CITY OF BOCA RATON, FLORIDA

WATER SUPPLY FACILITIES WORK PLAN

Prepared For:

Florida Department of Community Affairs

Prepared By:

City of Boca Raton Planning and Zoning Department and Utility Services Department

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TABLE OF CONTENTS

1.0 INTRODUCTION

The purpose of the City of Boca Raton's 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 Boca Raton obtain their water directly from the City of Boca Raton Utility Services Department, which is responsible for ensuring that enough capacity is available for existing and future customers.

The City of Boca Raton's Water Supply Facilities Work Plan (Work Plan) will reference the initiatives already identified in the City of Boca Raton's 20-year Work Plan. 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 Boca Raton's Water Supply Facilities Work Plan will have the same planning time schedule as and is incorporated as a sub-element to the City of Boca Raton's 20-year 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 area 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 "Infrastructure 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 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.]

    a. 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.]

1.3 Regulatory Framework

The provision of potable water service by the Utility Services Department of the City of Boca Raton is subject to certain specific regulatory agency requirements. The Federal, State, and County agencies involved in the planning and implementation of public water facilities' improvements by the City are:

- The U.S. Environmental Protection Agency
- The Florida Department of Environmental Protection Agency
- The Palm Beach County Health Department
- The Palm Beach County Department of Environmental Resources Management
- The South Florida Water Management District
- The Lake Worth Drainage District

The first three agencies concern themselves mostly with the water quality and reliability of the water system. The last three agencies address the actual raw water supply source. The following subsections provide a brief description of how these agencies' policies and regulations affect the Boca Raton water system.

The Environmental Protection Agency (USEPA)

The primary responsibility of any potable water supplier is to provide safe and aesthetically pleasing water to its customers. In order to assure that this responsibility is met by Utility Services and other potable water suppliers, the Safe Drinking Water Act (SDWA) was enacted by the United States Congress in December of 1974 (Public Law 93-523). The law directed the USEPA to establish minimum national drinking water standards. Several sets of regulations have since been promulgated by the USEPA to mandate and enforce the policies set forth in the SDWA.

In June of 1986, Congress passed several amendments to the SDWA of 1974. These amendments include redefinition of Recommended Maximum Contaminant Levels (MCL's) so they are now known as Maximum Contaminant Level Goals (MCLG's). In the future MCL's and MCLG's must be proposed simultaneously and promulgated simultaneously. The amendments recognize 83 contaminants for which regulations must be developed. Twenty-one of these contaminants were previously regulated in the Interim Primary Drinking Water Regulations. The remainder includes 14 volatile organic chemicals (VOC's), 29 new inorganic chemicals, four new microbiological contaminants, and two new radiological contaminants. MCLG's and regulation levels for at least nine of the listed contaminants will be promulgated within one year of enactment of the amendments. Another 40 more of the listed contaminants must be regulated within two years of enactment of the amendments. Some of the 21 other contaminants will probably be regulated within three years of enactment.

The City needs to be aware of the implications of this Act and its potential impacts. The most immediate impact of the revisions to the SDWA is in the additional water quality monitoring required and associated cost. If the City were to exceed any of the proposed contaminant levels, such as for trihalomethanes, the water treatment process would probably require revisions to the current disinfection means or the addition of other

treatment process steps, such as aeration or granular activated carbon (GAC) filters. Depending on exact modifications, this could represent a substantial cost impact.

The law allows each state to assume the responsibility of the SDWA program by adopting drinking water standards at least as strict as the national standards. The state must also be able to enforce the standards and monitor compliance with the requirements. The State of Florida has taken on this responsibility, and enforcement of the regulations is assigned to the Florida Department of Environmental Protection Agency (FDEP). The FDEP permits qualified health departments, such as the Palm Beach County Health Department to enforce the SDWA at the local level. The Federal standards are divided into primary standards, which are mandatory for public health purposes, and secondary standards, which are recommended for aesthetic quality reasons. In Florida, both primary and secondary standards are mandatory and enforced by the FDEP. One basic difference between the new primary and secondary regulations and their predecessors is that drinking water standards now have to be met at the customer's tap instead of at the water plant, as before.

Florida Department of Environmental Protection Agency (FDEP)

In 1977, the Florida Legislature enacted the “Florida Safe Drinking Water Act,” Sections 403.850-403.864 Florida Statutes. The FDEP promulgated the regulations contained in Chapter 17-22 of the Florida Administrative Code (FAC) to implement the requirements of the Florida SDWA. Since their inception in late-1977, these regulations have been modified to include additional requirements and parameters that apply to public drinking water systems such as the City's. The two most significant modifications that have taken place were in December of 1980 for THM's and in May of 1984 for VOC's. This regulation will probably be modified again as the USEPA promulgates standards in compliance with the 1986 Amendments to the SDWA. Currently, FDEP is revising existing rules such that Chapter 17-22, F.A.C., will become Chapters 17-550, 17-555 and 17-560, F.A.C. (1988).

As part of the commitment to ensure the provision of safe drinking water, the FDEP reviews and approves the final plans and specifications for the construction of public water supply facilities, including wells, raw water transmission mains, treatment facilities, and distribution works. The FDEP also has the responsibility for licensing water well contractors.

On July 1, 2008, Senate Bill 1302 was enacted requiring wastewater utilities that utilized ocean outfall for treated wastewater disposal to curtail the use of outfalls and become at least a 60% functioning reuse system by 2025. A provision in SB 1302 allows for wet weather discharge without advanced treatment requirements for those facilities that become 100% reuse by 2018. The City of Boca Raton Utility Services Department is directly affected by this bill and has set forth plans to become a 100% reuse facility well before the 2018 requirement. By implementing an aggressive reuse program, the City will replace the use of traditional sources of water for irrigation with reclaimed water, thus creating a positive impact on the regional system.

Palm Beach County Health Department (PBCHD)

PBCHD carries out a supportive role to the FDEP by reviewing all final drawings and specifications for construction of public water system facilities. After approval by the County, the drawings and specifications are forwarded to the FDEP for final review and approval by that agency.

On June 5, 1979, the Board of County Commissioners of Palm Beach County adopted a regulation entitled “Palm Beach County Environmental Control Rule II-Water Supplies” (ECR-II). This regulation is in line with FDEP's Chapter 17-22. It is of interest to note that Palm Beach County recently indicated their intention to modify ECR-II. At this time, the final draft of the revisions is being reviewed by County staff. They will be submitted to the Board of County Commissioners for public hearing at a later date.

Palm Beach County Department of Environmental Resource Management (DERM)

In April of 1987 the Palm Beach County Commission created the Department of Environmental Resources Management as the implementing agency for the County's Wellfield Protection Program (See Appendix A). This program establishes “zones of influence” around potable water supply wells and wellfields, within which zone restrictions are placed upon the use, handling, production, and storage of regulated substances (see PW - Map 6). The requirements of the ordinance address containment, emergency collection devices, emergency plans, inspection, maintenance of containment and emergency equipment, reporting of spills, monitoring for regulated substances in the protected potable water wells, monitoring for regulated substances in groundwater monitoring wells on the sites where the substances are used, alterations and expansions of uses of regulated substances, reconstruction after catastrophes, and financial responsibility.

The Wellfield Protection Ordinance requires permitting for the use of regulated substances in Zones 1, 2, 3 and 4 through better management practices and structural devices which serve to isolate high-risk contamination points from adjacent groundwater. The requirements are intended to reduce the risk of contamination. The permitting requirements under the proposed ordinance would serve to protect the users of regulated substances as well as the wellfields.

The ordinance also provides for operating permits, closure permits, permit conditions, bonds, cleanup and reimbursement, permit fees, revocation and revision of permits, hearings, appeals, exemptions, transfers, trade secrets, compensation for businesses which must close or move, enforcement, and penalties.

All proposed well sites and any new well sites being considered by the City of Boca Raton must take the Wellfield Protection Program and the ordinance's requirements into consideration. Care must be taken to avoid areas of zoning and land use that permit the use of regulated contaminants.

South Florida Water Management District (SFWMD)

Consideration must also be given to all applicable laws, rules, regulations, and policies of the SFWMD in the formulation and implementation of water supply improvements in the Boca Raton service area. Withdrawals of groundwater or the use of surface water for potable water supply, irrigation, or industrial purposes is regulated by consumptive use permits that must be obtained from the SFWMD. The District also issues permits for construction of water supply wells.

The SFWMD, when issuing water use permits, normally attaches general and specific permits conditions requiring certain actions on the part of the applicant. These may include requirements for additional water conservation measures or long-term water supply planning, or may be related to specific characteristics of the wellfield. In coastal areas, such conditions may require groundwater monitoring to address the possibility of saltwater encroachment. The District also requires proof that well locations are consistent with local or State wellfield protection programs.

On May 27, 1986, the City Council adopted Ordinance No. 3527 (see Appendix C) which adopted the rules of the SFWMD, Chapter 40E-21, Florida Administrative Code, which is the SFWMD's Water Shortage Plan.

In February of 2007, the SFWMD Governing Board adopted a Regional Availability Rule that restricted the allocation of water from the Biscayne Aquifer for consumptive uses. This rule directly impacted the City of Boca Raton during the consumptive use permit renewal process. Ultimately, the City of Boca Raton was granted a 20-year Consumptive Use Permit #50-00367-W, on July 10, 2008 with the allocation amount of 18,811 million gallons a year. The increase in allocation needed for growth was granted on the basis that the expansion of the City's In-City Reclamation Irrigation System (IRIS) would offset any increase in withdrawals.

Lake Worth Drainage District (LWDD)

The LWDD is responsible for drainage and surface water control throughout southeastern Palm Beach County, from Okeechobee Boulevard to the north, to the Hillsboro Canal and the Palm Beach County/Broward County line to the south. That portion of the City of Boca Raton located generally west of the El Rio Canal lies within the LWDD boundaries. PW - Map 7 shows the general locations of some of the canal recharge facilities which are operated by the LWDD.

With regard to water supply and wellfield location, the LWDD staff is requested by the SFWMD to review and comment on all applications for SFWMD water use permits for wells or wellfields lying within LWDD boundaries. The SFWMD also requests LWDD involvement prior to the permitting of any surface water allocations for use in aquifer recharge or agricultural or industrial activities. While an approval or objection that is filed by the LWDD on a SFWMD water use or surface water allocation permit may, or may not, result in like action by the SFWMD, the latter agency usually evaluates LWDD input in developing the SFWMD final permitting position.

Summary

The most important aspects of regulatory agency constraints on future water service by the City of Boca Raton Utility Services are:

A. Impacts on the existing water treatment facilities caused by the Amendment to the Safe Drinking Water Act enacted by Congress in June of 1986, and the corresponding standards and regulations currently being developed.

B. Impacts of the proposed Wellfield Protection Program Ordinance on existing and proposed water supply wells.

C. Requirements of the SFWMD for increased raw water withdrawals and associated water use permit conditions.

D. Concerns of the LWDD about their ability to maintain adequate water levels in the drainage canal network that recharges various existing and proposed wellfields in the southern part of the County, including those of the City.

2.0 BACKGROUND INFORMATION

2.1 Overview

The meaning of the name Boca Raton has always aroused curiosity. Many people wrongly assume the name is simply Rat's Mouth. The Spanish word boca (or mouth) often described an inlet, while raton (literally mouse) was used as a term for a cowardly thief. But the "Thieves Inlet," Boca Ratones, appeared on eighteenth century maps associated with an inlet in the Biscayne Bay area of Miami. By the beginning of the nineteenth century, the term was mistakenly applied to Lake Boca Raton, whose inlet was closed at the time. The "s" and later the "e" were dropped from this title by the 1920s, yet the correct pronunciation remains Rah-tone.

The earliest known inhabitants of the Boca Raton area were the Tequesta Indians, who lived in communities near the ocean as long ago as one thousand years until the eighteenth century. The construction of the Florida East Coast Canal (today's Intracoastal) and the Florida East Coast Railway in the 1890s made the region accessible to a group of resourceful pioneers. By the early-1900s Boca Raton was a tiny agricultural community, many of the farmers specializing in pineapple cultivation. Amongst these were a group of Japanese immigrants under the leadership of Joseph Sakai, who formed a community along today's Yamato Road in 1904.

In May of 1925, the Town of Boca Raton was incorporated at the height of the Florida land boom. The town council commissioned noted society architect Addison Mizner to plan a world-class resort community. His exclusive hotel, known as the Cloister Inn, was completed in 1926 and continues its reign as a city landmark as the Boca Raton Resort and Club. Although many of Mizner's plans for the young community were squelched by the demise of the land boom in 1926, a few survive today—and his architectural style continues to influence the city.

One of Mizner's projects was a design for a city hall for Boca Raton. Completed by Delray architect William Alsmeyer in 1927, Old Town Hall at 71 North Federal Highway still bears the original footprint of the Mizner design, and was constructed using ironwork, tile, and woodwork supplied by Mizner Industries. Today the restored Town Hall is the home of the Boca Raton Historical Society.

In the 1930s and 40s, Boca was known for its winter vegetable crop, particularly the green beans which commanded a premium in northern markets. In 1942, the Army Air Corps established its only war-time radar training school at the site of what is today F.A.U. and the Boca Raton Airport. The facility brought over 30,000 servicemen as well as families and civilian employees to the tiny community of Boca Raton, with a population of 723 in 1940.

In the 1950s, the still small town played host to a safari park called Africa USA which opened where the Camino Gardens development stands now. E. G. Barnhill offered an attraction called Ancient America on the site of prehistoric burial mounds on U.S. 1 in the area of today's Sanctuary neighborhood. And the Winter Bible Conference Grounds—Bibletown—was established in buildings of the former Air Field.

In the 1960s, South Florida experienced another great land boom, with developments pushing the Everglades and former farmlands increasingly westward. The population grew to almost 30,000 residents by 1970, continuing to increase well outside city limits to this day. In 1962, Boca Raton attracted the newest state university, Florida Atlantic, to the site of the old army airbase. IBM moved one of its computer facilities to Boca Raton in 1967, and in 1981, it was there the first IBM PC, or personal computer, was developed.

During the 1980s and 1990s, the city focused much of its attention on downtown redevelopment, and a number of important historical properties, such as Boca Raton's original Town Hall and F.E.C. Railway Station were restored and opened to the public. Many fine cultural facilities, such as the Boca Raton Museum of Art, have grown up to meet the needs of the growing population.

Since Boca Raton was incorporated as a town in 1925, the City has experienced steady and substantial growth. As of 2008, the City had 85,239 residents. Boca Raton is the 24th most populous city in the State of Florida, and United States Census statistics from 2000 show Boca Raton to be the second largest city in Palm Beach County.

Geographically the City encompasses 29.6 square miles (18,572 acres). The City has five miles of ocean frontage and the park system covers approximately 1,080 acres. The last piece of available vacant beachfront property was purchased in 1994. This acquisition of the Ocean Strand parcel by the Greater Boca Raton Beach Tax District completed the purchase of more than five miles of publicly owned beachfront property.

Located along Florida's "Gold Coast," Boca Raton is the southernmost municipality in Palm Beach County. The City is located approximately 40 miles north of Miami, midway between the cities of West Palm Beach to the north and Fort Lauderdale to the south. The City is bordered on the north by the Town of Highland Beach, the City of Delray Beach,

and unincorporated Palm Beach County; on the west by unincorporated Palm Beach County; on the south by the City of Deerfield Beach in Broward County; and on the east by the Atlantic Ocean.

Boca Raton, along with Martin, St. Lucie, and Indian River Counties, are under the jurisdiction of the Treasure Coast Regional Planning Council. Deerfield Beach, Broward County, and all local governments to the south of Boca Raton are under the jurisdiction of the South Florida Regional Planning Council.

The City provides police services, fire-rescue services, municipal services (sanitation, roads, storm water, and traffic control), recreation services (parks, beaches, golf courses, tennis courts, a library and a municipal swimming pool), and utility services (water, wastewater, and reclaimed water). Boca Raton is known nationally and internationally as an originator in the area of comprehensive zoning. Both the low density, i.e. dwelling units per acre, character of the City and the innovative Park of Commerce Industrial Park have influenced development around the country. The sign code, which was initiated in the late-1960s, gives the City a unique look with minimal commercial intrusion into landscaping and streetscapes.

The City is enjoying the results of the economic expansion of the 1990s. After weathering the economic storms of the 1980s and the loss of a major employer, the City has seen a steady increase in its industrial base. Boca Raton has become a Mecca for innovative computer development, using a well-educated, computer literate community as its base. Because of its initiative, the City has reaped the benefits of effective land use planning -- a stable tax base with increasing property values.

2.2 Relevant Regional Issues

As the state agency responsible for water supply in the Lower East Coast planning area, the South Florida Water Management District (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 Information

The City of Boca Raton’s existing and future population figures are derived from the City of Boca Raton’s Planning and Zoning Department and BEBR. In 1996, the population in the City of Boca Raton was comprised of 64,602 permanent residents. In 2005 the City completed an Evaluation and Appraisal Report (EAR) of the City’s Comprehensive Plan. Population projections contained in that document are listed in Table 1. In 2009, these numbers where updated. The 2009 updated population figures for the City are contained

in Table 2. Because the City provides water and sewer services to portions of unincorporated Palm Beach County, populations for the Water and Sewer Service area were also calculated for the 2005 EAR, these figures were also updated in 2009 and are listed in Table 3. As indicated in Table 2 below, by 2008 the population in the City of Boca Raton had increased to 85,293 permanent residents which is approximately a 26 percent change in population since 1996. This increase in population includes the estimated population due to the annexations that occurred in 2003 and 2004. Based on the 2008 populations, the population is expected to increase 1.64% to 86,715 by 2010 and increase 5.9% to 90,684 by 2020 for permanent residents.

TABLE 1
CITY OF BOCA RATON POPULATION PROJECTIONS
(Page 14 of City's 2005 EAR)

Year	Resident	Seasonal	Tourist	Total
1996	64,602	8,475	6,080	79,157
2005	85,377	10,538	4,277	100,192
2010	88,107	10,898	4,682	103,687
2020	91,942	11,404	5,102	108,448

TABLE 2
CITY OF BOCA RATON 2008 POPULATION PROJECTIONS

Update: 5/29/2009

CITY OF BOCA RATON
POPULATION & UNIT PROJECTIONS
(for 2004-2005 EAR Complan Amendment)

	<---------- Population ---------->				<---------- Units ---------->			
Year	Permanent	Seasonal	Tourist	Total	Permanent	Seasonal	Vacant	Total
2000	74,764	9,855	3,791	88,410	31,848	4,198	1,501	37,547
2008	85,293	10,594	4,277	100,164	37,317	4,568	1,708	43,593
2009	86,266	10,656	4,472	101,394	37,496	4,598	1,859	43,953
2010	86,715	10,715	4,472	101,902	37,721	4,628	1,720	44,069
2011	86,936	10,744	4,472	102,152	37,831	4,643	1,740	44,214
2012	87,182	10,776	4,682	102,640	37,954	4,659	1,746	44,359
2013	87,428	10,809	4,682	102,919	38,077	4,675	1,752	44,504
2014	87,763	10,853	4,682	103,298	38,245	4,697	1,812	44,754
2015	88,098	10,897	4,682	103,677	38,412	4,719	1,767	44,898
2016	88,527	10,954	4,682	104,163	38,627	4,747	1,886	45,260
2017	89,076	11,026	4,892	104,994	38,901	4,784	1,861	45,546
2018	89,668	11,104	4,892	105,664	39,197	4,823	1,938	45,958
2019	90,217	11,176	4,892	106,285	39,472	4,859	1,862	46,193
2020	90,684	11,238	4,892	106,814	39,706	4,890	1,914	46,510
2021	91,101	11,293	4,892	107,286	39,914	4,917	1,853	46,684
2022	91,537	11,350	5,102	107,989	40,132	4,946	1,946	47,024
2023	91,974	11,408	5,102	108,484	40,351	4,975	1,874	47,200
2024	92,271	11,447	5,102	108,820	40,499	4,994	1,881	47,374
2025	92,568	11,486	5,102	109,156	40,647	5,014	1,888	47,549
2026	92,865	11,525	5,102	109,492	40,796	5,033	1,895	47,724
2027	93,140	11,562	5,102	109,804	40,933	5,051	1,888	47,872
2028	93,334	11,587	5,102	110,023	41,030	5,064	1,858	47,952
2029	93,470	11,605	5,102	110,177	41,098	5,073	1,861	48,032
2030	93,605	11,623	5,102	110,330	41,166	5,082	1,865	48,113
2031	93,741	11,641	5,102	110,484	41,234	5,091	1,868	48,193
2032	93,877	11,659	5,102	110,638	41,302	5,100	1,871	48,273
2033	94,013	11,677	5,102	110,792	41,370	5,109	1,874	48,353
2034	94,148	11,695	5,102	110,945	41,438	5,118	1,877	48,433
2035	94,284	11,713	5,102	111,099	41,505	5,127	1,881	48,513

TABLE 3
CITY OF BOCA RATON POPULATION PROJECTIONS
FOR WATER AND SEWER SERVICE AREA

Update: 5/29/2009

WATER & SEWER SERVICE AREA
POPULATION & UNIT PROJECTIONS
(for 2004-2005 EAR Complan Amendment)

	<---------- Population ---------->				<---------- Units ---------->			
Year	Permanent	Seasonal	Tourist	Total	Permanent	Seasonal	Vacant	Total
2000	102,421	13,611	4,098	120,130	45,596	6,080	2,227	53,903
2008	107,739	14,335	4,277	126,351	48,122	6,461	2,246	56,829
2009	108,230	14,400	4,472	127,102	48,365	6,493	2,397	57,255
2010	108,702	14,462	4,472	127,636	48,600	6,524	2,258	57,382
2011	108,945	14,494	4,472	127,911	48,719	6,540	2,278	57,537
2012	109,213	14,530	4,682	128,425	48,851	6,558	2,285	57,694
2013	109,481	14,565	4,682	128,728	48,983	6,576	2,291	57,850
2014	109,838	14,613	4,682	129,133	49,160	6,600	2,352	58,112
2015	110,195	14,660	4,682	129,537	49,336	6,623	2,308	58,267
2016	110,646	14,720	4,682	130,048	49,560	6,653	2,426	58,639
2017	111,217	14,795	4,892	130,904	49,843	6,691	2,402	58,936
2018	111,831	14,876	4,892	131,599	50,148	6,731	2,479	59,358
2019	112,402	14,952	4,892	132,246	50,431	6,769	2,404	59,604
2020	112,891	15,016	4,892	132,799	50,674	6,801	2,456	59,931
2021	113,330	15,074	4,892	133,296	50,891	6,830	2,396	60,117
2022	113,788	15,135	5,102	134,025	51,119	6,861	2,489	60,469
2023	114,247	15,196	5,102	134,545	51,346	6,891	2,417	60,654
2024	114,566	15,238	5,102	134,906	51,504	6,912	2,425	60,841
2025	114,885	15,280	5,102	135,267	51,661	6,933	2,432	61,026
2026	115,204	15,322	5,102	135,628	51,819	6,955	2,440	61,214
2027	115,501	15,362	5,102	135,965	51,965	6,974	2,434	61,373
2028	115,706	15,387	5,102	136,195	52,067	6,988	2,398	61,453
2029	115,842	15,405	5,102	136,349	52,135	6,997	2,401	61,533
2030	115,977	15,423	5,102	136,502	52,203	7,006	2,405	61,614
2031	116,113	15,441	5,102	136,656	52,271	7,015	2,408	61,694
2032	116,249	15,459	5,102	136,810	52,338	7,024	2,411	61,773
2033	116,385	15,477	5,102	136,964	52,406	7,032	2,414	61,852
2034	116,520	15,495	5,102	137,117	52,474	7,041	2,417	61,932
2035	116,656	15,512	5,102	137,270	52,542	7,050	2,421	62,013

As the population of Boca Raton increased during the decade before 2000, so did the number of residential units, from 32,962 to 37,547.1 According to the 2006 census, the number of residential units was 44,207 In 2006, Boca Raton city had 32,121 occupied housing units or ~24,000 (74 percent) owner occupied and ~8,200 (26 percent) renter occupied. As a result of an annexation from Palm Beach County; 4,292 units, mostly multi-family, were added to the total number of units in the City of Boca Raton. Approximately 94% of these units are occupied and 6% vacant (according to records compiled by the City's Land Records Division).

According to 2000 Census statistics, over 90% of the City's housing stock has been added since 1960. 474 building permits for housing were issued from 2000-04, for 1,135 units.

The majority of the 4,292 units added by annexation were built after 1980. Taking the above into account, it can be said currently that about 75% of Boca Raton's housing units were built since 1970. Thus, most of the units are well maintained and in good condition. The 2006 Census indicated that 109 units lacked complete plumbing facilities, while 0 units were without complete kitchen facilities. The Census Bureau reported that just 0.56% of occupied housing units were overcrowded ("overcrowded" is defined as more than one occupant per room).

The City of Boca Raton Utility Services Department serves portions of unincorporated Palm Beach County. Since about 20% of the total service area potable water demand comes from the unincorporated areas, it is important that certain activities in the "overlap" area be coordinated. Both the City and Palm Beach County have projected populations for the unincorporated areas that receive water services from the City. Table 5 describes the population projections contained in Palm Beach County's 2008 20-Year Water Supply Plan.

Table 5 – Palm Beach County Population Projections

Table 5-1 - Population Forecast throughout Palm Beach County

UTILITY	2006		2010		2015		2020		2025	
	TOTAL POP SERVED	UNINCORP. POP SERVED	TOTAL POP SERVED	UNINCORP. POP SERVED	TOTAL POP SERVED	UNINCORP. POP SERVED	TOTAL POP SERVED	UNINCORP. POP SERVED	TOTAL POP SERVED	UNINCORP. POP SERVED
BOCA	106,544	21,056	108,870	20,700	114,122	20,941	119,801	22,165	121,304	22,622
BOYNTON BEACH	99,798	30,291	103,673	29,807	113,167	30,735	124,387	35,261	126,414	37,229
DELRAY BEACH	67,541	2,710	69,335	2,797	74,504	2,776	81,114	3,087	82,233	3,155
GOLF	2,673	2,441	2,679	2,438	2,687	2,427	2,687	2,466	2,728	2,515
HIGHLAND BEACH	4,157		4,195		4,327		4,530		4,624	
JUPITER	66,871	13,278	70,660	13,354	78,805	14,023	86,175	17,054	87,292	17,823
LAKE REGION AREA	35,062	7,083	36,245	7,223	39,215	7,366	43,941	8,556	45,787	9,209
LAKE WORTH	50,454	14,031	51,674	14,212	54,607	14,464	58,111	15,926	59,123	16,598
LANTANA	10,110		10,180		10,416		10,760		10,882	
MAGONIA	2,539		2,544		3,000		4,110		4,151	
MANALAPAN	2,445		2,466		2,529		2,615		2,655	
PALM SPRINGS	39,814	22,165	40,377	22,312	41,626	22,804	43,201	24,903	43,947	26,200
RIVIERA BEACH	38,938	2,954	40,483	2,804	44,590	2,671	49,712	2,991	50,696	3,051
ROYAL PALM	28,079	409	28,645	398	29,928	391	31,033	412	31,286	421
SEACOAST	88,035	18,113	92,037	17,941	99,672	19,058	105,945	20,584	107,592	21,173
TEQUESTA	8,179	2,106	8,231	2,153	8,386	2,194	8,594	2,296	8,694	2,345
WELLINGTON	53,910	2,984	55,587	3,276	59,008	4,047	61,913	4,609	62,733	4,914
WEST PALM BEACH	117,909	270	122,978	257	138,166	238	162,540	275	164,504	281
PBCWUD*	**397,512**	354,307	**413,324**	367,402	**445,477**	396,169	**488,903**	436,353	**504,506**	451,691
SELF-SERVED (ON WELLS)**	**67,416**	64,087	**71,317**	67,863	**79,768**	75,770	**94,048**	89,386	**100,827**	95,820
TOTAL PROJECTED POPULATION		558,284	1,335,500	574,938	1,444,000	616,075	1,584,120	686,325	1,621,980	715,045
BEBR COUNTY POPULATION	**1,287,987**		**1,335,500**		**1,444,000**		**1,543,800**		**1,640,000**	

*PBCWUD includes Greenacres, Haverhill, part of Wellington on east side of SR7, Glen Ridge, Cloud Lake, Atlantis, part of Palm Springs, part of West Palm Beach, and Royal Palm east of SR7.

**Self-Served Population includes part of Glades Area, parts within the South & Central Regions of WUD Service Area, Jupiter Farms, Acreage, Loxahatchee Groves, all unrecorded subdivisions in the former Sector Plan, Sections of the Ag Reserve west of SR7, and Seminole. Information was obtained from the PBCWUD Special Assessment Program.

Source: PZ&B 2007 Population Allocation Model. The 2020 & 2025 are projected population based on the housing units expected to be built according to historical trends and adopted plans.

Note: As BEBR published their latest population projection in March 2008, the 2007 Allocation Model results were modified to reflect the slower short term growth of the County for 2010 and 2015.

Table 6 provides a comparison of the unincorporated area population projections as relating to both the City's 2005 EAR Water and Sewer Service Area populations (updated 2009 - Table 3) and Palm Beach County's population projections (Table 5).

TABLE 6
Population Projections For Unincorporated Service Area

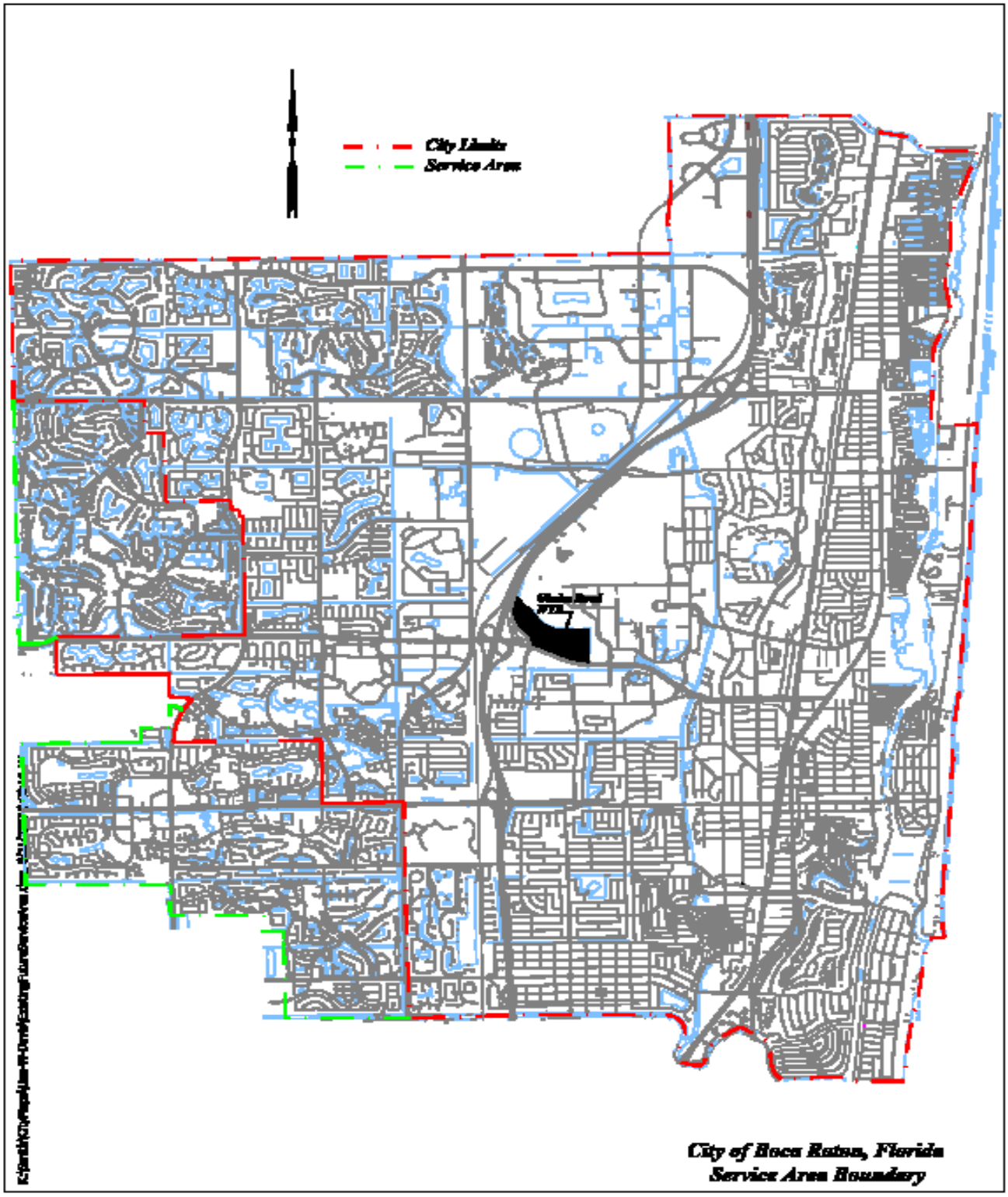
Year	City 2005 EAR Projections Updated in 2009	County Projections
2010	21,987	20,700
2015	22,097	20,941
2020	22,207	22,165
2025	22,317	22,622
2030	22,372	N/A
2035	22,372	N/A

Although the short term population projections differ by as much as 5.9%, the long term projects differ by as little as 1.3% and therefore the projections are considered consistent.

3.2 Maps of Current and Future Areas Served

The map depicting current and future City boundaries served by the City of Boca Raton Utility Services Department are provided in Figure 1.

Figure 1 – City of Boca Raton Utility Services Service Area



3.3 Potable Water Level of Service Standard

The City of Boca Raton owns and operates facilities to withdraw, treat, store and distribute potable water. The service area consists of 35 square miles and includes residential, commercial, hotel/motel and institutional uses, as well as some contiguous areas within unincorporated Palm Beach County. In 2008 the Department distributed an average of 36 mgd treated water to a population of 126,351 yielding a daily use of 285 gpdpc. Projected population growth through 2035 affords 334.3 gallons per capita per day finished water demand Level Of Service (LOS). The Department has a design storage capacity of 25.5 mg equivalent to 202 gallons per capita per day storage LOS. The Department provides a water pressure LOS of 60 pounds per square inch (psi) in normal conditions and a minimum water pressure LOS of 20 psi under mechanical or drought conditions.

The City's larger potable water users include: Boca Raton Community Hospital, Boca Raton Resort and Club, Florida Atlantic University, Boca Technology Center and Town Center Mall.

The sole source of the raw water is the Biscayne Aquifer. The aquifer is recharged by local rainfall and supplemented by water diversions controlled by the South Florida Water Management District (SFWMD), including Lake Okeechobee, Water Conservation Area No. 1, Hillsboro Canal and Lake Worth Drainage District (LWDD) canals E-2-E, E-3 and E-4 and various lateral canals. Fifty-one wells withdraw water from depths of 110 to 120 feet. The water is transmitted to the Boca Raton treatment plant located on Glades Road just east of Interstate 95. The water is treated in either the lime softening plant (30 mgd capacity) or the recently constructed membrane softening plant (40 mgd capacity). The water produced in each plant is blended before being pumped into the water distribution system. The water distribution system includes: 25.5 million gallons (MG) of finished water storage capacity; 585 miles of pipe; ~5,400 fire hydrants; and ~35,000 water meters.

The current 2030 projected population of 136,502 will require an average daily raw water demand of 51.46 mgd to produce 43.74 mgd potable water. The installed wellfield capacity for the City of Boca Raton Utility Services Department is 87 MGD with a permitted maximum day withdrawal of 64.65 MGD. Water treatment facilities to be utilized in the 2030 condition will be a 2:1 blend of lime-softening treatment and membrane-softening treatment. The current annual demand on the City's wellfields is 15.581990 billion gallons and the projected 2030 annual demand is 18.78 billion gallons. Utilizing a 1:10 year drought demand (assuming 10% higher than average-day demand) the CBRUSD will have a surplus of more than 30.4 mgd raw water pumping capacity and more than 13.4 mgd treatment capacity.

Pursuant to Consumptive Use Permit No. 50-00367-W, the City of Boca Raton has a maximum annual allocation of 17.743 billion gallons, and a maximum daily allocation of 64.65 million gallons. (Average daily allocation is 48.610 MGD.)

The City is committed to meeting all existing and future customer demands for water quality and quantity, in an economical and efficient manner.

The CBRUSD has realized the necessity of aggressive water conservation and the use of alternative water sources as part of their strategy to meet current and projected potable water needs. The CBRUSD's updated CIP will be designed to have a surplus condition for both raw and finished water facilities throughout the 20-year planning period and beyond.

Between 2000 and 2005, a total of $66,000,000.00 was spent on the significant capital improvement project involving the construction of a 40 mgd membrane-softening facility. This project added 40 mgd plant production capacity and can provide services to an anticipated population of 137,270 in 2035.

The CBRUSD IRIS reclaimed water system provides approximately 8.0 mgd of reclaimed water to approximately 900 customers. Expansion of the IRIS system during FY 2005-2006 has reduced the dependability of groundwater for customers west of I-95. Additional planned reclaimed water projects totaling ~$20 M through 2012 include:

- Expansion of the on-site plant production capacity from 10 mgd to 17.5 mgd
  - $4,340,300.00
  - Completed August 2010

- Expansion of the reclaimed water distribution system:
  - Broken Sound East Golf Course Phase I and Patch Reef Park (~0.9 mgd)
    - $1,054,044.95
    - Completed in 2009
  - Broken Sound West Golf Course Phase II (~0.9 mgd)
    - FY 2009 - 2011
  - Woodfield Country Club Golf Course (~1.0 mgd)
    - FY 2009 - 2011
  - Boca West Golf Course and Common Areas (~3.0 mgd)
    - FY 2010 – 2012

- Construction of an off-site 5.0 MG Reclaimed Water Storage Tank
  - $3,914,909.00
  - Completed in 2010

- Several smaller distribution system expansions resulting in the reuse of 100% available effluent (on annual average) by 2013.

- Feasibility analysis of blending membrane concentrate with reclaimed water
  - $46,312.00

- Treatment and plant modifications required if membrane concentrate is feasible.

Historically, utilizing only the lime softening treatment process, the City of Boca Raton Utility Services Department has operated with a raw water per capita usage of 332 gallons per capita per day (gpd) and finished water per capita usage of 316 gpd. Since the construction of the membrane softening plant, the department now operates with a 2:1 membrane:lime water treatment process ratio.

(a) The adopted level of service for potable water is:

Treatment	Raw water use expected	Recovery	Net Finished water produced
Lime	6270	.95	5956.5
Membrane	12541	.85	10659.85
Total	**18811**		**16616.35**

(i) The 2028 population projection of 136,195 requires a 334.3 gallons per capita LOS (service area wide) finished water demand.
(ii) Water storage facilities design of 215 gallons per capita.
(iii) Water pressure of 60 psi leaving the plant under normal conditions, and a minimum of 20 psi in the distribution system under drought conditions.

(b) Per-unit water demands for the City of Boca Raton used in land-use amendment planning include:
(i) Single Family = 382.03 gpd x 2.3 persons per unit
(ii) Multi Family = 150 gpd x 2.3 persons per unit
(iii) Industrial = 0.3555 gpd/sqft
(iv) Commercial = 0.355 gpd/sqft
(v) Hotel = 86.25 gpd/room
(vi) Institutional = 0.20 gpd/sqft

3.4 Population and Potable Water Demand Projections by the City of Boca Raton Utility Services

Year	**City 2005 EAR Projections**	**City 2009 Revised Projections**	**2008 CUP Allocation (18,811 MGY)**		**Water Treatment Plants (70 mgd treatment capacity; 334.4 gpcpd permitted LOS)**		**Water Supply Wells (87 mgd production capacity)**		**Water Storage Tanks (25.5 mgd storage capacity)**	
					Surplus		**Surplus**		**Surplus**	
			Annual Demand MG	**Annual Surplus MG**	2005 EAR Data	2009 Revised Data	2005 EAR Data	2009 Revised Data	2005 EAR Data	2009 Revised Data
2005	125,846	125,623	15,585	N/A	27.93	28.12	44.93	45.00	-1.56	-1.51
2010	129,472	127,636	17,828	N/A	26.72	27.45	43.72	44.33	-2.34	-1.94
2015	131,892	129,537	17,837	973	25.91	26.81	42.91	43.70	-2.86	-2.35
2020	134,483	132,799	18,436	374	25.04	25.72	42.04	42.61	-3.41	-3.05
2025	136,609	135,267	18,626	185	24.33	24.90	41.33	41.78	-3.87	-3.58
2035	N/A	137,270	18,834	N/A	N/A	24.23	N/A	41.11	N/A	-4.01

3.4a Population and Potable Water Demand Projections by the City of Boca Raton Utility Services – Consumptive Use Permit

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Service Area Boca Raton:RW(1) Treatment Plant (Table I) Boca Raton WTP

TABLE F
Past Water Use

Year	Past Population*	Per Capita Usage	Total Annual Use (MG)	Average Month Use (MG)	Maximum Month Use (MG)	Ratio Max:Average
2000	113,905	388	16,142.23	1,345.18	1,637.42	1.22
2001	114,252	296	12,353.91	1,029.49	1,180.8	1.15
2002	114,599	347	14,531.9	1,210.99	1,450.1	1.20
2003	115,239	345	14,532.44	1,211.04	1,301.28	1.07
2004	124,827	335	15,201.47	1,266.79	1,428.93	1.13
2005	125,846	339	15,585.8	1,298.75	1,468.32	1.13
		5 yr. average = 332.4				
		15% system loss = 382.26				3 yr. average = 1.11

* Source of Projected Population Information: Tables F: Extrapolated from City of Boca Raton 2005 EAR projected population (page 14) adjusted by adding 19,000 to reflect customers outside city limits.

TABLE G
Projected Water Use

Year	Projected Population*	Per Capita Usage	Total Annual Use (MG)	Average Month Use (MG)	Maximum Month Use (MG)	Ratio Max:Average
2006	126,351	382.26	17,629.11	1,469.09	1,630.69	1.11
2007	127,336	382.26	17,770.73	1,480.89	1,643.79	1.11
2008	128,107	382.26	17,923.09	1,493.59	1,657.89	1.11
2009	128,517	377.26	17,698.78	1,474.73	1,636.95	1.11
2010	129,472	377.26	17,828.28	1,485.69	1,649.12	1.11
2011	130,082	377.26	17,912.28	1,492.69	1,656.89	1.11
2012	130,520	377.26	18,021.83	1,501.82	1,667.02	1.11
2013	131,017	377.26	18,041.03	1,503.42	1,668.80	1.11
2014	131,378	377.26	18,090.74	1,507.56	1,673.39	1.11
2015	131,892	377.26	18,161.52	1,513.46	1,679.94	1.11

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SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Service Area Boca Raton:RW(2) Treatment Plant (Table I) Boca RatonWTP

TABLE F
Past Water Use

Year	Past Population*	Per Capita Usage	Total Annual Use (MG)	Average Month Use (MG)	Maximum Month Use (MG)	Ratio Max:Average

* Source of Projected Population Information: Table G: City of Boca Raton Water and Sewer Service Area Population and Unit Projections for 2004-2005 EAR Report

TABLE G
Projected Water Use

Year	Projected Population*	Per Capita Usage	Total Annual Use (MG)	Average Month Use (MG)	Maximum Month Use (MG)	Ratio Max:Average
2016	132,425	377.26	18,284.87	1,523.74	1,691.35	1.11
2017	133,017	377.26	18,316.43	1,526.37	1,694.27	1.11
2018	133,435	377.26	18,373.99	1,531.17	1,699.59	1.11
2019	133,854	377.26	18,431.68	1,535.97	1,704.93	1.11
2020	134,483	377.26	18,569.03	1,547.42	1,717.64	1.11
2021	134,902	377.26	18,575.99	1,548.00	1,718.28	1.11
2022	135,320	377.26	18,633.55	1,552.80	1,723.60	1.11
2023	135,739	377.26	18,691.25	1,557.60	1,728.94	1.11
2024	136,157	377.26	18,800.17	1,566.68	1,739.02	1.11
2025	136,609	377.26	18,811.05	1,567.59	1,740.02	1.11

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SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Service Area Boca Raton:RW(2) Treatment Plant (Table I) Boca RatonWTP

TABLE F
Past Water Use

Year	Past Population*	Per Capita Usage	Total Annual Use (MG)	Average Month Use (MG)	Maximum Month Use (MG)	Ratio Max:Average

* Source of Projected Population Information: Table G: City of Boca Raton Water and Sewer Service Area Population and Unit Projections for 2004-2005 EAR Report

TABLE G
Projected Water Use

Year	Projected Population*	Per Capita Usage	Total Annual Use (MG)	Average Month Use (MG)	Maximum Month Use (MG)	Ratio Max:Average
2026	136,854	375.55	18,811.05	1,567.59	1,760.02	1.11
2027	137,100	375.91	18,811.05	1,567.59	1,760.02	1.11

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3.5 Water Supply Provided by Local Government

Consumptive Use Permit (CUP) Information

- ***Current CUP Number***

  50-00367-W

- ***Raw Water Allocation Information***

  - ***Average Annual Daily and Maximum Monthly (Daily) Allocations***

    Annual Allocation: 18,811 Million Gallons
    Maximum Monthly Allocation: 1,760 Million Gallons

  - ***Applicable Source Limitations (dry season, wellfields, and priority)***

    N/A

- ***Required Off-sets:***

  2.93 Million Gallons per Day
  1,068.34 Million Gallons per Year

- ***Expiration Date(s) by Source***

  Biscayne Aquifer: July 10, 2028

- ***Treatment Facilities and Planning Schedules***

  Raw Water Supply

  The City's raw water is provided by four wellfields, listed in order of construction as the Eastern, Western, New Western, and Broken Sound wellfields. Three proposed wells are projected for construction in 2010 near the New Western wellfield. All of the existing and proposed wells in Boca Raton do or will withdraw water from the Biscayne aquifer, which is the source for most potable water supplies in southeast Florida. The aquifer lies from 0 to 300 feet below the ground surface and underlies the entire Boca Raton area. All existing and proposed wellfields are located within the City's service area.

  <u>Eastern Wellfield</u>

  The Eastern Wellfield is comprised of 15 operating wells, designated 1-E through 25-E and is oriented south to north along Northwest Second Avenue and the El Rio Canal (E-4) from Palmetto Park Road to Yamato Road (NW 51 Street). Well 2-E was abandoned prior to 1974; wells 5E and 23E were abandoned soon after. Wells 6-E, 7-E and 8-E were abandoned in 1990. Wells

1E, 9E, 10E, and 11E were abandoned in 2009. The remaining wells are regularly serviced and pumped periodically to ensure operability and to determine if there is any bacterial contamination in the wells.

The wells are connected through a 36-inch diameter raw water transmission main constructed in 1984 to the Glades Road Water Treatment Plant. The 15 wells that are pumped regularly (all except 1E, 2-E, 5-E, 6-E, 7-E, 8-E, 9E, 10E, 11E, and 23E) have a total installed capacity of 21 MGD (each well has a rated capacity of 1.0 mgd or 700 GPM except for wells 24 E and 25E which have a rated capacity of 2.0 MGD or 1,400 GPM.

Original Western Wellfield

The original Western Wellfield has 12 wells, designed 1-W through 12-W. Wells 1-W through 9-W were constructed along the E-3 Canal, which is oriented north to south from Glades Road to Camino Real. These nine wells pump raw water through a 48-inch diameter transmission main to the Glades Road Plant. Wells 10-W, 11-W, and 12-W are located in the vicinity of the Glades Road Water Treatment Plant and can be supplied power by the plant emergency generator. Wells 10W and 11W are on inactive status. Some wells (4-W to 9-W) have provisions for operating from portable generators. In 1995, Wells 7W and 9W were reconstructed and are now designated as 7WR and 9WR. The original Western Wellfield has an installed capacity of 23 MGD. Each well has a rated capacity of 2.0 MGD or 1,400 GPM except for 9WR which is limited to 1.0 MGD or 400 GPM.

New Western Wellfield

The New Western Wellfield has 14 production wells, designated 13-W through 26-W. Wells 13-W through 15-W are oriented from southwest to northeast in the median of Potomac Road; wells 16-W through 20-W are oriented from south to north along the E-3 Canal; wells 25-W, 24-W, 20-W through 23-W, and 26-W are oriented from east to west; respectively, along Yamato Road. All of the wells are presently active with a cumulative installed capacity of 28 MGD. Each well has a rated capacity of 2.0 MGD or 1,400 GPM. The wells pump raw water to the Glades Road Plant through a 48-inch diameter transmission main.

The Yamato Road generator building next to Well 20-W was provided to supply emergency power to wells 17-W through 25-W in the New Western Wellfield, along with housing the motor control centers for these wells. This station includes a telephone communication line connected directly to the operations control room at the Glades Road Water Treatment Plant.

Broken Sound Wellfield

This wellfield has 11 production wells, designated as 27-W, 29-W, 30-W, 32-W, 35-W through 37-W, and 39W through 42-W. The first 8 wells were constructed in the Broken Sound area in June of 1991. The last 3 wells were constructed along West Palmetto Park Road in 1995-1996. This wellfield has an installed capacity of 22 MGD with each well rated at 2.0 MGD or 1,400 GPM.

Proposed Wells

In order to further ensure the reduction in potential salt water intrusion, the City has proposed to construct three new western wells located along Military Trail, just south of Spanish River Boulevard. Each well will have an installed capacity of 2.0 MGD or 1,400 GPM.

Historically, the city has experience 71 mgd actual production capacity reliability (85%) from the well fields which includes an accounting for wells that are temporarily out of service or periodically taken out of service for rehabilitation. The City also maintains an industry below average measured difference between the sums of total metered volume pumped at the individual wells vs. the volume of raw water measured as received on the treatment plant master meter of 3.7%.

Treatment Facilities

The City of Boca Raton owns and operates water treatment facilities located on Glades Road just east of Interstate 95. The water treatment facilities include:

30 million gallon a day Lime Softening Plant

The original 20-MGD nominal capacity plant that was completed in 1973 was upgraded to 60 MGD in 1983 by the construction of three dual-media filters, two softening units, three high-service pumps, a 7.5 MG storage tank, a sludge handling system, and modifications to the chemical feed system. Interim improvements completed in FY 89/90 allowed the plant to be rerated to 70 mgd. The plant utilizes ammonia injection to form a combined chlorine residual to reduce trihalomethanes (THM's). A computer is used for operational control and to monitor the status of the plant and wellfields. In 2006, because of the additional capacity created by the completion of the Membrane Softening Plant, four dual-media filters and one lime-softening unit were disbanded resulting in a plant rating of 30 mgd.

40 million gallon a day Membrane Softening Plant

A state-of-the-art Membrane Softening Plant was constructed and completed in January of 2005. This facility includes:

- 6 raw water booster pumps;
- 4 (8-cells) multimedia pressure filters;
- 12 micron cartridge filters;
- 10 primary membrane feed pumps;
- 2 convertible membrane unite feed pumps;
- 10 primary membrane process units;
- 2 convertible membrane process units;
- 6 degasifiers; and
- 2 air quality control scrubbers.

2/3 of the raw water is directed to the Membrane Softening Plant and 1/3 is directed to the Lime Softening Plant for treatment. After treatment, the water is combined in a clearwell, disinfected with sodium hypochlorite and ammonia, pH adjusted with sodium hydroxide, and stabilized with corrosion inhibitor and distributed to the customers of Boca Raton.

With a combined capacity of 70 mgd and a projected demand of 51.09 mgd yielding an excess capacity of nearly 20 mgd, the City of Boca Raton Utility Services department has no long term plans for increasing the capacity of either water treatment facility. Facility maintenance and upgrades will be scheduled in accordance with standard preventative and predictive maintenance programs and as necessitated by regulation.

Transmission and Distribution System

The water transmission system is considered to be those water mains 12 inches in diameter and larger. Transmission mains are predominantly of cast iron and ductile iron construction. The system has a looped grid configuration which enhances system pressures and reliability. City Ordinance No. 3853 was adopted June 13, 1989, requiring connection to the potable water system for any building connected to the sanitary sewer system.

The water distribution system consists of mains smaller than eight inches in diameter, customer service lines, meters, hydrants, and other system appurtenances and is ~535 miles in length.

- ***Methods and Treatment Losses in the CUP***

The Lime Softening treatment process yields almost 100% of the raw water treated where as the Membrane Softening treatment process has an 85% treatment efficiency. The 15% loss due to the Membrane Softening process is accounted for in the CUP utilizing a 2:1 blend of membrane softened and lime softened water treatment ratio.

- ***Permitted Florida Department of Environmental Protection (FDEP) Capacities***

DEP DISTRICT	COUNTY	PWS ID	TYPE	DESIGN CAPACITY	# PLANTS	LAST DATE INSPECTED
4	50	4500130	COMMUNITY	70,000,000	1	05/2007

- ***Storage Facilities***

The water storage facilities for Boca Raton are 24.5 MG in ground storage and 1.0 MG in elevated storage.

Storage Type	Number	Capacity	Location
Ground Storage Tank	1	10.0 MG	Glades Rd. & I-95 (Utility Complex)
Ground Storage Tank	1	7.5 MG	Glades Rd. & I-95 (Utility Complex)
Clearwell	1	1.0 MG	Glades Rd. & I-95 (Utility Complex)
Elevated Storage Tank	1	500,000 MG	Dixie Hwy. and N.E. 42nd St.
Elevated Storage Tank	1	500,000 MG	S.W. 1st Ave. and S.W. 13th Terrace
Ground Storage Tank	1	3.0 MG	S.W. 18th St.
Ground Storage Tank	1	2.0 MG	N.W. 2nd Ave.
Ground Storage Tank	1	1.0 MG	Hidden Valley
Total Finished Water Storage Capacity		**25.5 MG**	

The Glades Road Water Treatment Plant has 18.5 MG of ground storage and 1.0 MG in the elevated backwash storage tanks onsite. These two on-site elevated tanks are not considered available except under extreme emergency. The facilities at the City's old Second Avenue Plant include 2.0 MG in ground storage. In May of 1986, provisions were made to utilize a portion of the Second Avenue Plant storage and high-service pumping facilities to supplement the Glades Road high-service pumps. The Hidden Valley Pump Station has 1.0 MG in ground storage located onsite. A third storage tank located on Southwest 18th Street has 3.0 MG in storage capacity. There is an additional 1.0 MG of elevated storage at two other locations in the system. The first of these is elevated tank No. 1, known as the "North Tank," located at the northeast corner of the intersection of Dixie Highway and Northeast 42nd Street. This tank has a capacity of 500,000 gallons. A second elevated tank, No. 2, known as the "South Tank," is located southeast of the intersection of Southwest 1st Avenue and Southwest 13th Terrace. This tank has a capacity of 500,000 gallons. A third tank located at St. Andrews Boulevard was dismantled in 1986.

The Hidden Valley Pumping Station is operated on a time basis up to twice per day during peak demand periods. This pumping station is equipped with a diesel-powered generator for emergency power.

- ***Interlocal agreements and bulk sales***

  N/A

- ***Interconnects, Distribution and Associated Responsibilities (emergency or on-going)***

  All interconnections with neighboring Utilities are governed by interlocal agreements and serve for emergency purposes only. Listing of interconnects is provided in the following Table K.

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

TABLE K

Water Supply System Interconnections

Interconnect with:	Location Description (also, please provide a location map)	Existing/ Proposed	Size	Capacity	Metered?	Status
Delray Beach	North City Limits (C-15) & Dixie Hwy. (Hidden Valley)	Existing	8 inch	627 gpm	Yes	Yes

Please discuss any operational constraints that would inhibit use of the interconnect:

Primarily for emergency use only. Valves must be opened.

Interconnect with:	Location Description (also, please provide a location map)	Existing/ Proposed	Size	Capacity	Metered?	Status
Delray Beach	North City Limits (C-15) & North Congress Avenue	Existing	8 inch	627 gpm	Yes	Yes

Please discuss any operational constraints that would inhibit use of the interconnect:

Primarily for emergency use only. Valves must be opened.

Interconnect with:	Location Description (also, please provide a location map)	Existing/ Proposed	Size	Capacity	Metered?	Status
Palm Beach County	Jog Road & Canary Palm Drive	Existing	8 inch	627 gpm	Yes	Yes

Please discuss any operational constraints that would inhibit use of the interconnect:

Primarily for emergency use only. Valves must be opened.

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SOUTH FLORIDA WATER MANAGEMENT DISTRICT

TABLE K

Water Supply System Interconnections

Interconnect with:	Location Description (also, please provide a location map)	Existing/ Proposed	Size	Capacity	Metered?	Status
Palm Beach County	Jog Road & Sunstream Blvd.	Existing	10 inch	979 gpm	Yes	Yes

Please discuss any operational constraints that would inhibit use of the interconnect:

Primarily for emergency use only. Valves must be opened.

Interconnect with:	Location Description (also, please provide a location map)	Existing/ Proposed	Size	Capacity	Metered?	Status
Palm Beach County	Congress Avenue	Existing	6 inch	627 gpm	Yes	Yes

Please discuss any operational constraints that would inhibit use of the interconnect:

Primarily for emergency use only. Valves must be opened.

Interconnect with:	Location Description (also, please provide a location map)	Existing/ Proposed	Size	Capacity	Metered?	Status
Deerfield Beach	South City Line& A1A	Existing	8 inch	803 gpm	Yes	Yes

Please discuss any operational constraints that would inhibit use of the interconnect:

Primarily for emergency use only. Valves must be opened.

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Form 0645-G73 (08/03)

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

TABLE K

Water Supply System Interconnections

Interconnect with:	Location Description (also, please provide a location map)	Existing/ Proposed	Size	Capacity	Metered?	Status
Deerfield Beach	Hillsboro Canal & Interstate 95	Proposed	8 inch	803 gpm	Yes	Yes

Please discuss any operational constraints that would inhibit use of the interconnect:

Would be primarily for emergency use only. Valves would have to be opened.

Interconnect with:	Location Description (also, please provide a location map)	Existing/ Proposed	Size	Capacity	Metered?	Status
Highland Beach	North City Limits & A1A	Existing	10 inch	979 gpm	Yes	Yes

Please discuss any operational constraints that would inhibit use of the interconnect:

Primarily for emergency use only. Valves must be opened. Used during Hurricane Wilma (see Table E)

Interconnect with:	Location Description (also, please provide a location map)	Existing/ Proposed	Size	Capacity	Metered?	Status

Please discuss any operational constraints that would inhibit use of the interconnect:

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Form 0645-G73 (08/03)

- ***Treatment and Distribution System Losses***

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

TABLE I

Water Treatment Method and Losses

Treatment Plant Name:	Boca Raton Water Treatment Plant
Service Area(s) (Table F & G)	Boca Raton
Treatment Method	Lime Softening and Membrane Softening
Plant Capacity	70 MGD
Maximum TDS or Chloride in Raw Water Being Treated	61.5 mg/L Chloride
Maximum TDS or Chloride Limit of Treatment Method	N/A (< 250 mg/L Chloride)
Reject Discharge Point	Effluent Storage Tank and Ocean Outfall
Chloride Concentration of	
Reject Water	< 150 mg/L
Receiving Water	Atlantic Ocean 37,000 mg/L
System Efficiency Losses (%)	1.24 % for 2009
Wellfield to Treatment Plant	
Treatment Loss	15 % (Membrane Softening recovery rate = 85%)
Other In-Plant Loss	
Distribution System Loss	
Other (specify)	
Other (specify)	
Other (specify)	
Other (specify)	
Cumulative System Loss	16.24 %

If applicable, please submit a copy of the approval letter from the Department of Environmental Protection for the discharge of reject water resulting from the treatment process.

- ***Outstanding Compliance Issues (required upgrades or expansion etc.)***

  The City of Boca Raton's Utility Services Department continuously evaluates and maintains the integrity of its facilities. As regulations are enacted, a pro-active approach to achieve compliance before deadlines is practiced. The most recent upgrades to the water treatment processes involved the movement of chlorine disinfection injection points to meet the requirements of the EPA's Groundwater Rule. Currently there are no outstanding compliance issues that require upgrades or expansion.

3.6 Water Supply Provided by Other Entities

Not applicable to the City of Boca Raton.

3.7 Conservation

A number of steps have been taken by the City to reduce raw water demand. The City utilizes a water conservation rate structure and performed a rate analysis in 2007. As a result of the rate analysis study, it was concluded the tiered water conservation model was appropriate and the City adjusted rates in January 2008 and then again in October 2008. The City has also implemented, as of January 1, 2008, a tiered water conservation rate structure for reclaimed water. The new commodity rates are as follows:

Potable Water Rates:	
0-25,000 Gallons	**$0.71/1000 Gallons**
25,001-50,000 Gallons	**$1.71/1000 Gallons**
50,001& Above	**$2.18/1000 Gallons**
Reclaimed Water Rates:	
0-25,000 Gallons	**$0.43/1000 Gallons**
25,001-50,000 Gallons	**$0.53/1000 Gallons**
50,001 & Above	**$0.64/1000 Gallons**

The City continues to undertake and expand education programs to promote water conservation. The first mailing of conservation information went out in August of 1989 to customers of more than 28,000 accounts. This resulted in an estimated 600 telephone calls from customers, most of who requested and were given water conservation information. Revisions to the City's Community Appearance Board criteria include Xeriscape techniques and principles.

In the past four years, education programs for school-aged children and other local groups have been developed and delivered to over 6,000 residents.

The Utility Services Department has one of the lowest unaccounted-for-water ratios in the area at 1.24% If we see a trend in this percentage increasing, instead of decreasing or holding steady as it has over the last several years, we will undertake a leak detection program.

The City has required low-volume plumbing fixtures for some years. These requirements are part of the City's building code. As more efficient fixtures become available, these will be incorporated into the City code.

The Utility Services Department submitted to the South Florida Water Management District a water conservation program along with our CUP permit application.

Included in the 89/90 budget was $1,985,300 to begin a wastewater recycling program that targets large water users. This program was added to the Capital Improvements Program budget at a total cost of over $6 million through fiscal year 1993/94.

Currently the City's IRIS reclamation facility produces an average of 8 million gallons a day of reclaimed water with an original capacity to produce 10 million gallons a day. The City's expansion of the on-site production capacity of the IRIS reclamation facility to a production capacity of 17.5 million gallons a day was completed in August 2010. During the same time, the City is also expanded the distribution system for the reclaimed water including the construction of a 5.0 MG off-site storage tank. Expanding the reclaimed water distribution system will result in making reclaimed water available to large users such as golf courses and schools. Once the reclaimed water in-plant production capacity expansion, construction of the off-site storage tank, and the distribution system expansions are complete, an expected increase in daily demand totaling ~17.5 million gallons a day will be realized.

Raw water withdrawals for irrigation use will be offset with the use of reclaimed water and a positive impact on the regional system will result by increasing the availability and use of reclaimed water from 8 million gallons a day to ~17.5 million gallons a day.

3.7.1 Regional Issues

Water Conservation Plans

The City of Boca Raton Utility Services Department provided a water conservation plan as part of the 2006 CUP renewal application. The plan addresses:

1. Limitation of lawn and ornamental irrigation hours

Appendix L to the City's Water Conservation Plan (submitted as Item IV-12 and was presented in Appendix H of the 2000 WUP renewal application) includes a copy of an Ordinance No. 3857, setting forth the limitation of landscape irrigation hours. In summary, the ordinance applies to "all use of water for irrigation regardless of source, except reclaimed water or treated effluent." Irrigation is prohibited on Friday and between the hours of 8:00 AM and 5:00 PM on Saturday through Thursday. Irrigation during allowed hours is limited to a non-consecutive three days a week (based upon property address) for a period of no more than four hours for a parcel of property less than five acres in size. Variances are allowed only if issued by both the SFWMD and the City.

In addition to enforcing the ordinance, the City issues reminders of these irrigation restrictions through notes on water bills as well as stand-alone mailers.

Sec. 17-57 - Landscape Irrigation Restrictions.

(1) Application. The provisions of this section shall apply during all periods of time in which no water use restrictions, as provided in sections 17-55 and 17-56, are in effect. The provisions of this section shall apply to all use of water for irrigation regardless of source, except:

(a) reclaimed water may be utilized for irrigation purposes each day of the week from 5:00 p.m. through 8:00 a.m., and

(b) irrigation with reclaimed water by golf courses shall be exempt from all day of the week and time restrictions.

(2) Restrictions. The use of water for sprinkling or other irrigation of lawns, landscaped areas, golf courses or other outdoor vegetation in the city is restricted as follows:

(a) The use of water for sprinkling and irrigation is prohibited on Friday and between the hours of 8:00 a.m. and 5:00 p.m. Saturday through Thursday.

(b) Water use between the hours of 5:00 p.m. and 8:00 a.m. Saturday through Thursday shall be limited to 3 days a week as follows:

1. Property with odd-numbered addresses shall be permitted to irrigate on Monday, Wednesday and Saturday. An odd-numbered address means a house address, box number or rural route ending in the number 1, 3, 5, 7 or 9 or the letters N through Z.

2. Property with even-numbered addresses shall be permitted to irrigate on Tuesday, Thursday and Sunday. An even-numbered address means a house address, box number or rural route ending in the number 0, 2, 4, 6 or 8 or the letters A through M and property which has no street address.

3. Irrigation shall not extend beyond a 4-hour period on any given parcel of property less than 5 acres in size.

(3) Variances. Any user holding a valid variance issued by the South Florida Water Management District may continue to avail himself of the provisions of the variance upon filing of the variance with the city.

(4) Enforcement. Every police officer 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. In addition, the city manager may also delegate enforcement responsibility for this section to other departments of city government.

(5) Penalties. Violation of any provision of this section shall be subject to the following penalties:

(a) For the first violation, by a fine not to exceed $50.00.

(b) For as second violation, by a fine not to exceed $150.00.

(c) For a third violation, by a fine not to exceed $250.00 and by termination of water service to the premises until the violation is corrected.

Each day in violation of this section shall constitute a separate offense. Law enforcement officials and others as delegated may provide violators with no more than 1 written warning. In addition to the sanctions contained herein, the city may take any other appropriate legal action, including but not limited to emergency injunctive action, to enforce the provisions of this section.
(Code 1966, § 24-13; Ord. No. 3857, § 1(24-14), 7-10-90; Ord. No. 4476, § 1, 12-14-99)

2. Use of Xeriscape principles

The City's Water Conservation Plan discusses conservation measures related to the use of Xeriscape principles. Ordinance No. 3861 sets forth landscaping requirements and criteria, including the use of Xeriscape principles such as water reduction measures, use of native vegetation, and ratios of vegetation species mixing. Additionally, the ordinance requires landscaping plans to satisfy a minimum use of Xeriscape as determined by a point-system awarded to designs.

Additional efforts by the City to promote the use of Xeriscape principles include the mailing of Xeriscape materials, airing of Xeriscape videos on the City's cable television channel, development of a Xeriscape demonstration site, and the publication of Xeriscape articles in "Liquid Assets" and "Water Conservation Update," newsletters published and distributed by the City of Boca Raton Utility Services Department.

Requirement of ultra-low volume plumbing in new construction:
As part of its Water Conservation Plan, the City of Boca Raton adopted the requirements of the Water Conservation Act (Florida Statutes, Section 533.14) regarding plumbing codes (through Ordinance No. 3905) and the required use of ultra-low volume plumbing in new construction. The City also distributes information about water saving devices, including low-flow shower heads and toilets, as part of its general public information program.

3. Water conservation-based rate structures

In August of 1989, the City Council adopted a three-tiered water rate structure (through Ordinance No. 3787) to encourage water conservation. Water rates are assessed bi-monthly and are based on "the use of the property receiving water and the amount consumed." For residential customers, the rates are further divided by in-City and out-of-City users. For water usage between 1,000 and 24,999 gallons (on a bimonthly basis), in-City customers pay $0.55 per 1,000 gallons, and out-of City customers pay $0.69 per 1,000 gallons. For customers consuming 25,000 to 49,999 gallons, the rates increase to $1.31 and $1.64 per 1,000 gallons for in-City and out-of-City customers, respectively. Finally, for consumption of 50,000 gallons or greater, the rates again increase to $1.68 and $2.10 per 1,000 gallons for in-City and out-of-City customers, respectively.

4. Leak detection programs

In an effort to reduce water leakage throughout the distribution system, the City tests, calibrates, and repairs or replaces (when necessary) water meters. These actions can be initiated by customer complaints, meter reading/billing staff, distribution network system mechanics, or through the program of regular testing of the larger water meters in the system.

5. Requirements of rain-sensor override for new lawn sprinkler systems

The City adopted Ordinance No. 4289 that requires "any lawn sprinkler system connected to the potable water supply shall be equipped with a rain sensor device which will override the irrigation cycle of the sprinkler system when adequate rainfall has occurred." As of January 1, 1997, these sensors were required on all new landscaping sprinkler systems, except those using reclaimed water. As a reminder of this ordinance requirement, the City airs a public service announcement on the cable television channel and publishes notes on customers' water bills.

6. Water conservation public education programs

The City has a general public information program through which it promotes water conservation. Elements of the program include publishing and distributing of newsletters ("Liquid Assets" and "Water Conservation Update"), hosting an open house at the Utility Services complex, participating in local events such as the Engineer's Week celebration at FAU, and maintaining various water conservation materials (pamphlets and videos) that can be either mailed to customers or aired on the City's cable television channel. Educational/Outreach programs are also conducted for local civic groups, homeowners associations, and schools. The City also participates in local environmental programs and has purchased Enviroscape, a working model of a coastal ecosystem, and the City has made over 700 customer contacts with Enviroscape in the past year alone.

7. Analysis of economic, environmental, and technical feasibility of reusing reclaimed and/or recycled water

This analysis has been completed. As a result of the findings, the City is using approximately 1.0 MGD of reclaimed water for process and irrigation water at its wastewater treatment plant. The City has also installed Project IRIS (In-City Reclaimed Irrigation System) that provides approximately 4.24 mgd of reclaimed water to approximately 770 customers including single-family homes, FAU, a number of commercial green spaces along Glades Road and Federal Highway, and a number of condominiums and golf courses in the southeastern part of the city. The project has expanded into the Royal Palm Yacht and Country Club residential section. Further expansion of the system will include bringing Lynn University on-line in the 2006-2007 timeframe as well as the new City library and park planned for the T-Rex area. Project IRIS pumps an average of greater than 4.24 MGD resulting in a total reclaimed water use of over 5.24 MGD which is a preservation of greater than one billion of gallons of fresh water per year. In an effort to increase the amount of fresh water that can be preserved, the City requests that SFWMD encourage other permitted irrigation water users to connect to the Project IRIS system, if available, when permits are up for renewal.

8. A schedule and processes for implementing, assessing, and periodically updating the water conservation plan

The City's water conservation efforts meet all of the requirements from SFWMD. Certain elements of the program, such as the limitation of landscape irrigation, are monitored continuously and appropriate enforcement actions are taken. Additionally, the City regularly communicates water conservation requirements to its customers through the use of newsletters, public service announcements, and community events. Therefore, the water conservation plan is continually assessed by way of its implementation and modifications are made, as necessary.

9. Any other appropriate elements

In 2006, the City has begun calculating Unaccounted for Water (UAW) on a monthly basis using the attached framework to monitor the system to detect potential inconsistencies and possible leaks and/or misuse of the potable water.

The City has also been adhering to the SFWMD regulations regarding water conservation from the Draft Consolidated Water Supply Plan Support Document (June 2004).

Analysis of Conservation Element EAR

Specific items contained in the city's Analysis of Conservation Element EAR are as follows:

OBJECTIVE CONS.2.1.0: Prevent further degradation and improve the quality of water sources and waters that flow into surface water resources.

Monitoring Measure. The following are the adopted monitoring measures for this objective:

1. Continue to participate with Palm Beach County for the protection and enhancement of source surface and groundwater resources.
2. Require new developments or redevelopments to provide drainage systems consistent with the water quality level of services set forth in the Drainage Subelement Policy 5.1.1.

Objective Achievement Analysis. City pursues interlocal agreements with appropriate agencies to ensure correction of localized stormwater drainage system deficiencies. The City has adopted ordinances to regulate marina and boating activities to protect and conserve water quality and marine habitats.

OBJECTIVE CONS.2.2.0: Protect the groundwater recharge areas from pollution.

Monitoring Measure. Policies have been established in the Aquifer recharge Subelement to protect groundwater recharge areas.

Objective Achievement Analysis. The City has implemented programs to slow the depletion of and increase the recharge of the local groundwater resources.

- Since June of 1987, the City has operated a pump which diverts as much as 44 mgd of surface water from the Hillsboro Canal into the E-2-E (Turnpike) Canal (SFWMD WUP No. 50-01568 – W). This recharges the groundwaters of the E-3 sub-basin.

- The City's reclaimed water program, Project IRIS (In–city Reclamation Irrigation System), replaces as much as six (6) mgd of raw and treated freshwater which would be withdrawn and used for irrigation. Most of this reclaimed water is applied as irrigation and returns to the shallow aquifer.

OBJECTIVE CONS.2.3.0: Provide adequate potable water quality and quantity for the City's present and projected needs.

Monitoring Measure. Policies have been established in the Potable Water Subelement to provide adequate potable water quality and quantity, and to protect existing wellfield sites.

Objective Achievement Analysis. The Glades Road lime softening water plant was constructed in 1973. Like most southeastern Florida water treatment plants, groundwater was treated and disinfected with chlorine. In the early-1980's, research found that chlorine could react with naturally occurring organic matter in certain raw waters to create unhealthy by products (DBPs), including Trihalomethanes (TTHMs).

In 1983, the City of Boca Raton switched from chlorine to chloramines for disinfection to reduce THM levels. Unfortunately, that allowed more of the natural color in our water to pass through the treatment process, creating noticeable levels of color in our drinking water. It also produced TTHMs in the upper range of allowable concentrations and the City was aware that USEPA planned to lower the acceptable levels of THMs.

In 1992, the City Council approved exploring other treatment methods. After many years of studies and pilot testing, a membrane softening plant (MSP) was designed and construction began in 2001. The initial phase of this plant, the largest of its kind in the world, was put into service in August 2004. Since that time, the City has seen a significant reduction of both color and THMs. This water is blended with the lime-softened water to produce a safe, aesthetically pleasing product.

The City Utility Services laboratory staff routinely monitors water quality from all active municipal wells, plus a number of monitoring wells. Staff conducts semi annual standard raw water analyses for compliance purposes. Staff also continues to conduct supplemental annual wellfield analyses for primary organic contaminants, though this is no longer required by any regulatory agency.

The City works vigorously to install sanitary sewers in areas currently served by individual septic tanks. The Spanish Village project was completed in 2004. Funds are identified in the CIP for special assessment projects in Hidden Valley, Boca Raton Hills, and Area II (commercial area north of Glades Rd). This reduces the possibility of groundwater contamination due to leaking septic tanks. The City coordinates with FDOH to require property owners to properly abandon any septic tanks.

OBJECTIVE CONS.2.4.0: Continue to conserve potable water resources.

Monitoring Measure. The following are the adopted monitoring measures for this objective:

1. Continue to cooperate with SFWM to conserve potable water resources through programs.

Objective Achievement Analysis. Beginning with public workshops in the summer of 2001 and culminating with the publication of the Water Conservation Initiative (WIC) Report, the

Florida Department of Environmental Protection (FDEP) coordinated a statewide effort to "identify cost-effective, practical measures to use water more efficiently." The report contains over 50 "priority recommendations" addressing issues including:

- Agricultural irrigation
- Water pricing
- Reuse of reclaimed water
- Landscape irrigation
- Indoor water use
- Industrial/commercial/institutional uses
- Research
- Education and outreach

The City of Boca Raton's Utility Services staff participated in this effort. Staff continues to participate in ongoing projects, including an effort to identify performance measures for water conservation programs. As directed by several policies adopted in the 1989 Comprehensive Plan and 1996 EAR, the City continues to implement a number of programs directed towards water efficiency, including:

- The City's reclaimed water program, Project IRIS (In-city Reclamation Irrigation System) has been funded since 1990 for an estimated total cost of about $20 million. There are currently almost 900 customers, including the Boca Raton Community Hospital, Florida Atlantic University, the Boca Raton Resort and Club, two golf courses, 46 multi-family residences, 83 businesses, many acres of City parks and median strips, and over 700 single family homes. Average daily demand is 5.6 mgd with a maximum day demand of 6.8 mgd. Without Project IRIS, this irrigation water would have been potable water, or untreated surface or ground waters – all part of our local freshwater resources. Project IRIS funding is included in the next five (5)-year planned CIP expenditures. Currently under design is a project to extend reclaimed water lines to the former T-Rex property, the site of the City's future Western/Spanish River library.
    - The City continues to use a tiered water rate structure that encourages water conservation.
    - The City continues to enforce the provisions of City Code of Ordinances, Section 17-57, adopted in 1990, which generally limits irrigation to a maximum of three (3) times a week during non-daylight hours.
    - The City continues to vigorously enforce the provisions of the SFWMD water shortage plan when a water shortage is declared.
    - The City continues to require rain sensors be installed on new irrigation systems.
    - A number of programs contribute to a low "Unaccounted for Water" percentage for our system. One way of calculating this number is by comparing the difference between what is pumped from the plant and what is metered is 2.49%, below the industry goal of 10%. This means that the City of Boca Raton has a "tight" system, with very little leakage or "lost" water.

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

The City will coordinate future water conservation efforts with the 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 promotes water conservation in a cost-effective and environmentally sensitive manner. The City will continue to actively support the SFWMD in the implementation of new regulations or programs that are design to conserve water during the dry season.

3.7.2 Identify any Local Financial Responsibilities as Detailed in the CIE or CIS

Two projects listed in the City of Boca Raton's CIE involving the Water Treatment facilities are described below.

CIP Project Request

Project Title
Raw Water Well Equipment/Expansion

Date: 08/03/09
Priority: 5
Project #: 470228

Location	Department	Contact Person(s)
Various areas	UTILITY SERVICES	N. T. Wellings

Project Description
Construction and rehabilitation of wells.

Project Justification
The 56 wells in the water system require periodic rehabilitation to maintain their capacity and water quality.

Account #	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	
473-4279-536-6533	500,000	580,000	300,000	300,000	300,000	300,000	
478-4299-536-6533	2,500,000	-	-	-	-	-	
Total	3,000,000	580,000	300,000	300,000	300,000	300,000	

Funding Request	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	Total
Construction	3,000,000	580,000	300,000	300,000	300,000	300,000	4,780,000
Total	3,000,000	580,000	300,000	300,000	300,000	300,000	4,780,000

Funding Source	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	Total
WIF	2,500,000	-	-	-	-	-	2,500,000
WRR	500,000	580,000	300,000	300,000	300,000	300,000	2,280,000
Total	3,000,000	580,000	300,000	300,000	300,000	300,000	4,780,000

Operational Impact	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	Total
Capital Outlay	-	-	-	-	-	-	-
Other Operating	-	-	-	-	-	-	-
Personnel	-	-	-	-	-	-	-
Supplies	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-

This project entails funding the design, sighting, and construction of three new raw water construction wells in the City's new western wellfield area located along Military Trail, just south of Spanish River Boulevard. Each well will have an installed capacity of 2.0 MGD or 1,400 GPM. The above project wells will offset water withdrawals from wells that have been decommissioned in the eastern wellfield to ensure the reduction in potential salt water intrusion and will ensure sustainable water supply and water quality.

CIP Project Request

Project Title
Water Network System Improvement

Date: 08/03/09
Priority: 14
Project #: 470258

Location	Department	Contact Person(s)
City-Wide	UTILITY SERVICES	J. Sfiropoulos

Project Description
Replacement of old galvanized water services.

Project Justification
Based on the past several years these deteriorated water services have caused damage to roads. This project will inventory these services in a timely fashion.

Account #	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	
473-4279-536-4915	-	500,000	500,000	-	-	-	
473-4279-536-6405	500,000	950,000	1,200,000	1,300,000	1,000,000	1,000,000	
478-4299-533-6405	-	-	-	-	-	-	
Total	500,000	1,450,000	1,700,000	1,300,000	1,000,000	1,000,000	

Funding Request	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	Total
Construction	500,000	1,450,000	1,700,000	1,300,000	1,000,000	1,000,000	6,950,000
Total	500,000	1,450,000	1,700,000	1,300,000	1,000,000	1,000,000	6,950,000

Funding Source	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	Total
WIF	-	500,000	500,000	-	-	-	1,000,000
WRR	500,000	950,000	1,200,000	1,300,000	1,000,000	1,000,000	5,950,000
WSB	-	-	-	-	-	-	-
Total	500,000	1,450,000	1,700,000	1,300,000	1,000,000	1,000,000	6,950,000

Operational Impact	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	Total
Capital Outlay	-	-	-	-	-	-	-
Other Operating	-	-	-	-	-	-	-
Personnel	-	-	-	-	-	-	-
Supplies	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-

This project entails the ongoing replacement of aging galvanized water service lines to meters on an as needed basis ensuring the reliability of our water services. The galvanized water service lines have a limited life expectancy are being replaced with polyethylene piping. The replacing of the aging galvanized water service lines ensure reliable and quality water services to our customers.

3.8 Reuse

3.8.1 Regional 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 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 Boca Raton supports water reuse initiatives under consideration by both the SFWMD and the FDEP. The City has committed to become a 100% reuse facility by 2013 as noted in the City's 20-year water use permit. In the 20-year Work Plan, the City has identified a number of water reuse projects and their respective schedule.

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

The City will support the SFWMD 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.

3.8.3 Identify any Local Financial Responsibilities as Detailed in the CIE or CIS

CITY-WIDE SUMMARY OF MAJOR PROJECTS[1]

PROJECT NO.	PROJECT TITLE	2009/10 PROPOSED BUDGET	2010/11 PROPOSED BUDGET	2011/12 PROPOSED BUDGET	2012/13 PROPOSED BUDGET	2013/14 PROPOSED BUDGET	2014/15 PROPOSED BUDGET
470018	In-City Reclamation Irrigation System (IRIS) Construction of reclaimed water system components.	2,500,000	2,500,000	500,000	500,000	500,000	500,000

4.0 CAPITAL IMPROVEMENTS

4.1 Work Plan Projects and Schedule

City of Boca Raton Utility Services Water short-term CIP Projects include:

CITY-WIDE SUMMARY OF MAJOR PROJECTS[1]

PROJECT NO.	PROJECT TITLE	2009/10 PROPOSED BUDGET	2010/11 PROPOSED BUDGET	2011/12 PROPOSED BUDGET	2012/13 PROPOSED BUDGET	2013/14 PROPOSED BUDGET	2014/15 PROPOSED BUDGET
470015	Water Treatment Facility Improvements Rehabilitation of the lime softening water treatment facilities.	8,500,000	4,060,000	1,500,000	1,500,000	1,500,000	1,500,000
470228	Raw Water Well Equipment/Expansion Construction and rehabilitation of wells.	3,000,000	580,000	300,000	300,000	300,000	300,000

City of Boca Raton Utility Services Water Long-term CIP Projects include:

DEPARTMENT	NO.	PROJECT DESCRIIPTION	ESTIMATED COST	OPERATIONAL IMPACT
Water & Sewer	43	Palmetto Park Road Water Main Improvements 250 feet of 12-inch main on NW 4th Avenue from Pine Circle to Palmetto Park Road 1,340 feet of 8-inch main on Palmetto Park Road from NW 4th Avenue to NW 2nd Avenue 1,430 feet of 12-inch main on Palmetto Park Road from NW 4th Avenue to SE 1st Avenue.	$243,000	None
Water & Sewer	42	upgrades. Southwest 18th Street Water Main Improvements 880 feet of 16-inch main from the east terminus of I-95 crossing to SW 18th Street 4,110 feet of 16-inch main on SW 18th Street from Montezuma Road to SW 8th Avenue 3,840 feet of 12-inch main on SW 18th Street from SW 8th Avenue to Royal Palm Way 1,615 feet of 16-inch main from Federal Highway to Date Palm Road	704,000	None

TABLE 3 - PROJECTS & PROGRAMS [City of Boca Raton WATER SUPPLY FACILITIES WORK PLAN]

ALL PUBLIC, PRIVATE & REGIONAL UTILITY PROJECTS & PROGRAMS SERVING THE LOCAL GOVERNMENT						
UTILITY SERVING LOCAL GOVERNMENT'S	**FUTURE PROJECT OR PROGRAM PROVIDING WATER TO JURISDICTION**	**FINISHED WATER (MGD)**	**WATER SOURCE FOR PROJECT OR PROGRAM**	**DATE PROJECT ONLINE**	**CAPITAL COST**	**POPULATION SERVED WITHIN JURISDICTION**
City of Boca Raton	Currently constructed Lime Softening Plant	30	Biscayne Aquifer	Current	N/A	All + portions of unicorporated PBC
City of Boca Raton	Currently constructed Membrane Softening Plant	40	Biscayne Aquifer	Current	N/A	All + portions of unicorporated PBC
City of Boca Raton	Raw water well expansion and rehabilitation	~6.0	Biscayne Aquifer	2013	$4,180,000.00	All + portions of unicorporated PBC
TOTAL						

LOCAL GOVERNMENT'S UTILITY PROJECTS & PROGRAMS SERVING OUTSIDE ITS OWN JURISDICTION						
OTHER JURISDICTIONS BEING SERVED BY LOCAL	**FUTURE PROJECT OR PROGRAM PROVIDING WATER TO OTHER JURISDICTIONS**	**FINISHED WATER (MGD)**	**WATER SOURCE FOR PROJECT OR PROGRAM**	**DATE PROJECT ONLINE**	**CAPITAL COST**	**POPULATION SERVED OUTSIDE JURISDICTION**
	Not Applicable					
TOTAL						

5.0 GOALS, OBJECTIVES AND POLICIES

The City of Boca Raton reviews its GOPs on a regular basis and the workplan has been developed consistently with the GOPs.

As noted previously, the LOS for water services has been updated based on the current permitted 20-year permit allocation and is consistent with the workplan.

The City of Boca Raton ensure land use and future land use changes are in-line with the availability of water supplies and water supply facilities through a coordinated effort between the Development Services Department and the Utility Services Department. All land use amendments are reviewed and tabulated in the spread sheet on the next page to ensure concurrency. Utility Services Departmental approval is necessary for a land use and future land use change to be approved by the City.

Project Name	Location	Contact Name	Contact Phone	Contact E-mail	Date Request Received	Date Request Completed	Land Use Exisiting	Land Use Proposed	Potable Water Impact (MGPD)	Effluent Impact (MGPD)	Response	Additonal Responses
Tom's Land Use Ammendment	Dixie Highway				October 1, 2005	October 1, 2005					..\Analysis of Public Facilities and Services\Projects\Tom's land use amendment 10-05.doc	
Hidden Cove	Hidden Valley	James Drotos, PE	954-943-9433		November 10, 2005	November 21, 2005	Club house and golf course (~1,420 gpd)	90 SF 96 MF and 9.784 acres irrigation	0.167720	0.043293	..\Hidden Cove.doc	1-04-07 Updated response
Lynn Comprehensive Cancer Center	FAU Campus - North	Jim Pierce			March 2, 2006	March 2, 2006					..\Analysis of Public Facilities and Services\Projects\Lynn Comprehensive Cancer Centeranalysis 1 - Lisa Comments.doc	
HN Investment Properties	8300 S. Congress Avenue	Lauren C. Lending	561-838-4557	lauren.lending@ruden.com	March 4, 2006	March 22, 2006	Industrial - 24,393 sqft	commercial 34,848 sqft	-0.429000	0.000000	..\Analysis of Public Facilities and Services\Projects\HN Investment Property.doc	
Boca Teeca Townhomes	Western portion of Boca Teeca Golf Course	Jeffrey A. Evans, AICP	561-218-8854	jaevans@broadandcassel.com	March 22, 2006	April 3, 2006	Golf Course 25 acres and existing Inn	211 Townhouses and 92 room hotel			..\Analysis of Public Facilities and Services\Projects\Boca Teeca Townhomes.doc	
Wildflower	NE corner of Palmetto Park Road	Matthew Barnes	561-368-3808	matt@siemonlarsen.com	April 21, 2006	April 24, 2006	Commercial	Commercial and Residential			..\Analysis of Public Facilities and Services\Projects\Wildflower sewer and	

	and NE 5th Avenue										water.doc	
Conference Estates		Patricia F. Ramudo, P.E.	561-393-5818	Pframudo@aol.com	July 6, 2006	July 7, 2006					..\Analysis of Public Facilities and Services\Projects\Conference Estates.doc	
BRHP, LLC	Blue Lake Townhomes - SW corner of Broken Sound Blvd. and Yamato Road	Michael Gai	954-777-3123	suntech@suntech.org	August 16, 2006	August 18, 2006	Industrial - 1,400,000 sqft	Industrial - 800,000 sqft and 172 townhomes	-0.092000	-0.125000	..\Analysis of Public Facilities and Services\Projects\BRHP-LCC.doc	
Lower School Addition @ St. Andrews School	St. Andrews School	Keith Mote	(954) 522-1004	kmote@flynnengineering.com	May 4, 2007	May 4, 2007	8,000 sqft	24,000 sqft	0.001600	0.003200	..\St. Andrews Addition.doc	
Boca Grove Office MUPD	Powerline Road and Sunstream - Boca Grove Shoppes	Lauren C. Lending	561-838-4557	lauren.lending@ruden.com	December 4, 2007	December 6, 2007	Commercial - 51,600 sqft	Commercial - 59,166 sqft	0.002686	0.000757	Q:\Comprehensive Plan Ammendments\Analysis of Public Facilities and Services\Projects\Boca Grove - December 2007.doc	
Ocean Breeze	Boca Teeca	John Wheeler		John@cwiassoc.com	December 4, 2007	December 6, 2007					Q:\Comprehensive Plan Ammendments\Analysis of Public Facilities and Services\Projects\Boca Teeca Townhomes.doc	

Bailey Plaza	7900 North Federal Highway	OLA Realty, LLC Represented by Slattery & Associates - Neal Janov	561-392-3848	neal@dcesgroup.com	10/21/2008 2nd submittal - 12/03/08	10/22/2008 - Incorrect form/data Second submittal - 12/03/08	1.826 acres Residential (Low) and 0.117 Commercial	1.943 acres RM	-0.000660	0.001661	November 13, 2008 - provided template to Neal	Approved 2nd draft
TOTAL:									-0.349654	-0.076089		

In addition to the potable water conservation strategies and techniques discussed previously, the City of Boca Raton has provisions for conserving potable water resources through the implementation of its reuse program, Project IRIS.

The City of Boca Raton Utility Services Department currently treats an average of approximately 14 MGD of influent wastewater at its Glade Road Water Reclamation Facility. The reclamation facility is rated at 17.5 MGD. A 10.0 MGD reclaimed water production facility is co-located next to the water reclamation facility at the Glades Road site. The reclaimed water production facility currently treats an average of 6.3 MGD. The remaining balance of the effluent is discharged via ocean outfall.

The City of Boca Raton has been granted at CUP where the potable water demand in excess of the baseline allocation of 50.86 mgd is projected to occur in mid-2020.

- The projected completion of reclaim projects is by mid to late-2013 creating a positive balance to the regional system throughout the remaining duration of the permit and preceding the projected demands for the use of the terminated or reduced base condition water use well in advance of the 2020 projected demand.
- Total water saved on the regional system by the reclaim projects over the 20 year period = **38.51261 billion gallons**.

The City has implemented an aggressive reuse plan to become a fully operational reuse system comprising 100 percent of our annual average daily flow for reuse activities authorized by the FDEP. The following actions necessary to meet this plan are listed below:

On-Site Reclaimed Water Facility Capacity Expansion — **Expected Completion: August 2010**

Increase in demand: N/A

Objective: The objective of this project is to increase the capacity of the City of Boca Raton Utility Services Department's on-site reclaimed water facility from 10.0 MGD to 17.5 MGD (which is 100% of the permitted wastewater treatment facility capacity) thus increasing the amount of reclaimed water made available daily for irrigation to end-users resulting in a decrease demand of the regional water supply by August 1, 2010.

Status: The City accepted BID NO. 2009-014, Reclaimed Water Production Facility Expansion Project: 71-08-01 for $4,340,400.00 with R.J. Sullivan Corporation on February 24, 2009 and a contract was signed on March 30, 2009. As of October 31, 2009, the project is at 62.4% completion.
This project is on schedule.

Outside Funding: Per agreement #4600001650 with the South Florida Water Management District (SFWMD), the City received $794,800.00 as part of the SFWMD's FY 2008 – 2009Alternative Water Supply Funding Program. On November 3, 2009, the City submitted an application for additional funding through this program in the amount of $386,050.00.

5.0 MG Reclaimed Storage Tank Construction — **Expected Completion: April 2010**

Increase in Demand: N/A

Objective: The objective of the overall project is to increase the storage capacity of the City of Boca Raton Utility Services Department's reclaimed water distribution system for the utilization of the concurrent additional

reclaimed water production capacity expansion project from 10.0 MGD to 17.5 MGD in order to maintain hydraulic efficiency, reliable reclaimed water availability, and wet weather storage.
Realizing there was an area of large irrigation users in the northwestern portion of the City's service area, it was determined this area would be the focus of the reclaimed water distribution system expansion. In order to maintain hydraulic efficiency and provide reliable reclaimed water to this portion of the City and other portions of the City, it was determined that a 5.0 MG reclaimed water storage tank and pumping station would be necessary. This project entails the construction of the off-site 5.0 MG reclaimed water storage tank and pumping station.

Status: The City accepted BID NO. 2009-009, Reclaimed Water Storage and Pumping Facility: 71-07-12 for $3,914,909.00 with Florida Design Contractors on January 27, 2009 and a contract was signed on February 25, 2009. As of October 31, 2009, the project is at ~ 84% completion.
This project is on or ahead of schedule.

Outside Funding: Per agreement #4600001649 with the South Florida Water Management District (SFWMD), the City received $933,200.00 as part of the SFWMD's FY 2008 – 2009 Alternative Water Supply Funding Program.

Reclaimed Distribution System Expansion – Broken Sound East **Completed**

Increase in Demand: 0.700 MGD

Objective: The objective of the overall project is to increase the capacity of the City of Boca Raton Utility Services Department's reclaimed water distribution system for the utilization of the concurrent additional reclaimed water production capacity expansion project from 10.0 MGD to 17.5 MGD. This will result in a decrease demand of potable water and the use of wells/canals/lakes for irrigation. This specific project will provide the infrastructure for Broken Sound's East Golf Course which will utilize 0.700 mgd of reclaimed water.

Status: The City accepted BID NO. 2008-060, Reclaimed Water Pipeline Extension Broken Sound East Golf Course, Phase 1 Project: 470018 for $905,360.10 with Ric-Main Construction, Inc. on July 22, 2008 and a contract was signed on July 25, 2008.
This project is complete.

Outside Funding: Per agreement #4600001665 with the South Florida Water Management District (SFWMD), the City received $404,500.00 as part of the SFWMD's FY 2008 – 2009Alternative Water Supply Funding Program.

Reclaimed Distribution System Expansion – Western Expansion **Expected Completion: January 2012**

Projected Increase in Demand: 3.80 MGD

Objective: The objective of the overall project is to increase the capacity of the City of Boca Raton Utility Services Department's reclaimed water distribution system for the utilization of the concurrent additional reclaimed water production capacity expansion project from 10.0 MGD to 17.5 MGD. This will result in a decrease demand of potable water

and the use of wells/canals/lakes for irrigation. This specific project will provide the infrastructure for Broken Sound's West Golf Course, Woodfield Country Club Golf Course and Common Areas, and Boca West Golf Course and Common Areas which will utilize 3.80 mgd of reclaimed water.

Status: The City requested bids on this project on October , 2009 and closing date on bids was November 24, 2009. The City expects the bid to be awarded on December 8, 2009.
This project has been designed and notice to proceed is expected by March 2010.

Outside Funding: N/A

Total increase in demand as a result of the above projects: 4.5 mgd

Planned Additional Reclaimed Water Users as a result of the above projects or existing infrastructure:

Project/Customer Name	Expected Hook-up Date	Projected Increase in Demand
City of Boca Raton – Patch Reef Park	October 2010	0.077 mgd
Lynn University	October 2010	0.500 mgd
Boca Raton Airport Properties	July 2011	0.072 mgd
Pope John Paul High School	October 2011	0.150 mgd
Palm Beach County Schools – Don Estridge Middle School	October 2011	0.080 mgd
Palm Beach County Schools – A.D. Henderson Elementary School	July 2013	0.041 mgd
FAU – Running Track	July 2013	1.000 mgd
Total increase in demand of projects:		**1.92 mgd**

The result of this aggressive expansion of the City's existing reuse system will be an approximate increase in demand of **6.42 mgd**, bringing a total projected daily demand of **12.72 mgd**.

In a continued realization of the need to maintain environmental stewardship and invest in alternative water supplies, the City is committed to the expansion of its reclaimed system infrastructure and meeting the ultimate goal of realizing a fully operational reuse system comprising 100 percent of the facility's annual average daily flow for reuse activities.