment of 30 MGD of secondary effluent to produce approximately 23 MGD of highly treated reclaimed water that will be piped to replenish ground water for water supply purposes. The technologies to be used include micro-filtration and reverse osmosis which filters out small particles and uses ultraviolet light for disinfection. High quality water would be piped to areas upgradient of the proposed South Miami Heights wellfield and discharged into the groundwater through underground trenches. Based upon this replenishment of water, more water can be withdrawn and treated for drinking water purposes at this treatment plant. This approach will enable the continuous use of the South Miami Heights WTP, which will be constructed over the next four to five years.

5.0 GOALS, OBJECTIVES AND POLICIES

The following comprehensive plan objectives and policies will be added to the City of Coral Comprehensive Plan for consistency with the Water Supply Work Plan.

Future Land Use Element

Add new policy as follows:

Policy FLU-1.4.5: The City, through the Land Development Regulations will coordinate the land uses and future land use changes with the availability of water supplies and water supply facilities.

Community Services and Facilities Element

Add new Objective and related policies as follows:

Objective COM-5.2:

The City of Coral Gables shall comply with its 10-year Water Supply Facilities Work Plan, as required by section 163.3177(6)(c), F.S.. The Work Plan will be updated, at a minimum, every 5 years. The City of Coral Gables Water Supply Facilities Work Plan is designed to: assess current and projected potable 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 for a 10-year period.

Policy COM-5.2.1:

The City will comply with the 10-year Water Supply Facilities Work Plan and incorporate such work plan into the Coral Gables Comprehensive Plan.

Policy COM-5.2.2: *Coordinate appropriate aspects of its comprehensive plan with the South Florida Water Management District's regional water supply plan adopted February 15, 2007 and with the Miami-Dade County 20-Year Water Supply Facilities Work Plan adopted April 24, 2008, and as updated. The City shall amend its Comprehensive Plan and Work Plan as required to provide consistency with the District and County plans.*

Policy COM-5.2.3: *The City shall coordinate the planning of potable water and sanitary sewer facilities and services and level-of-service*

standards within the Miami-Dade County Water and Sewer Department, DERM, the South Florida Water Management District, and the Lower East Coast Water Supply Plan Update.

Policy COM-5.2.4: *The City shall coordinate with Miami-Dade County WASD by requiring applications to be reviewed by WASD during the site plan review process prior to approving a Building Permit, in order to determine whether adequate water supplies will be available to serve the development by the anticipated issuance date of the certificate of occupancy for properties located within the City of Coral Gables. Additional coordination efforts will occur between WASD and the City through the water allocation system, ~~which is a m~~ Monthly spreadsheet used for tracking Building Permit data will be provided to WASD to track development activity within the City. The City will monitor proposed amendments to the Miami-Dade County Comprehensive Development Master Plan as they relate to water supply planning in the South Miami area and provide input as necessary.*

Policy COM-5.2.5: *The City Planning Director or a representative will attend the Miami-Dade Planners Technical Committee meeting to share information regarding water supply needs and coordinate water use issues as needed. The Planners Technical Committee is a council of professional planners representing local governments and public regulatory/review agencies in Miami-Dade County that addresses common concerns and shares resources toward solving planning problems.*

Revise existing policy as follows:

Policy ~~COM-5.1.1:~~ 4-4.1.5: WATER SYSTEM LOS STANDARDS: *The minimum acceptable LOS Level of Service standards of potable water shall be ~~two-hundred ninety-four (294)~~ 165 155 gallons per day per capita and such water is to be delivered to users at a pressure of not less than twenty pounds per square inch (psi) and not greater than one-hundred (100) psi. The regional treatment system shall operate with a maximum daily rated capacity, which is no less than two (2%) percent above the maximum ~~day~~ daily flow for the preceding year and an annual average daily capacity 2% above the average daily system demand for the preceding 5 years. Water quality shall meet or exceed all federal, state, and County primary standards for potable water, and system wide*

storage capacity for finished water shall equal no less than fifteen (15%) percent of the County wide average daily demand.

Natural Resources Element

Add new policies as follows:

Policy NAT-1.2.6: *Implementation of the 10-Year Water Supply Facilities Work Plan will ensure that adequate water supplies and public facilities are available to serve the water supply demands of the City's future population.*

Policy NAT-1.2.7: *~~Due to the fact that~~ The potable water network is an interconnected, countywide system, therefore, the City will cooperate with ~~Miami-Dade County Water and Sewer Department~~ MDWASD to jointly develop methodologies and procedures for biannually updating estimates of system demand and capacity, and ensure that sufficient capacity to serve development exists. The City will prepare and submit a Water Conservation Plan to the County at the same time as the City submits the updated 5-Year Water Supply Facilities Work Plan.*

Policy NAT-1.2.8: *If in the future there are issues associated with water supply, conservation or reuse the City will immediately contact MDWASD to address the corresponding issue(s). In addition, the City will follow adopted communication protocols with MDWASD to communicate and/or prepare an appropriate action plan to address any relevant issue associated with water supply, conservation or reuse.*

Policy NAT-1.2.9: *The City will enforce Miami-Dade County's Water Use Efficiency Standards ~~Ordinance adopted on February 5, 2008 and amended by ordinance on September 2, 2008.~~ All future development within the City will be required to comply with water use efficiency techniques for indoor water use in accordance with Section 8-31, 32-84 and 8A-381 of the Code of Miami-Dade County. In addition, the future development will be required to comply with the landscape standards in Section 18-A and 18-B of the Miami-Dade County Code.*

Policy NAT-1.2.10: *The City will require the use of High Efficiency Toilets; High Efficiency Showerheads; High Efficiency Faucets; High Efficiency Clothes Washers; and Dishwashers that are Energy Star rated and WaterSense certified in all new and redeveloped residential projects.*

Policy NAT-1.2.11: *The City will ~~encourage~~ educate the development community on the water saving benefits of the use of sub-metering for all multi-unit residential development which will include: separate meter and monthly records kept of all major water-using functions such as cooling towers and individual buildings in all new and redeveloped multi-family residential projects.*

Policy NAT-1.2.12: *The City will ~~encourage~~ educate the development community on the water saving benefits of the use of Florida Friendly Landscapes guidelines and principles. The City will encourage through use of educational materials the use of the following techniques: ~~gutter downspouts, roof runoff, and~~ rain harvesting through the use of rain barrels and directing runoff to landscaped areas; drip irrigation or micro-sprinklers; and the use of porous surface materials (bricks, gravel, turf block, mulch, pervious concrete, etc) on walkways, driveways and patios.*

Policy NAT-1.2.13: *The City will participate, when warranted, in the SFWMD's Water Savings Incentive Program (WaterSIP) for large-scale retrofits as recommended by the Lower East Coast Water Supply Plan.*

Capital Improvements Element

Policy CIE-5.1.2: *Appropriate mechanisms will be developed and adopted consistent with the South Florida Water Management District and Miami-Dade County in order to assure that adequate water supplies are available to all water users and to ensure that prior to approval of a building permit. Furthermore, City of Coral Gables will be responsible for providing monthly building permit data to WASD to be used for monitoring the availability of water supplies for all water users of the Miami-Dade County Water and Sewer Department, and for implementing a system that links water supplies to the permitting of new development.*

Policy CIE-5.1.3: *The City shall incorporate capital improvements affecting City levels of service for water supply by referencing the Capital Improvements Schedules of Miami-Dade County, state agencies, regional water supply authorities and other units of government providing services but not having regulatory authority over the use of land into its Capital Improvements Element via reference during periodic updates of the Comprehensive Plan.*