

BROWARD COUNTY WATER AND WASTEWATER SERVICES ANNUAL REPORT

FISCAL YEAR 2013

Prepared for



Final Report Prepared June 2014 by
Brown and Caldwell, Inc.

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Section 1 Introduction

1.1 Purpose of the Report

The purpose of this Annual Report of Consulting Engineers for Water and Wastewater Services (WWS) of Broward County, Florida (County) is to provide the following:

- A review of the management and organization of WWS which operates the County water and wastewater systems (collectively, the Utility);
- A description of the Utility;
- A financial review of the Utility regarding historical and prospective debt service coverage, insurance requirements, and future system funding needs;
- A summary of projections of future impacts on the Utility, projections of revenues and expenses, and a review of the planned capital improvements of the Utility.

This report provides descriptions and observations of the organization; the primary operating activities including the retail water and wastewater system which provides water and/or sewer service to approximately 56,530 customers and sewer only to approximately 2,645 customers, the North Regional Wastewater System which provides transmission, treatment and disposal services to other utilities on a wholesale basis and the Regional Raw Water System which provides raw water to other utilities; the water and wastewater capital improvement program (CIP); and the financial operations of the Utility.

Section 2

Administration and Management

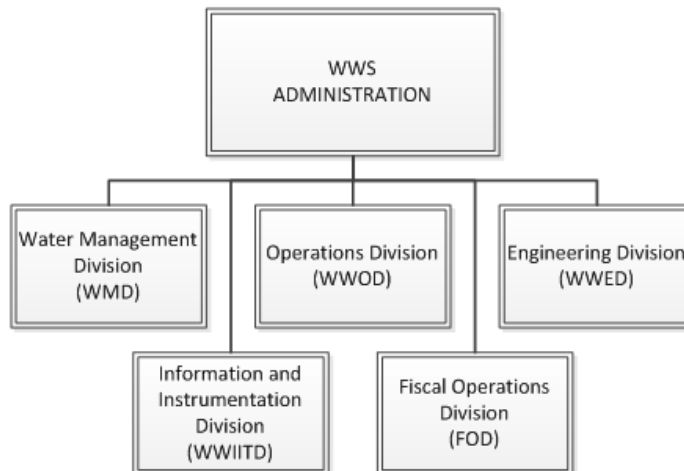
Section 2 Administration and Management

2.1 History and Organization of Water and Wastewater Services

The Broward County Utilities Division was established on January 31, 1962, with the County's purchase of a small, investor-owned water and wastewater utility. Between 1962 and 1975, the County acquired additional private utilities. In 1972, the Utility commenced construction of the North Regional Wastewater Treatment Plant (NRWWTP), and in 1975, began providing wholesale wastewater treatment service to large users. In 1976, to achieve fiscal consolidation, the County established uniform rates throughout its service areas. The water utility service area is divided into separate geographic districts; District 1 is served by Water Treatment Plant (WTP) 1A, District 2 by WTP 2A and District 3 by purchased water from the City of Hollywood.

Subsequent reorganizations created Water and Wastewater Services (WWS) consisting of five divisions. These divisions are Water and Wastewater Operations, Water and Wastewater Engineering, Water Management, Water and Wastewater Information and Instrumentation Technology, and Fiscal Operations. WWS operates within the Public Works Department, and is responsible for planning, construction, operation, maintenance, customer service, water management, and financial management of the Utility. As of September 30, 2013, WWS employed 331 people, including 21 certified water operators, 24 certified wastewater operators, 15 registered professional engineers, and 5 certified public accountants. Included are 6 employees who are dual certified as both water and wastewater operators. In addition, numerous employees hold recognized industry-specific certifications. An organizational chart, Figure 2-1, is provided below.

Figure 2-1 Water and Wastewater Services Organizational Chart



Section 2 Administration and Management

Under the County Code of Ordinances, the County exercises exclusive jurisdiction, control and supervision over the utility system or any part of a utility system owned, operated or maintained by the County. The Board of County Commissioners of Broward County, Florida (the Board) has the specific legal authority to fix, charge and collect from its customers, rates, fees and charges, and to acquire, construct, finance and operate the Utility without supervision or regulation by any other political subdivision of the State (provided that environmental impacts are regulated as described herein).

2.2 Mission

WWS has adopted a mission statement expressing commitment to performing as a benchmark comprehensive utility providing exceptional retail and regional water and wastewater management services and programs to its customers; and supporting continuous improvement while maintaining the quality of life in Broward County through sound environmental practices.

The following goals were established by WWS:

- Provide high quality and cost-effective services.
- Treat customers professionally and with the utmost respect.
- Operate the facilities and execute programs in a manner that protects the environment.
- Protect and enhance the natural resources of Broward County.
- Create and maintain a workplace in which employees are provided the opportunity to develop to their maximum potential.
- Maintain honesty and integrity in every aspect of the operation.

Water and Wastewater Services Administration

Water and Wastewater Services Administration manages and directs the activities of the five WWS divisions: Engineering, Fiscal Operations, Information & Instrumentation Technology, Operations, and Water Management. Administration approves operating and capital budgets, assures rates, fees, charges are sufficient to support fund activities and debt service requirements while providing appropriate coverage to maintain or enhance bond ratings; develops and implements financing plans for the successful implementation of the capital plan and policies to ensure environmentally safe water resources. Administration coordinates activities to identify efficiencies and synergies to reduce overall costs and enhance the delivery of services.

Administration also manages relationships with Large Users of the North Regional Wastewater System and the Regional Raw Water System. Administration coordinates the response to information requests from the County Commission and the public; and, publishes an award-winning WWS employee newsletter. Administration promotes water conservation programs to

Section 2 Administration and Management

benefit customers, preserve water resources and protect the environment, and monitors legislative and regulatory issues at local, regional, state and federal levels.

WWS Administration highlights included:

- Water and Wastewater Services' water and sewer utility bonds maintained strong ratings—“Aa2”, “AA+” and “AA” — from the three major rating services: Moody's, Fitch, and Standard & Poor's.
- The Retail Rates increased approximately 1.5% over fiscal year 2012.
- The Regional Rates for wastewater and raw water were recalculated in conformance with large user agreements and recommended rates were approved by the Board for fiscal year 2013.
- The Ocean Outfall Legislation was amended to allow ongoing use of the ocean outfall after 2025 for disposal of peak flows. This change is estimated to save the North Regional Wastewater System (NRWWS) approximately \$446 million in estimated costs for additional deep wells.
- Palm Beach County and Broward County agreed to negotiate the creation of a Regional Reclaimed Water System to support the NRWWS reclaimed water requirement under the Ocean Outfall legislation.

Water and Wastewater Operations Division

Water and Wastewater Operations Division (WWOD) is committed to supplying high quality raw and potable water; providing reliable water distribution and wastewater collection services; operating dependable transmission, treatment and disposal of wastewater to large users in the north region of the County; and ensuring all services are delivered in a safe, efficient and cost-effective manner.

WWOD is responsible for pumping, treating and distributing water and/or the provision of wastewater collection services to retail and water resale customers. The division operates and maintains water treatment plants; re-pumping and storage facilities; lift stations, underground water distribution and sewage collection systems; and other support facilities. The division is responsible for the preparation and submittal of reports to comply with federal, state and local requirements (such as the Safe Drinking Water Act) and to ensure the reliable production of high-quality, safe potable drinking water for our citizens. The division provides raw water from two regional wellfields to five large users and to Broward County retail operations as well as operates two retail wellfields that supply water to the County's 1A and 2A water treatment plants.

WWOD is also responsible for providing wastewater transmission, treatment and disposal services to eleven large users and to Broward County through the operation and maintenance of a regional wastewater treatment facility and related regional pumping stations. The division operates a reclaimed water facility, which provides reclaimed water to both industrial and retail

Section 2 Administration and Management

customers. In addition, WWOD operates a state-certified laboratory, a nationally-recognized Industrial Pretreatment Program (IPP) and provides critical environmental service through operating and maintaining the only Septage Receiving Facility located in Broward County.

WWOD's highlights included:

- North Regional Wastewater Facility effluent ocean outfall nutrient reduction goals continue to exceed those established by the State of Florida in response to the ocean outfall legislation.
- North Regional Wastewater Facility's operating permit was renewed by Florida Department of Environmental Protection (FDEP).
- Four-Log Treatment was implemented at 1A Water Treatment Facility to increase levels of disinfection.

Water and Wastewater Engineering Division

Water and Wastewater Engineering Division (WWED) is committed to managing the WWS Capital Improvement Program (CIP) by ensuring that cost-effective, reliable infrastructure is available in a timely manner to meet the current and projected demands and capacities for raw water, potable water, sanitary sewer and storm drainage within WWS service areas.

WWED is responsible for developing and implementing the CIP for services provided by WWS including water, wastewater and drainage. The division is also responsible for coordination of developer-donated facilities, the maintenance of record information on potable water and wastewater facilities, administration of potable water and sewer easements, and administration of permits to connect to the potable water and wastewater plants operated by the WWS. WWED also provides general potable water and wastewater engineering support for Broward County. These processes ensure compliance with the County's minimum standards for construction and integrity of WWS systems.

WWED manages the following projects:

- The Neighborhood Improvement Program (NIP), which encompasses a total area the size of a medium city, is nearing completion. The improvements include roadways, sidewalks, and pipelines for rebuilding water services and extending sanitary sewer service to eliminate septic tanks. Of the 66 bid packages, currently 62 have been completed and 3 are under construction.
- The Local Utility Program (LUP) covers an area of 1,479 acres and includes installation of approximately 54 miles of pipeline. Construction started in 2009. Each project is designed based on its Utility Analysis Zone (UAZ).
- North Regional Wastewater Treatment Plant (NRWWTP) effluent disposal and treatment enhancements to comply with outfall legislation and proposed facilities operational modifications are estimated at \$172 million over the next 5 years.

Section 2 Administration and Management

- WWS has initiated design of the Guaranteed Energy Savings contract for the construction of the energy conservation measures (ECMs) for the agency's wastewater treatment facilities. The goal of this project is to reduce the carbon footprint through the implementation of the ECMs, thus resulting in reduced operational costs and improved environmental efficiencies. Construction on this project began in April 2014.

Water Management Division

Water Management Division (WMD) is committed to developing, managing, operating, and maintaining the surface and groundwater resources within our service area to provide recharge for water supply and wetlands; saltwater intrusion abatement; drainage and flood control; and environmental enhancements.

WMD programs in engineering, management and development review provide for the planning, design, construction and right-of-way management of waterways, culverts, pump stations and water control structures that provide flood protection, surface and ground water recharge, saltwater intrusion abatement and urban water supply. Water supply planning, well site assessments, and permitting services are provided to apply for, obtain and assure compliance with public water supply and diversion and impoundment water use permits. Staff also engineers and manages the inspection, cleaning and repairs of County roadway drainage elements; assures compliance with the Florida DEP National Pollutant Discharge Elimination System (NPDES); Municipal Separate Storm Sewer Systems (MS4) Permit for Broward County; and prepares and submits applications and data for the renewal of surface water management licenses for the roadway drainage system.

WMD highlights included:

- Providing support to water supply and water resource development programs, including the C-51 Reservoir Project, Integrated Water Resources Management Master Plan, Broward County Water Resources Task Force/Technical Team and the Broward County Water Advisory Board/Technical Advisory Committee.
- Preparing annual updates, permit modifications, water level information and chloride monitoring concerning the 1A, 2A/NRW, and SRW water use permits.
- Providing hydrogeological assistance for the rehabilitation and abandonment of various District 2A WTP wells.
- Providing assistance in the development of models to evaluate the impacts of predicted sea level rise on the 2A wellfield, the C-51 Reservoir and the Broward County Floridan Aquifer System.

Fiscal Operations Division

Fiscal Operations Division (FOD) is committed to supporting all WWS divisions by providing exceptional customer service and timely and accurate billing services; supporting sound

Section 2 Administration and Management

financial management; fiscal planning and rate development; and providing efficient and effective support services.

FOD provides accounting services for all divisions of WWS to provide timely financial reporting, ensure compliance with federal and state laws, professional accounting standards and County policies and procedures. The division provides customer services including meter reading and meter repair, monthly billing and collection of revenues. The division operates a warehouse for materials and supplies used in the operation and maintenance of utility infrastructure. FOD coordinates materials management, purchasing and contract administration functions for all operational and administrative activities in WWS. In addition, the division provides grounds and building maintenance services to over 200 locations owned and operated by WWS throughout the County. The division also coordinates the budgeting activities of all divisions of WWS and supports the development of fiscal plans and rates, fees and charges for the services provided by WWS.

FOD highlights included:

- In support of water conservation efforts, the “Toilet Credit” Program continues for WWS water customers who replace old high flow toilets with WaterSense high efficiency low flow toilets. Each approved customer receives a \$100 credit (a maximum of \$200 per customer) to their water bill.
- Customer Service was improved with the addition of electronic Integrated Voice Response (IVR) payment option which allows customers to pay utility bills 24/7 with a check or credit card over the phone.
- Customer Service has implemented an electronic deposit process which expedites the deposit of payments received.
- The Customer Service Survey was made available on the WWS website.

Water and Wastewater Information and Instrumentation Technology Division

Water and Wastewater Information and Instrumentation Technology Division (WWIITD) is committed to providing WWS divisions with current industry standard technologies to efficiently and effectively automate business functions and to providing a high level of service support for those systems.

WWIITD provides specialized automation services to the water and wastewater utility by acquiring, developing and maintaining the latest utility specific technology solutions on its proprietary utility network. WWIITD is responsible for maintaining the automation and industrial control systems at all four main treatment and re-pumping facilities and over one hundred other distribution, collection and storage facilities within Broward County on a 24-hour, 7 day-per-week basis. WWIITD also provides desktop, server and network support for the WWS segment of the County’s administrative network.

Section 2 Administration and Management

The division also manages the safety and security programs for WWS staff and facilities, which have been designated critical infrastructure by Homeland Security.

WWIITD highlights included:

- Upgrading Maximo the Enterprise Asset and Maintenance Management Application from version 7.0 to 7.5. The upgrade was performed in-house, resulting in significant cost avoidance.
- Implementing the first WWS Software as a Service (SaaS) contract in support of the One-Call Ticket Management System. This service is used by both WWOD and Traffic Engineering.
- Extending the GPS vehicle tracking system to all County vehicles used by WWS staff.
- Upgrading the Integrated Voice Response (IVR) system to provide customers with the ability to pay their water bills via credit card or e-check over the phone.
- Installing eight access points to provide WiFi access at the Copans Road facility, Plant 1A, Plant 2A, and Blount Road.
- Completing the initial network design to separate the SCADA network from the utility network. All network hardware, servers, and workstations were purchased and installed on the new network. IP addresses for the Maverick SCADA system were changed in preparation to move the system to the SCADA network.
- Completing a fire extinguisher inventory and inspection in all WWS buildings and lift stations. A total of 758 fire extinguishers were certified, mounted on walls as needed and brought up to fire code. Many fire extinguishers had reached end of life cycle and had to be replaced.
- Completing a physical security hardening upgrade on all Water Treatment Plants (WTPs), the NRWWTP, and some Master Lift Stations by securing the perimeters with 10-foot fence, gates and gate operators, which Completed the Perimeter Fence Project.

Section 3

Retail Water and Wastewater Utilities System

Section 3 Retail Water and Wastewater Utilities System

This section describes the water and wastewater retail system including the service area, results of the physical inspection and review of the renewal and replacement program.

3.1 General Description

The retail water system supplies potable water to retail customers in several sections of the County and to one significant bulk water user. Over the past ten years, the County's retail water system has grown from 53,497 customers (connections) to its present retail base of 56,529. This represents a population of approximately 197,500. The City of Coconut Creek, a sale for resale customer, has approximately 54,000 residents. Including the City of Coconut Creek, the retail water system serves approximately 13 percent of Broward County's total population.

The retail wastewater system provides wastewater collection service to approximately 77 percent of the County's retail water customers and sewer only customers. The County's wastewater retail customer base has grown from 38,061 customers (connections) to its present base of 47,799 customers in the past ten years and will continue to grow through the County's extension of sanitary sewers into currently un-sewered areas. Treatment, transmission and disposal management is provided by the County-operated North Regional Wastewater System (the "Regional Wastewater System" discussed in Section 4 and collectively with the retail wastewater system the "Wastewater System") and by the Southern Regional Wastewater System operated by the City of Hollywood. A summary of the Retail Water and Wastewater systems is presented in Table 3-1.

Notably, finished water production has decreased in recent years. This may be attributable to a downturn in the economy, slowdown in population growth and the County's water conservation efforts, including year-round lawn irrigation restrictions. Water conservation became increasingly important following a series of droughts from 2007 through 2009.

Section 3 Retail Water and Wastewater Utilities System

Table 3-1 Summary of Retail Water System and Retail Wastewater System

System Component	Units	Fiscal Year 2004	Fiscal Year 2013	Change	Percent Change
Water System					
Customer Base	Customers	51,525	56,529	5,004	9.71%
Water Service Area	Square Miles	40.19	41.10	-0.09	-0.22%
Water Lines	Miles	682.23	714.00	31.77	4.66%
Water Plant Capacity:					
Plant Capacity	MGD ¹	46.00	46.00	0.00	0.00%
Avg. Daily Production ²	MGD ¹	24.79	19.33	-5.46	-22.03%
Max. Daily Production ²	MGD ¹	30.74	23.09	-7.65	-24.89%
Purchased Water	MGD ¹	7.026	6.55	-0.48	-6.77%
Wastewater System					
Customer Base	Customers	336,654	47,799	11,145	30.41%
Wastewater Service Area	Square Miles	40.79	40.70	0.09	-0.22%
<p>¹ MGD = Million Gallons Per Day.</p> <p>² Droughts which began in April 2007 have resulted in reduced water use due to demand management efforts comprising water conservation initiatives, including year round lawn irrigation restrictions. Reduced water translates to reduced billed wastewater.</p>					
<p>Source: Broward County Water and Wastewater Services</p>					

Service Area and Customer Base

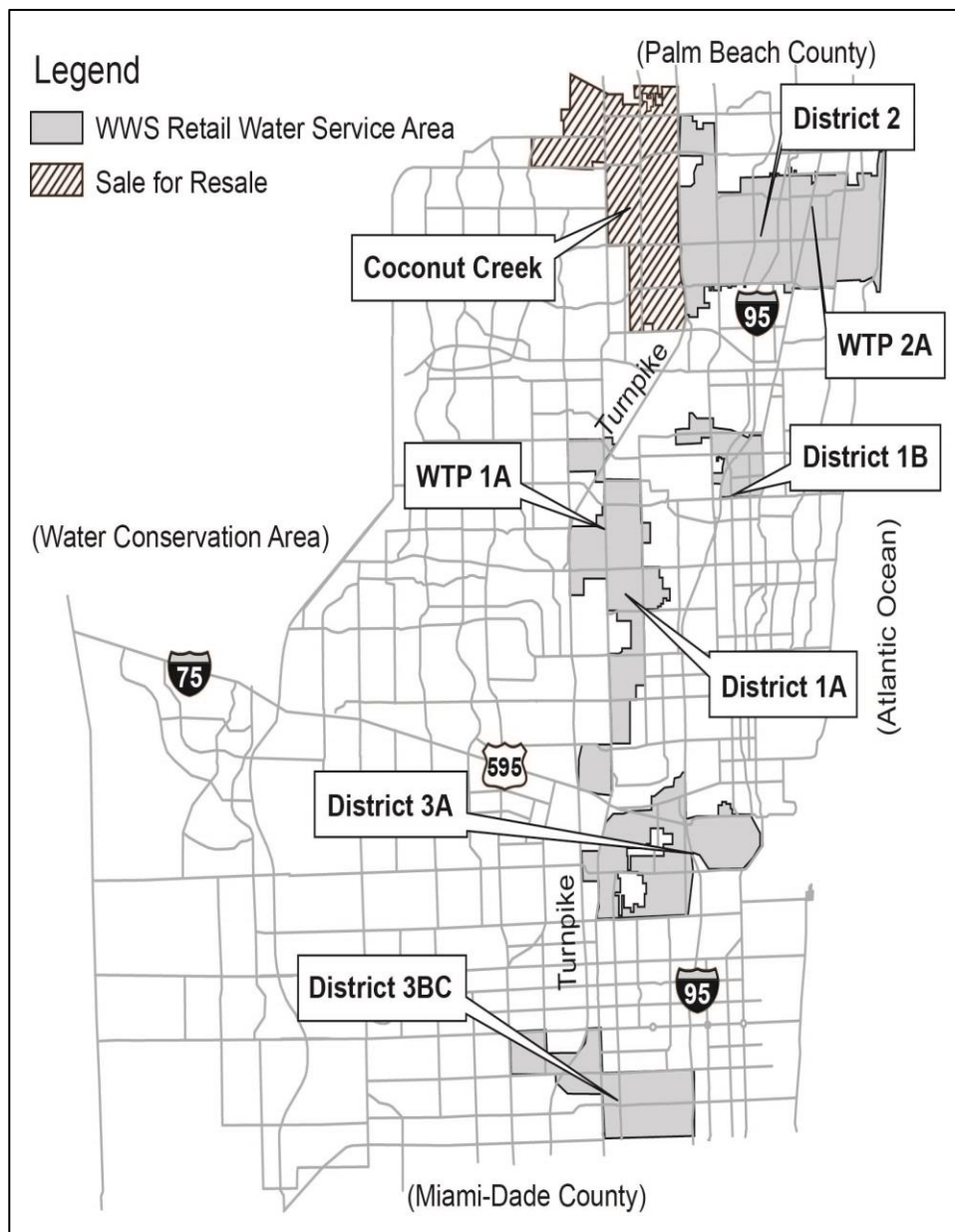
The retail water system is divided into three service areas - Districts 1, 2 and 3, which collectively cover approximately 41 square miles. Additionally, District 2 sells water to the City of Coconut Creek, which re-sells it to its customers. Two (2) water treatment plants (WTPs), one each in District 1 and District 2, have a combined permitted water treatment capacity of 46 MGD (million gallons per day). However, potable water production is constrained by 20-year term consumptive use permits from the South Florida Water Management District. Based on the current 20-year permit, Biscayne Aquifer annual average allocations are 30.7 MGD through March 2013 and 26.7 MGD through March 2028. Starting March 2013 a Floridan Aquifer allocation of 9.3 MGD annual average is included in the 20-year consumptive use permitted withdrawal. The Utility's five year Capital Improvement Program (CIP) is predicated upon these

Section 3 Retail Water and Wastewater Utilities System

allocations. Water for District 3 is provided by the City of Hollywood through a water-for-resale agreement.

The distribution systems in the three Districts contain approximately 714 miles of water distribution and transmission mains with 2-inch or greater diameters. Figure 3-1 shows the geographic location of each service district as well as the large user (the City of Coconut Creek). Table 3-2 summarizes information on the production wells, treatment plants and water system storage capacity in each district.

Figure 3-1 WWS Retail Water Service Areas



Section 3 Retail Water and Wastewater Utilities System

Table 3-2 Summary of Water System Facilities and Capabilities as of September 30, 2013				
	District 1	District 2	District 3	Total
Production Wells	9	9	0	18
Wellfield Firm Capacity, (MGD) ^{1,2}	19.6	21.3	0	40.9
Treatment Plants ³	1	1	0	2
Permitted Plant Capacity (MGD) ^{2,4}	16	30	0	46
Current Permitted Allocation (MGD) ^{2,4}	9.2	17.5 ⁵	0	26.7
Storage Capacity (Million Gallons) ³	6.2	8.5	6	20.7
Distribution Mains (Miles)	252	247	215	714
Service Area (Square Miles)	12.0	14.8	14.3	41.1
Purchased Water (MGD) ²	0	0	6.55	6.55
Produced Water (MGD) ²	7.159	12.176	0	19.335
<p>¹ Firm Capacity refers to the available flow with the largest well in each district out of service.</p> <p>² MGD = Million Gallons Per Day</p> <p>³ Includes clearwells, on site and distribution storage facilities.</p> <p>⁴ Permit allocations are less than permitted treatment plant capacity.</p> <p>⁵ Combined permit with North Regional Wellfield and includes finished water sold to Coconut Creek.</p>				
<p>Source: Broward County Water & Wastewater Services</p>				

The Water System supplies water primarily to retail customers, but also serves the City of Coconut Creek under a resale agreement, which expires as described in Section 3.5. Without prior approval by the County, the City of Coconut Creek is prohibited from buying or otherwise providing water within its service area from any source other than the County during the term of the resale agreement, and cannot provide more than 100,000 gallons per day of water to any customer unless approved by the County. Presently, there appears to be no practical or economic incentive for the City of Coconut Creek to pursue development of its own facility or to develop alternative sources of supply. The County cannot charge rates to Coconut Creek greater than those charged to other customers in the same class. Billing based upon water meter readings is provided monthly.

A summary of historical treated water sold and consumption data, including service to the City of Coconut Creek, is shown in Table 3-3. Values for annual average daily consumption will differ from the sum of production plus purchased water due to system losses.

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Table 3-3 Summary of Treated Water Sold as of September 10, 2013

Fiscal Year	Average Number of Units¹	Average Number of Metered Customers	Total Billed Treated Water (1,000 GAL)	Total Billed Water for Resale (1,000 GAL)²	Annual Average Daily Consumption (MGD)
2004	82,171	51,525	10,574,616	2,190,845	28.97
2005 ³	84,203	53,705	11,383,041	2,178,609	31.19
2006	83,725	52,938	10,362,713	2,005,205	28.39
2007 ⁴	87,539	55,596	9,725,151	1,958,720	26.64
2008 ⁴	89,452	57,003	9,063,644	1,868,562	24.83
2009 ⁴	92,870	58,287	9,001,466	1,872,821	24.66
2010 ⁴	93,183	58,323	8,628,876	1,754,856	23.64
2011 ⁴	92,208	58,773	8,616,736	1,731,297	23.61
2012 ⁴	88,344	56,503	8,339,560	1,643,812	22.85
2013 ⁴	87,928	56,529	8,279,722	1,699,799	22.67

¹ The term "unit" means individual living unit for residential (single family), multifamily, hotel/motel and mobile home categories. Several units may be served through one connection. For commercial, the term means the number of connections.

² Included in the total water billed; most represents service to the City of Coconut Creek.

³ Several hurricanes resulted in significant water losses from line breaks and leaks throughout the system.

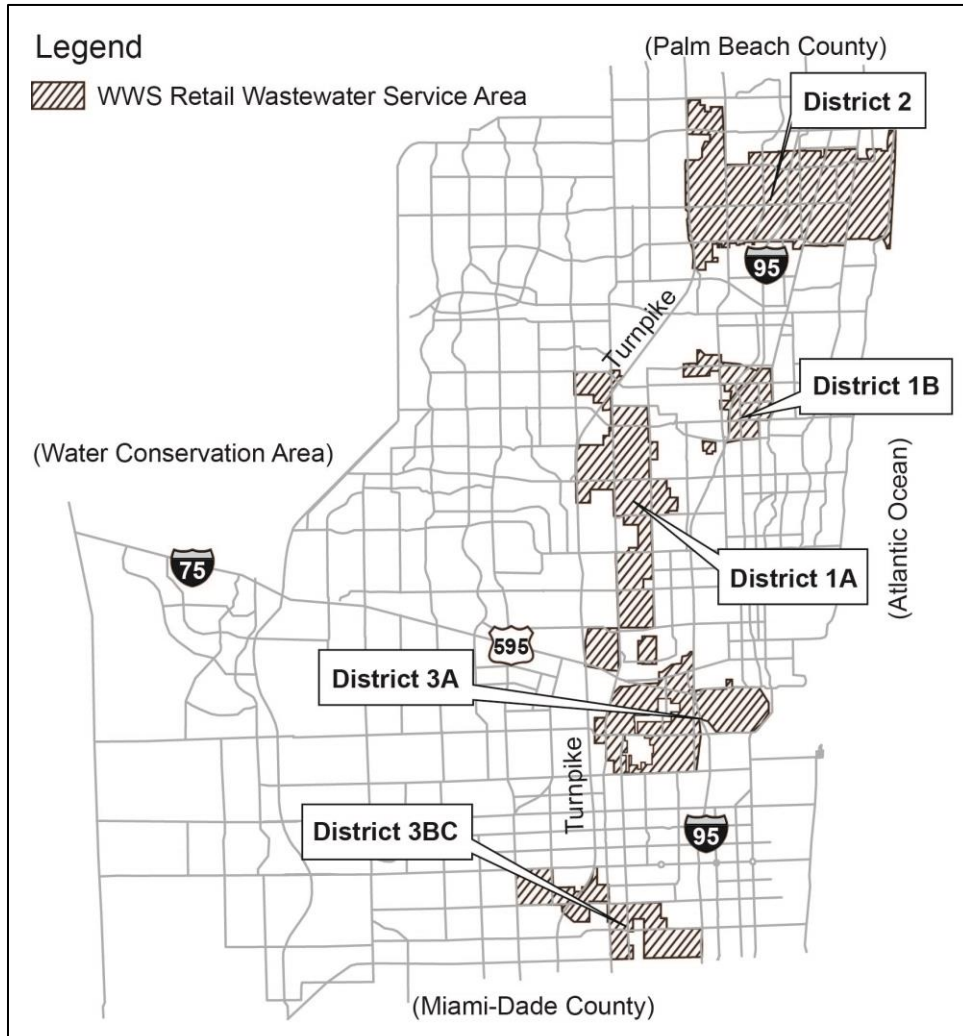
⁴ Droughts from April 2007 through 2009 resulted in reduced water use due to demand management efforts comprised of water conservation initiatives including year-round lawn irrigation restrictions, and may also be partly a result of the economic downturn. Reduced water use translates to reduced billed wastewater.

Source: Broward County Water and Wastewater Services

The retail wastewater system service area covers approximately 41 square miles with approximately 438 miles of gravity sewers, 232 lift stations, 5 master pump stations and 109 miles of force mains. Figure 3-2 shows the service districts for the retail wastewater system. Table 3-4 presents retail wastewater system characteristics. A 10-year summary of the Retail Wastewater System customers and billed wastewater flows is presented in Table 3-5. Table 3-6 presents a five-year history of water usage by customer type.

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Figure 3-2 WWS Retail Wastewater Service Areas



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**Table 3-4 Retail Wastewater System Characteristics
as of September 30, 2013**

	District 1	District 2	District 3	Total
Service Area (Square Miles)	13.0	15.6	12.1	40.7
Gravity Sewer (Miles)	184.7	167.3	85.7	437.7
Lift Stations	74	96	62	232
Force Mains (Miles)	41.6	34.0	33.8	109.4
Master Pump Stations	-		1	5

Table 3-5 Summary of Billed Wastewater - Retail as of September 30, 2013

Fiscal Year	Average Number of Units ¹	Average Number of Metered Customers	Total Billed Treated Wastewater ² (1,000 GAL)	Annual Average Daily Flow (MGD)
2004	65,029	36,654	5,310,427	14.55
2005	67,116	38,257	5,130,824	14.06
2006	67,736	40,021	5,077,759	13.91
2007 ³	70,361	41,297	4,915,383	13.47
2008 ³	71,718	42,163	4,830,155	13.23
2009 ³	74,146	43,591	4,828,210	13.23
2010 ³	74,547	44,953	4,744,985	13.00
2011	74,691	44,856	4,891,742	13.40
2012	77,247	46,911	4,872,721	13.35
2013	78,020	47,799	4,996,843	13.69

¹ The term "unit" means individual living unit for residential (single family), multifamily, Hotel / Motel, and mobile home categories. Several units may be served through one connection. For commercial, the term means the number of connections and does not include large users

² Billed wastewater is primarily based upon water sold.

Source: Broward County Water and Wastewater Services

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**Table 3-6 Water Usage - Five Year History (1,000 gallons)
Through September 2013**

Customer Class	Fiscal year 2009	Fiscal year 2010	Fiscal year 2011	Fiscal year 2012	Fiscal year 2013
Residential	4,788,005	4,608,329	4,659,677	4,534,199	4,462,407
Commercial	1,924,704	1,848,557	1,785,623	1,756,142	1,740,148
Irrigation	415,936	417,134	440,139	405,407	377,368
Sale For Resale	1,872,821	1,754,856	1,731,297	1,643,812	1,699,799
Total ¹	9,001,466	8,628,876	8,616,736	8,339,560	8,279,722

¹ Droughts from April 2007 through 2009 resulted in reduced water use due to demand management efforts comprised of water conservation initiatives including year round lawn irrigation restrictions, and potentially the effects of the economic downturn. Reduced water use translates to reduced billed wastewater.

Source: Broward County Water and Wastewater Services

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3.2 Water System Regulatory Requirements

Current Water Quality Regulations

The Safe Drinking Water Act (SDWA, 1974) and the Safe Drinking Water Act Amendments (SDWAA, 1986) authorized the United States Environmental Protection Agency (EPA) to establish national primary and secondary drinking water regulations to regulate maximum permissible levels of contaminants in finished drinking water. These standards were incorporated into the State of Florida Water Quality Regulations beginning in 1993 and modified to address state-specific concerns. By doing this and meeting other specific requirements, the State was given the primary authority (primacy) to enforce SDWA requirements within its borders. The Florida Department of Environmental Protection (FDEP) is the state agency with primary enforcement responsibility. In Broward County, the authority to enforce drinking water regulations is delegated by FDEP to the Broward county Health Department, which is an Approved County Health Department (ACHD) as defined under the Memorandum of Understanding between FDEP and the Florida Department of Health.

The Water and Wastewater Operations Division (WWOD) performs all analyses for primary and secondary drinking water standards on raw and finished water as required under applicable sections of the SDWA and the State of Florida's Water Quality Regulations (Chapter 62-550, Florida Administrative Code (FAC)). Additionally, samples required under the Unregulated Contaminant Monitoring Rule (UCMR) were analyzed and reported in FY 2013. No maximum contaminant levels (MCLs) were exceeded, no Treatment Technique (TT) violations were noted, and no Action Levels were exceeded during FY 2013. WWS tests raw water quality only for the development of baseline data and as required under the Ground Water Rule as described below; MCL limitations do not apply for any raw water monitoring outside of fecal indicator triggered monitoring required under the ground water rule. The annual Consumer Confidence Report, which summarizes the results of drinking water quality testing results, is available at <http://www.broward.org/WaterServices/Documents/2013WaterQualityReport.pdf>

Recently-Updated Regulations Affecting the Utility

The Disinfectant/Disinfection By-Products Rule (D/DBP) requires all water treatment plants to comply with MCLs for byproducts of a number of common disinfectants. For WWS water treatment plants, byproducts of chlorine and chloramines, specifically total trihalomethanes (TTHMs) and five haloacetic acids (HAA5), are of primary concern. Stage II of this rule requires that the rolling annual average of TTHM and HAA5 levels be below their respective MCLs at each sampling site in the distribution system, whereas previously they were averaged over the entire system. Since Stage II compliance began in February 2012, WWS' water treatment plants have remained in compliance with D/DBPR requirements.

The Ground Water Rule, promulgated in 2009, is an area where action is being taken by the County to enhance its compliance posture. This rule, which was adopted by reference in FAC 62-550.828 in December 2011, provides two Compliance options: triggered monitoring and 4-log virus treatment. Triggered monitoring uses sampling under the existing Total Coliform Rule (TCR) to trigger additional sampling requirements for raw water wells. Any time a TCR sample

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is positive for coliforms, a utility must sample each well that was online at the time when the positive TCR sample was taken. If any of the wells test positive for one of three fecal indicators, action must be taken, which typically includes issuing a precautionary boil water order for the affected system. Groundwater plants that provide 4-log (99.99%) virus treatment are not required to conduct triggered monitoring, but instead must maintain treatment conditions specified in its 4-log treatment authorization.

Currently, the County is in the process of implementing 4-log virus treatment at its 1A, 2A, and 3A systems. Improvements at the 1A system are complete, and 4-log treatment is currently in operation. Improvements at the 2A water treatment facility are currently under construction, and improvements at the 3A facility are in the design phase. In FY 2013, WWOD maintained continuous compliance with the Ground Water Rule and did not have any fecal indicator detections.

Monitoring results for seven currently-unregulated contaminants are included in the 2013 water quality report. The EPA requires utilities to periodically collect occurrence and concentration data of substances that are being considered for future regulation under the Unregulated Contaminant Monitoring Rule. Outside of time and resources required for analysis, these detections have no immediate compliance impact on WWS; however, it is recommended that WWS closely follow any future potential regulatory action for contaminants detected under the UCMR.

As of May 5, 2014, updated cross-connection control rules under FAC 62-555.330, 62-555.360, and FAC 62-555.900 come into effect. These rules allow a dual check valve to be used in lieu of a reduced pressure principle-type backflow preventer (RPZ) at residences where an auxiliary (reclaimed or other) water source is present, reduce the required testing frequency for RPZs installed at residences from once a year to once every two years, and requires utilities to report cross-connection control compliance on a new two-page form. Going forward, WWOD will be required to prepare and submit this form each year.

3.3 Water Supply

The primary source of water supply for WWS is the Biscayne Aquifer. Presently, WWS operates wellfields to supply water to the 1A and 2A Water Treatment Plants, with firm capacities of 19.6 and 21.3 MGD, respectively. Additional water is provided to District 2 by the North Regional Wellfield with a firm capacity of 18.1 MGD. A physical description of the regional system and its wellfields is provided in Section 5. Water for District 3 is provided by the City of Hollywood.

In 1979, the Biscayne Aquifer was designated as a “sole source” drinking water supply by the EPA. The water in the aquifer is primarily replenished by rainfall, but is also recharged by water flowing from Lake Okeechobee and conservation areas through an extensive water conveyance system. Presently, in addition to the Utility, the Biscayne Aquifer is also the primary source for raw water supplies for the municipalities in Broward County, Miami-Dade County, Monroe County, and the southern portion of Palm Beach County.

Section 3.0 of the South Florida Water Management District (SFWMD) Basis of Review for Water Use Permit Allocations generally limits raw water usage from the Biscayne Aquifer for public water supply to the maximum quantity of water withdrawn during any consecutive 12-month period during the five years preceding April 1, 2006. Water supplies necessary to satisfy

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any demand which exceeds that maximum quantity must come from an alternative water supply source, such as the Upper Floridan Aquifer, harvested stormwater or reclaimed wastewater to offset the impacts to the Everglades Water Bodies that would be caused by the additional withdrawals.

Due to the “withdrawal and treatment” cost-effectiveness of the relatively shallow Biscayne Aquifer, it is, and is likely to remain, the County’s primary source of raw water supply. Future supply is currently expected to be provided through a brackish Upper Floridan Aquifer supply. The CIP for the Utility includes provisions to construct reverse osmosis facilities to desalinate water from the Upper Floridan Aquifer to supply projected future potable water demands. It is noted, however, that Broward County, Palm Beach County, several municipalities, and the SFWMD are also currently evaluating a regional harvested stormwater reservoir project in Palm Beach County known as the C-51 Reservoir that could expand the supply of Biscayne Aquifer raw water through offsets to impacts on the Everglades Water Bodies. Should the C-51 Reservoir prove to be a more reliable and lower cost alternative water supply option, the County maintains the flexibility to reduce or eliminate proposed use of the Upper Floridan Aquifer.

3.4 Water Supply Regulatory Requirements

The volume of raw water withdrawal from the Utility’s wellfields is regulated by the SFWMD. Each wellfield is governed by a water use permit that stipulates the maximum allowable annual and monthly withdrawal. These permits are reissued for periods of five to twenty years; however, the longer, 20-year permits require that a Water Use Compliance Report be prepared and submitted once every five years. These reports compare actual and projected usage to per-capita usage targets and the most current regulatory requirements issued by SFWMD. SFWMD reserves the right to reduce the permitted allocations and/or mandate additional conservation measures based on the findings of this report. The County has accounted for the uncertainty that this represents in the water supply planning process by pursuing various alternative water supply options, such as the Floridan Aquifer and C-51 supply projects discussed previously.

The Utility’s current annual permitted rate of raw water allocations is 18.3 billion gallons from all wellfields combined, including the Regional Raw Water Wellfields. The Utility holds three permits from the SFWMD for the wellfields 1A, 2A/North Regional Wellfield (NRW), and the South Regional Wellfield (SRW). The permits for 2A/NRW were consolidated into one 20-year permit in March 2008. The 1A Wellfield was also granted a 20-year permit in April 2008.

The permit for the SRW expired in October 2007, and the submitted application for SRW permit renewal is currently under review by the SFWMD. The permit has been administratively extended while the application is under review. The County has held several review meetings with the SFWMD. Based upon the reported results of these meetings, review is expected to be favorable, but will be delayed as the SFWMD resolves a sub-regional water supply solution for Hallandale Beach. A second, similar issue involving the City of Dania Beach was resolved upon the issuance of a Water Use Permit to that entity on March 11, 2013. Regardless of issues associated with the City of Hallandale Beach, it is expected that the SRW permit will be reissued in the ordinary course of events. Table 3-7 highlights information from the 20-year permit renewals for the 1A Wellfield and the 2A/NRW.

In 2013, the SFWMD required the transitioning of water supply above the baseline allocation from the Biscayne Aquifer to the Floridan Aquifer or to another alternative water supply such as

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the C-51 reservoir project. This requirement for shifting of additional water supply to an alternative source will have implications for future treatment technology and capital investment, as well as operating costs. As additional water supplies are needed, the Utility will evaluate the available water treatment technologies and their associated fiscal and environmental factors in making treatment decisions. Should a lower cost alternative become feasible, the Utility retains the flexibility to reduce or eliminate use of the Upper Floridan Aquifer.

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Table 3-7 Summary of SFWMD Wellfield Permits as of September 30, 2013			
Description	Wellfield		
	1A	2A/NRW	SRW
Permit Period:			
Issuance	4/10/2008	3/13/2008	10/10/2002
Expiration	4/10/2028	3/13/2028	10/10/2007 ¹
Total Allocations:			
Annual Average Daily (MGD)	13.9	22.1	14.2
Maximum Monthly (MGD)	15.2	24.3	-
Maximum Day (MG)	-	-	22.4
BISCAYNE AQUIFER WITHDRAWALS			
Initial Period:			
Thru	4/1/2013	3/1/2013	1
Annual Average Daily (MGD)			1
Maximum Monthly (MGD)			1
Subsequent Period:			
Thru	4/10/2028	3/13/2028	1
Annual Average Daily (MGD)	9.2	17.5	1
Maximum Monthly (MGD)	9.9	19.2	1
FLORIDAN AQUIFER WELLS			
Annual Average Daily (MGD)	4.7	4.6	1
Maximum Monthly (MGD)	5.3	5	1
Number of Wells - proposed	4 ²	4	-
Diameter (Inches)	16	16	-
Depth (Feet)	1,200	1,200	-
Proposed Implementation Date	2017	2022	-
Modification ³			-
<p>¹Permit for SRW expired October 2007. An application was submitted for permit renewal and is under review by SFWMD while sub-regional solutions for Hallandale Beach and Dania Beach are determined. Regardless of the SFWMD's ultimate resolution of the sub-regional issues, it is expected that the SRW permit will be renewed in the ordinary course of events.</p> <p>²Construction of two test wells began in 2013.</p> <p>³Due to demand management efforts and lower growth, the implementation dates for alternative water supply will be extended.</p>			
Source: Broward County Water and Wastewater Services			

Long-term water supply in South Florida may also be affected by the Comprehensive Everglades Restoration Plan (CERP) undertaken by the U. S. Army Corps of Engineers (ACOE) in coordination with the SFWMD and by regional water supply planning undertaken by the SFWMD and the FDEP. The intent of CERP was to provide multiple benefits to the South Florida ecosystem. While restoration of The Everglades is a primary objective of the plan, it also

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includes a provision for ensuring a reliable, adequate supply of fresh water for use by the environment, public water supply and agriculture while maintaining flood protection. The effect of CERP will be to reserve water resources for restoration of the Everglades without impacting existing legal users. Implementation through the Lower East Coast Water Supply Plan (LECWSP), and CERP account for future needs of water utilities by utilization of new surface water reservoirs and by implementation of Aquifer Storage and Recovery (ASR) wells. A decision by the State to endeavor to acquire the property owned and farmed by US Sugar as part of the CERP may limit the option of utilities to store and use excess stormwater as an alternative to water supply.

It is possible that the new water supply technologies could be delayed, or could be less effective than SFWMD and ACOE expect. Recognizing this, the Utility has taken multiple steps to assure that a continuous adequate raw water supply is available:

- The County has been actively participating in the LECWSP, the CERP and the SFWMD regulatory revision process.
- A new surface water pump station is being designed to improve the effectiveness of the existing raw water recharged by three existing pump stations through the canal system.
- The County has constructed and operates a 10 MGD wastewater reuse facility to support potable water demand reduction.
- The County continues to implement the Integrated Water Resources Plan (IWRP) in order to maximize the utilization of available water. Current projects include the design of interconnects between the C-1 and C-2 Canals and between the C-12 and C-13 Canals.
- The County is planning an alternative technology in case an alternate source of water may be necessary. As previously noted, it is currently expected that the Upper Floridan Aquifer is the most likely alternative raw water supply source. The Upper Floridan Aquifer is an artesian water supply located approximately 700 feet below the land surface in the County. Waters within the Upper Floridan Aquifer contain higher total dissolved solids than the waters of the Biscayne Aquifer. Reverse osmosis membrane technology with appropriate post-treatment (pH adjustment, excess dissolved gas stripping, and disinfection) will readily treat Upper Floridan Aquifer water to meet all applicable regulatory requirements. The Upper Floridan Aquifer is presently used by a number of utilities, including the Town of Jupiter, Palm Beach County Utilities, and the City of Hollywood. Costs for future use of the Upper Floridan Aquifer are shown in Table 6-2 under "Water Treatment".

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3.5 Overview of the Water System Facilities

District 1

District 1 has a combined service area of 12.0 square miles, permitted plant capacity of 16.0 MGD and 252 miles of water distribution and transmission mains. WWS maintains District 1 water system interconnections with the systems of the City of Fort Lauderdale, the City of Tamarac, the City of Plantation, and the City of Lauderhill to provide for emergency water supply.

District 2

District 2 includes the Utility's largest wholesale water customer, the City of Coconut Creek. The District, not including the City of Coconut Creek, has a service area of 14.8 square miles, a permitted plant capacity of 30 MGD and contains 247 miles of water distribution and transmission mains. The facilities of District 2 are interconnected with the City of Deerfield Beach, the Town of Hillsboro Beach, the City of Pompano Beach and Palm Beach County to provide for emergency water supply.

The County has an agreement with the City of Coconut Creek under which the County has agreed to provide the City of Coconut Creek with potable water for a term that exceeds by one year the last payment of any potable water system debt obligation of the County. The City of Coconut Creek constitutes approximately 20% of the total potable water consumption by customers of the Utility, and pays compensation amounting to 4.7% of the Utility's gross revenues. The agreement provides that, except by written consent of the County or for emergency purposes, the City of Coconut Creek will not purchase water other than from the County or pump water into its water distribution system from its own facilities. The County has agreed not to sell water to anyone else within the defined service area and the City of Coconut Creek is not permitted to increase its water service area without the written consent of the County.

District 3

District 3 is the southernmost service area of the County and is geographically separated into subdistricts referred to as 3A, 3B and 3C. Subdistricts 3B and 3C are interconnected. 3A, 3B and 3C receive potable water through connections principally with the City of Hollywood. District 3 has a combined service area of approximately 14.3 square miles and contains 215 miles of transmission and distribution mains. Subdistrict 3A has interconnects with the City of Fort Lauderdale, the City of Hollywood and the City of Dania Beach to provide for emergency water supply. Subdistrict 3B has interconnects with the City of Hollywood. Subdistrict 3C has interconnects with the City of Hollywood, the City of Pembroke Pines and the City of Miramar to provide for emergency water supply.

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3.6 Overview of the Retail Wastewater System Facilities

District 1

District 1 has a service area of 13.0 square miles and includes 184.7 miles of gravity collection sewers and 74 lift stations. There are 41.6 miles of force mains. Transmission, treatment and disposal of wastewater are provided through the Utility's Regional Wastewater System.

District 2

The size of the District 2 service area is 15.6 square miles. The collection system consists of 167.3 miles of gravity sewer, 96 lift stations, 4 master pump stations, and 34.0 miles of force mains. Transmission, treatment and disposal of wastewater are provided through the Utility's Regional Wastewater System.

District 3

District 3 serves an area of 12.1 square miles. The gravity collection system has 85.7 miles of gravity sewer and 62 lift stations. The force main network contains 33.8 miles of pipe that delivers the wastewater from this area to the Southern Regional Wastewater Treatment Facilities operated by the City of Hollywood. District 3A and District 3B wastewater is treated by the City of Hollywood under a large user wastewater agreement with the County. The County has 5.883 MGD of reserved capacity in the Southern Regional Wastewater Treatment Plant. The City of Hollywood has 55.5MGD of plant capacity. One (1) of the master pump stations is located within District 3.

The agreement between the County and the City of Hollywood contains a number of major provisions including: identification of the service area; requirements for the use of metering devices; reserve capacity requirements; restrictions on excessive flows; and charges for damages to the system. Debt service and operation and maintenance costs are paid on an actual flow basis. The agreement can be terminated by either party with a 365-day notice, if all financial requirements have been met. The City of Hollywood may not terminate the agreement, unless there shall be a readily available alternative means of treating and disposing of County wastewater.

3.7 Visual Inspection and Review

The visual inspections of the District 1 water treatment plant was performed on April 25, 2014. The District 2 water treatment plant was inspected on April 29, 2014. the District 3 water treatment plant (currently operated as a pumping station and booster chlorination facility), as well as distribution system storage and pumping stations 3B and 3C, were inspected on April 25, 2014. These inspections were performed by Brown and Caldwell accompanied by WWS staff.

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Water Treatment Plant 1A

WTP 1A was originally constructed in 1960 with a treatment capacity of 3.0 MGD, which was expanded to 10.5 MGD in 1979, and finally to 16.0 MGD in 1994. Overall, the plant is in good condition. Water quality standards were maintained at WTP 1A throughout the year. During the visual inspection of the plant, it was generally operating in a satisfactory manner. The plant is clean and well maintained. The following summarizes the observations resulting from the inspection:

- Raw Water Wells
 - Well 1 was generally in good condition. The wellhead and associated piping and valves appeared to be in good condition. Light corrosion was noted around the pump shaft. Electrical equipment was in good condition. The concrete slab was in good condition.
 - Well 2 was generally in good condition. The wellhead and associated piping and valves appeared to be in good condition. Light corrosion was noted around the pump shaft. Electrical equipment was in good condition. The concrete slab was in good condition.
 - Well 4 was generally in good condition. The wellhead and associated piping and valves appeared to be in good condition. . Light corrosion was noted around the pump shaft. Electrical equipment was in good condition. The concrete slab was in good condition.
 - Well 7 was generally in good condition. The wellhead and associated piping and valves appeared to be in good condition. Light corrosion was noted around the pump shaft. Electrical equipment was in good condition. The concrete slab was in good condition.
 - Deep Well 1 is a new Floridan well that is still in the development and testing phase. Permanent wellhead equipment was not in place at the time of the inspection.
- Treatment Unit 1 (softener unit) was recently refurbished. The interior, including the cone, mixer, and launders, were in good condition. The drive appeared to be in good condition. Electrical equipment and instruments also appeared to be in good condition. Auxiliary pumps and associated piping, valves, and equipment were generally in good condition. This unit was being filled and returned to service at the time of the inspection.
- Treatment Unit 1 is generally in good condition. The interior, including the visible parts of the cone and mixer were in good condition. Effluent launders showed moderate corrosion in several locations – this should be addressed via sanding and repainting. The drive appeared to be in good condition. Electrical equipment and instruments also appeared to be in good

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condition. Auxiliary pumps and associated piping, valves, and equipment were generally in good condition.

- Filters
 - Filter 1 was generally in very good condition. Filter media appeared level and uniform. Piping and valves were in very good condition. Effluent launders were in very good condition. The control panel on the filter deck appeared to be in good condition. The overall structure appeared to be in very good condition. The readings on the filter effluent turbidimeter indicate that it may be out of calibration – this should be checked and addressed.
 - Filter 2 was generally in very good condition. Filter media appeared level and uniform. Piping and valves were in very good condition. Effluent launders were in very good condition. The control panel on the filter deck appeared to be in good condition. The overall structure appeared to be in very good condition.
 - Filter 3 was generally in very good condition. Filter media appeared level and uniform. Piping and valves were in very good condition. Effluent launders were in very good condition. The control panel on the filter deck appeared to be in good condition, except for the head loss indicator readout which was not readable. The filter effluent turbidimeter should be checked to ascertain whether it is functional and correctly calibrated. The overall structure appeared to be in very good condition.
 - Filter 4 was generally in very good condition. Filter media appeared level and uniform. Piping and valves were in very good condition. Effluent launders were in very good condition. The control panel on the filter deck appeared to be in good condition. The overall structure appeared to be in very good condition.
 - Filter 5 was generally in very good condition. Filter media appeared level and uniform. Piping and were in very good condition. Effluent launders were in very good condition. The control panel on the filter deck appeared to be in good condition. The filter effluent turbidimeter should be checked to ascertain whether it is functional and correctly calibrated. The overall structure appeared to be in very good condition.
 - Filter 6 was generally in very good condition. Filter media appeared level and uniform. Piping and valves were in very good condition. Effluent launders were in very good condition. The control panel on the filter deck appeared to be in good condition. The overall structure appeared to be in very good condition.
 - Filter 7 was generally in very good condition. Filter media appeared level and uniform. Piping and valves were in very good condition. Effluent launders were in very good condition. The control panel on the filter deck appeared to be in good

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condition. The filter effluent turbidimeter should be checked to ascertain whether it is functional and correctly calibrated. The overall structure appeared to be in very good condition.

- Filter 8 was out of service and was currently having its media replaced. Piping and were in very good condition. Effluent launders were in very good condition. The control panel on the filter deck appeared to be in good condition. The overall structure appeared to be in very good condition.
- The filter backwash pumps, piping, valves, gauges, and appurtenances appeared to be in good condition. Corrosion was observed on the baseplate of backwash pump 2 that should be addressed during routine maintenance.
- Filter roof drain piping paint is peeling extensively, and the underlying piping is beginning to corrode. This piping should be stripped and repainted as a part of routine maintenance efforts.
- Clearwell transfer pumps (4) were recently installed as part of the 4-log project at this facility, and all pumps, piping, valves, gauges, appurtenances, and associated structures appear to be in excellent condition.
- High Service Pumping
 - High service pumps 1, 3, and 5 appeared to be in very good condition. Pumps, piping, valves, gauges, appurtenances, and associated structures appear to be in very good condition, except for an analog pressure gauge on pump 3 that needs to be replaced.
 - High service pumps 2, 4, and 6 appeared to be in good condition. Pumps, piping, valves, gauges, appurtenances, and associated structures appear to be in good condition. Moderate corrosion on pump 2 casing, bolts, and baseplate should be addressed during routine maintenance.
 - High service pump electrical gear generally appeared to be in good condition. MCC 14 has a note on it indicating that it can start when the HOA switch is in the “off” position – if this is true, this situation should be addressed promptly.
- Solids handling
 - The gravity thickener structure, rake and drive, and auxiliary pumps appeared to be in good condition. It is reported that the rake was recently replaced.
 - The emergency gravity thickener structure, rake and drive, and auxiliary pumps appeared to be in good condition. This structure is currently only put in service on an as-needed basis.

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- Vacuum belt thickeners and associated vacuum pumps and electrical equipment generally appeared to be in good condition. The vacuum disk on vacuum drum 1 needs to be replaced.
- Chemical feed and storage systems
 - The carbon dioxide feed system, including refrigerated storage tanks and solution feeder panels, appeared to be in excellent condition. These systems were recently installed as part of the 4-log project.
 - The ferric chloride feed and storage system was in fair to good condition. Bulk and day storage tanks appeared generally intact and functional. Metering pumps appeared to be functional. Calibration columns were open at the top, below the level of the day tanks. This represents a potential spill hazard. Consistent with current practices, each calibration column should be capped with a vent pipe routed to above the liquid level of the day tanks.
 - The dry polymer makedown and feed systems were in good condition. Makedown and dilution units appeared generally intact and functional. Metering pumps appeared to be functional. Calibration columns were open at the top, but appeared to be at or above the level of the tanks from which they are filled. It is recommended that these be screened or covered to prevent foreign objects from entering the system.
 - The lime slaking and feed systems appeared to be in generally good condition. The lime silo, vibrator, rotary valve, and dosing unit appeared to be in good condition. Slakers appeared to be functional. Overall, the level of corrosion on equipment was less than expected, and equipment appears to be well-maintained.
 - The fluoride (HFS) feed and storage system was in fair condition. Bulk and day storage tanks appeared generally intact and functional. Metering pumps appeared to be functional. Calibration columns were open at the top, below the level of the day tanks. This represents a potential spill hazard. Consistent with current practices, each calibration column should be capped with a vent pipe routed to above the liquid level of the day tanks. Electrical and mechanical equipment was extensively corroded inside the day tank/metering room. This system should be considered for refurbishment.
 - The sodium hypochlorite feed and storage system, which was recently installed, was in very good condition. Storage tanks are generally in very good condition. Priming issues have been noted in the sodium hypochlorite transfer system – the WTP staff is in the process of identifying and correcting them. Containment area flooring is generally in good condition; however, there are some areas where the coating is coming off. These areas should be recoated. Metering pumps are in

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very good condition. Metering pump piping is in good condition, with a couple minor drips that need to be repaired.

- The sodium hydroxide system is not in service, and is not anticipated to be put in service within the foreseeable future. The bulk tank shares a containment area with ferric chloride and fluoride. Since sodium hydroxide can react violently with both of these chemicals, consideration should be given to permanently removing this tank.
 - The gaseous ammonia system is generally in good condition. Bulk storage tanks are in very good condition. Ammoniators are in excellent condition.
 - The diesel fuel storage system is generally in good condition. Bulk storage tanks are in very good condition. The local display for the leak detection is not functional and should be replaced.
- Backup generators and associated equipment appeared to be in excellent condition.

Plant modifications performed through FY- 2013:

- Structural repairs to Treatment Unit No. 1 (complete).
- 4-Log Virus Treatment approval received.
- Construction of a new 1.0 MG concrete storage tank (complete).
- Dismantling of the 0.3 MG steel tank (complete).
- New site lighting improvement project (complete).
- Replacement of sludge re-circulating pumps No. 1 and No. 2 at Treatment Units 1 and 2 (complete).
- Completion of new communication tower (complete).

The plant modifications to be initiated for FY- 2013/2014:

- Rebuild filters No. 5 thru No. 8 and replace piping and media (ongoing).

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Water Treatment Plant 2A

The WTP 2A was originally constructed in 1975 with a treatment capacity of 20 MGD. In FY 1994, the treatment capacity was expanded to 40 MGD with permitted capacity of 30 MGD. Water quality standards were maintained at WTP 2A throughout the year. Overall, the plant is in good condition and appeared to be operating satisfactorily at the time of the site visit.

A summary of the inspection observation for major subsystems is presented below:

- Raw Water Wells
 - Well 4 was out of service for motor replacement. The security fencing was intact. The wellhead and associated pump shaft, piping and valves appeared to be in good condition. Electrical equipment (except the motor, which had been removed) was in good condition. The concrete slab was in good condition.
 - Well 6 was in good condition. The well building was intact and generally in good condition. The wellhead and associated pump shaft, piping and valves appeared to be in good condition. Electrical equipment was in good condition. The concrete slab was in good condition.
 - Well 7 is currently being rehabilitated. The security fencing was intact and generally in good condition. The wellhead and associated pump shaft, piping and valves appeared to be in good condition. Electrical equipment was in good condition. The concrete slab was in good condition.
 - Well 8 is under construction as part of a rehabilitation project. As a part of this, it will be converted from a vertical turbine pump to a submersible pump. Currently, above-ground features are being built.
 - Well 9 is under construction as part of a rehabilitation project. As a part of this, it will be converted from a vertical turbine pump to a submersible pump. Currently, above-ground features are being built.
 - Well 10 was generally in good condition. The security fencing was intact. The wellhead and associated motor, pump shaft, piping and valves appeared to be in good condition. Electrical equipment was in good condition. The concrete slab was in good condition.
 - Well 11 was generally in good condition. The security fencing was intact. The wellhead and associated motor, pump shaft, piping and valves appeared to be in good condition. Electrical equipment was in good condition. The concrete slab was in good condition.
- Treatment Unit 1 is generally in good condition. The interior, including the visible parts of the cone and mixer were in good condition. Effluent launders showed moderate corrosion in

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several locations – this should be addressed via sanding and repainting. The drive appeared to be vibrating more than was expected – the cause of this should be investigated and repairs made, if needed. Electrical equipment and instruments also appeared to be in good condition. Auxiliary pumps and associated piping, valves, and equipment were generally in good condition.

- Treatment Unit 2 is generally in good condition. The interior, including the visible parts of the cone and mixer were in good condition. Effluent launders showed moderate corrosion in several locations – this should be addressed via sanding and repainting. The drive appeared to be in good condition. Electrical equipment and instruments also appeared to be in good condition. Auxiliary pumps and associated piping, valves, and equipment were generally in good condition. This unit was out of service at the time of observation.

- Filters
 - Filter 1 was generally in good condition. Filter media was not able to be observed due to the turbidity of the water on top. Piping and valves in the filter gallery were in very good condition. Effluent launders were in very good condition. The overall structure appeared to be in very good condition. No issues were identified with instrumentation.

 - Filter 2 was generally in good condition. Filter media was not able to be observed due to the turbidity of the water on top. Piping and valves in the filter gallery were in very good condition. Effluent launders were in very good condition. The overall structure appeared to be in very good condition. No issues were identified with instrumentation.

 - Filter 3 was generally in good condition. Filter media was not able to be observed due to the turbidity of the water on top. Piping and valves in the filter gallery were in very good condition. Effluent launders were in very good condition. The overall structure appeared to be in very good condition. No issues were identified with instrumentation.

 - Filter 4 was generally in good condition. Filter media appeared level and uniform. Piping and valves in the filter gallery were in very good condition, but corrosion was noted around the effluent piping wall penetration. Effluent launders were in very good condition. The overall structure appeared to be in very good condition. Local instrument readouts on the filter control panels were difficult to read.

 - Filter 5 was out of service for media replacement and other maintenance. The underdrain appeared to be in excellent condition. Piping and valves in the filter gallery were in very good condition. Effluent launders were in very good condition. The overall structure appeared to be in very good condition. No issues were identified with instrumentation.

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- Filter 6 was generally in good condition. Filter media appeared level and uniform. Piping and valves in the filter gallery were in very good condition, but corrosion was noted around the effluent piping wall penetration. Effluent launders were in very good condition. The overall structure appeared to be in very good condition. Local instrument readouts on the filter control panels were difficult to read.
- Filter backwash pump 1 was out of service for maintenance, and the motor has been removed, piping, valves, gauges, and appurtenances appeared to be in good condition. A crack exists along the corner of the grout pad that should be repaired.
- Filter backwash pump 2, piping, valves, gauges, and appurtenances appeared to be in good condition.
- Clearwell transfer, and all, piping, valves, gauges, appurtenances, and associated structures appear to be in good condition. Electrical equipment for transfer pumps 1 and 2 (and other filter equipment) appeared to be functional. Electrical gear associated with transfer pumps 3 and 4 appears to be in excellent condition and was recently upgraded.
- High Service Pumping
 - High service pumps 1, 3, 4, 5, 6, and 8 appeared to be in very good condition. Pumps, motors, piping, valves, gauges, appurtenances, and associated structures appear to be in very good condition.
 - High service pump 6 appeared to be in functional condition. Pumps, piping, valves, gauges, appurtenances, and associated structures have extensive amounts of moderate corrosion and/or cracked paint. It is recommended that this pump be re-coated in the course of normal maintenance activities.
 - High service pump electrical gear generally appeared to be in good condition.
- Solids handling
 - Gravity thickener 1: the structure, rake and drive, and auxiliary pumps appeared to be in good condition. This thickener was out of service for routine maintenance at the time of the site visit.
 - Gravity thickener 2: the structure, rake and drive, and auxiliary pumps appeared to be in good condition.
 - Vacuum belt thickeners and associated vacuum pumps and electrical equipment generally appeared to be in good condition.
- Chemical feed and storage systems

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- The carbon dioxide feed system, including refrigerated storage tanks and solution feeder panels, appeared to be in excellent condition.
 - The ferric chloride feed and storage system was in good condition. Bulk and day storage tanks appeared generally intact and functional. Metering pumps appeared to be functional. Calibration columns were open at the top, below the level of the day tanks. This represents a potential spill hazard. Consistent with current practices, each calibration column should be capped with a vent pipe routed to above the liquid level of the day tanks.
 - The dry polymer makedown and feed systems were in good condition. Makedown and dilution units appeared generally intact and functional. Metering pumps appeared to be functional.
 - The lime slaking and feed systems appeared to be in generally good condition. The lime silo, vibrator, rotary valve, and dosing unit appeared to be in good condition. Slakers appeared to be functional.
 - The fluoride (HFS) feed and storage system was in fair condition. Bulk and day storage tanks appeared generally intact and functional. Metering pumps appeared to be functional. Calibration columns were open at the top. This represents a potential hazard. Consistent with current practices, each calibration column should be capped with a vent pipe routed to above the liquid level of the day tanks. Electrical and mechanical equipment was extensively corroded inside the day tank/metering room. This system should be considered for refurbishment.
 - The sodium hypochlorite feed and storage system, which was recently installed, was in very good condition. Storage tanks are generally in very good condition, except for one tank which has a leak near the discharge flange. This leak should be repaired. Containment area flooring is generally in good condition. Metering pumps are in very good condition.
 - The sodium hydroxide system is not in service, and is not anticipated to be put in service within the foreseeable future. The bulk tank shares a containment area with ferric chloride and fluoride. Since sodium hydroxide can react violently with both of these chemicals, consideration should be given to permanently removing this tank.
 - The gaseous ammonia system is generally in good condition. Bulk storage tanks are in very good condition. Ammoniators are in very good condition.
 - The diesel fuel storage system is generally in excellent condition. Bulk storage tanks are in very excellent condition.
- Backup generators and associated equipment appeared to be in good condition.

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- The 5 MG storage tank is in good condition, with no observed cracks or spalls. Paint appears to be in fair condition.
- The 1 MG storage tank is in good condition, with no observed cracks or spalls. Paint appears to be in fair condition.
- The 0.5 MG storage tank is in good condition, with no observed cracks or spalls. Paint appears to be in fair condition.

Plant modifications performed through FY- 2013:

- Repaint clearwell and treatment units.
- Rehabilitate laboratory cabinets and counter tops.
- Filter #5 of 6 resealed, re-painted and media replaced.
- Replacement of existing communication tower.
- ASR well to be abandoned and contractor to seal well.
- Replace portion of backwash piping from backwash tank to filters.
- Outdoor electrical panels to be replaced from transfer units.
- Replace raw water influent valve at Treatment Unit No. 2 including the influent underground valve.
- Replace roof on the lime silo tower and bag house.
- Install new VFD at Transfer Pumps No. 3 and No. 4.

Plant modifications to be initiated for FY- 2014:

- Installation of lighting improvements for the plant (ongoing).
- Rehabilitation of wells No. 7, No. 8 and No. 9 (ongoing).
- Replacement of chemical feed pumps (ongoing).
- Replacement of backwash tanks (ongoing).

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- Rehabilitation of switch gear at high service pump room at building No.1 (ongoing).
- Plans to construct a new 5MG storage tank (ongoing).
- Filter #6 of 6 to be resealed, re-painted and media replaced.
- Installation of new chlorine analyzers.
- Replacement of Transfer Pumps No. 1 and No. 2.
- North High Services Pump buildings to be connected to new public sewer system.

Water Distribution System 3A

In December 2001, the City of Hollywood began providing water for resale to the County in System 3A. Then re-pumping facilities consisting of high service pumps supplying the 3A distribution system, which includes the Fort Lauderdale/Hollywood International Airport were constructed at the site of the former WTP 3A. The 3A facility was inspected on April 25, 2014. In general, the 3A facility appeared to be in fair condition, with potential operational issues that WWS is in the process of addressing, and potential issues with the integrity of an abandoned building that still houses a functional piece of equipment that is maintained by County staff. Observations from the site visit are provided below.

- In general, staff have noticed issues with distribution pumps losing prime from time to time, which requires manual intervention. Engineering solutions to this issue are currently being developed in-house by the County.
- High service pump 1 was out of service at the time of the site visit pending repair of the VFD. The pump appeared to be in good condition, with moderate corrosion noted around the pump base that should be addressed as part of routine maintenance. The diesel engine backup drive associated with this pump appeared to be in good condition.
- High service pump 2 appeared to be in good condition. The discharge isolation valves and check valves appear to have been recently replaced. The VFD for this pump appeared to be in good condition. The VFD was wired to an emergency generator located outside the building, and portions of the wires serving this generator were not in conduit. If the County desires to maintain the ability to serve this VFD with a backup generator, it is recommended that a permanent, hard-wired generator connection receptacle be installed.
- High service pump 3 appeared to be in good condition. The discharge isolation valves, check valves, and piping are in good condition. Electrical gear serving this pump was aging, but functional.

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- High service pump 4 appeared to be in good condition. The discharge isolation valves and check valves appear to have been recently replaced. Electrical gear serving this pump was aging, but functional.
- The water storage tank appeared to be in good condition. Light spalling was noted on isolated locations on the outer surface of the tank. The paint on the exterior was in fair to poor condition.
- The inflow meter and associated piping, valving, and instrumentation appears to be in good condition.
- The gas chlorine feed and storage system appeared to be in good condition. The chlorinator unit itself was in excellent condition. County staff anticipate replacing this system with a sodium hypochlorite system in the near term to support 4-log virus treatment.
- The ammonia storage and feed system appear to be in good to fair condition. Moderate corrosion was observed on the piping within the ammonia storage building.
- The diesel fuel storage system appeared to be in fair condition. Containment was intact. Corrosion was noted at the base of the diesel tank, which warrants further assessment and determination of repair is needed.
- The main diesel generator appears to be in fair condition. The structure in which the generator is housed had severe deterioration and large patches of mold visible. It is recommended that this building be assessed by a structural engineer and a firm experienced in mold identification and remediation to determine if it is safe for WWS staff to enter for generator maintenance work. The planned demolition of unused facilities at this site will remedy this issue permanently.

Facility modifications performed through FY- 2013:

- None.

Planned facility modifications for FY-2014/15:

- Demolition of the existing treatment plant and adjacent plant building (ongoing).
- Construction of a new 2.5 mg storage tank
- Construct new chemical feed system
- Construct new building to house new generator.

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- Construct a new by-pass system .
- Implementation of new site lighting system
- Construction of temporary sodium hypochlorite feed system to support implementation of 4-log virus treatment.

Water Distribution System 3B and 3C

The 3B distribution system water supply is fed primarily by the City of Hollywood through two 12-inch potable water interconnect treatment stations located at the City's south system perimeter (on Pembroke Road at Park Road and at S.W. 57th Avenue). Another connection from the City of Pembroke Pines supplies water to the North Perry Airport perimeter. The County maintains a 2.5 MG storage tank and high service pumps and an emergency generator, all in very good condition. These facilities are remotely monitored and controlled via SCADA equipment/instrumentation. The 3B and 3C facilities were inspected by Brown and Caldwell on April 25, 2014.

Overall, the four distribution high service pumps at the 3B facility and their associated piping and valving appear to be in good condition. Staff report that pumps 2 and 4 appear to have insufficient head capacity to pump into the system. It is recommended that WWS further evaluate this claim to determine what action is required. The storage tank appears to be in good condition, with minor spalling noted in certain locations. The exterior paint was chalking, and it is recommended that the tank be re-painted. There was a section of sidewalk missing around the back side of the tank that needs to be repaired. The backup generator and associated equipment appeared to be in good condition. The temporary hypochlorite system installed in the previous year appeared to be in good condition, and is slated to be replaced with a permanent system in the future. The pump building exterior was generally in good condition, but a significant amount of between-block grout was missing from one of the exterior glass block windows.

The 3C repump facility currently consists of a 2.0 MG concrete tank and three high service pumps, VFD controls, sodium hypochlorite disinfection system and emergency standby diesel engine with generator housed in a new concrete building structure. The facility is equipped with a SCADA system to allow staff to monitor and control the facility operation remotely. The entire site is fenced with a decorative fence in the front of the facility and a standard 6-foot high chain link fence on the sides and back of the property.

Overall, the three distribution high service pumps at the 3C facility appear to be in good condition. Pump 3 has some corrosion on the top half of the casing and on the coupling that should be addressed. Check valves for pumps 2 and 3 were recently replaced, but check valve 3 appears to have functional issues and should be considered for repair or replacement. It is recommended that WWS further evaluate this claim to determine what action is required. The storage tank appears to be in excellent condition. One of the two sodium hypochlorite storage tanks leaks and is out of service, while the other is in good condition. The leaky tank should be fixed or replaced to provide redundant hypochlorite storage capacity at this facility. The sodium hypochlorite transfer/tank mixing pumps are not functional, but staff report that the turnover of

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chemical in the tank is sufficient to maintain hypochlorite quality and strength. The ammonia system was generally in excellent condition. A slight ammonia odor was present upon inspection, which may be due to a recent tank change – it is recommended that WWS monitor this site to confirm that is the case (and that a leak is not present). The chlorine analyzers installed at this facility have reportedly been problematic and have experienced failures – these should be evaluated for replacement. The backup generator appeared to be in excellent condition. The pump building exterior was in excellent condition.

Lift Stations

There are a total of 232 lift stations operated by the County. A representative set of 19 lift stations were inspected by Brown and Caldwell on April 30, 2014. Overall, the lift stations inspected appeared to be well maintained, and the mechanical and electrical components (control panels, variable frequency drives, motor control centers, generators, telemetry units, pumps, pipes, and accessories) appeared to be in good condition unless noted. The following serves to summarize the observations made during the visual inspection of the lift stations:

- LS 10C This submersible pump-type lift station is in generally good condition. No pump issues were observed or reported, but pumps were below the wetwell water surface and could not be directly observed. The wetwell and valve vault hatches were in good condition. Piping and valving were generally in good condition, with light corrosion noted. The wetwell itself was in good condition, with the liner fully intact. The electrical panel was in very good condition.
- LS 10G This submersible pump-type lift station is in generally good condition. No pump issues were observed or reported, but pumps were below the wetwell water surface and could not be directly observed. The wetwell and valve vault hatches were in good condition. Piping and valving were generally in good condition, with light corrosion noted. The wetwell itself was in good condition, with the liner fully intact. The electrical panel was in very good condition.
- LS 10R1 This submersible pump-type lift station is in very good condition. The condition of the pumps should be investigated further based on noises that were heard during the inspection. The wetwell and valve vault hatches were in good condition. Piping and valving were generally in good condition, with minor corrosion noted. The wetwell itself was in good condition. The station does not appear to be lined, but wetwell walls were in good condition. The electrical panel was in good condition.
- LS 21A This submersible pump-type lift station is in generally excellent condition. No pump issues were observed or reported, but pumps were below the wetwell water surface and could not be directly observed. The wetwell and valve vault

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hatches were in excellent condition. Piping and valving were in good condition, with moderate corrosion noted. The wetwell itself was in fair condition. The wetwell liner appeared to be almost entirely gone, and the underlying concrete is beginning to erode. The electrical panel was in good condition.

- LS 21D3 This submersible pump-type lift station is in generally good condition. No pump issues were observed or reported, but pumps were below the wetwell water surface and could not be directly observed. The wetwell and valve vault hatches were in good condition. Piping and valving were in very good condition, with no corrosion noted. The wetwell itself was in excellent condition. The wetwell liner appeared to be intact. The electrical panel was in excellent condition.
- LS 21J This submersible pump-type lift station is in generally good condition. No pump issues were observed or reported, but pumps were below the wetwell water surface and could not be directly observed. The wetwell and valve vault hatches were in good condition. Piping was in good condition, with light corrosion noted. One of the check valves was leaking and needs repair; other valves were in good condition. The wetwell itself was in good condition. The wetwell liner appeared to be intact. The electrical panel was in excellent condition.
- LS 23 This submersible pump-type lift station is in generally good condition. No pump issues were observed or reported, but pumps were below the wetwell water surface and could not be directly observed. The wetwell and valve vault hatches were in good condition. Piping and valving were generally in good condition, with moderate corrosion noted. The wetwell itself was in good condition and does not appear to be lined. The electrical panel was in good condition, with some light corrosion noted on interior components.
- LS 24B1 This submersible pump-type lift station is in generally fair condition. No pump issues were observed or reported, but pumps were below the wetwell water surface and could not be directly observed. The wetwell and valve vault hatches were in good condition. Piping and valving were in good condition, with moderate corrosion noted. The wetwell itself was in fair condition. The wetwell liner appeared to be almost entirely gone, and the underlying concrete is beginning to erode. The electrical panel was in excellent condition.
- LS 24E3 This submersible pump-type lift station is in generally good condition. No pump issues were observed or reported, but pumps were below the wetwell water surface and could not be directly observed. The wetwell and valve vault hatches were in good condition. Piping and valving were generally in good condition, with

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light corrosion noted. The wetwell itself was in good condition and does not appear to be lined. The electrical panel was in good condition.

- LS 24E31 This submersible pump-type lift station is in generally good condition. No pump issues were observed or reported, but pumps were below the wetwell water surface and could not be directly observed. The wetwell and valve vault hatches were in good condition. Piping and valving were generally in fair condition, with moderate corrosion noted. The wetwell itself was in good condition. the wetwell and valve vault liners were peeling significantly. The electrical panel was in good condition.
- LS 27E This submersible pump-type lift station is in generally good condition. No pump issues were observed or reported, but pumps were below the wetwell water surface and could not be directly observed. The wetwell hatch was significantly corroded and does not appear to be watertight – there was evidence of significant inflow under the rim of the hatch. Piping and valving were generally in good condition, with light corrosion noted. The wetwell itself was in good condition. The electrical panel was in good condition.
- LS 30 This submersible pump-type lift station is in generally good condition. No pump issues were observed or reported, but pumps were below the wetwell water surface and could not be directly observed. The wetwell and valve vault hatches were in good condition. Piping and valving were generally in good condition, with moderate corrosion noted. The wetwell itself was in good condition. Extensive peeling of the wetwell coating was observed, and re-lining should be considered. The electrical panel was in excellent condition.
- LS 30B This submersible pump-type lift station is in generally good to fair condition. No pump issues were observed or reported, but pumps were below the wetwell water surface and could not be directly observed. The wetwell and valve vault hatches were in good condition. Piping and valving were generally in fair condition, with moderate to severe corrosion noted. The wetwell itself was in good condition. The wetwell lining was in good condition, but the valve vault lining was nearly gone. The electrical panel was in very good condition.
- LS 30P This submersible pump-type lift station is in generally good condition. No pump issues were observed or reported, but pumps were below the wetwell water surface and could not be directly observed. Piping and valving were generally in good condition, with light corrosion noted. The wetwell and valve vault hatches were in good condition. Erosion of the soil underneath slab on grade between the wetwell and the valve vault was observed and should be addressed. The wetwell

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itself was in good condition. Its coating was intact with minor bubbling of the surface observed. The electrical panel was in good condition, with light corrosion of some interior components noted.

- LS 31D1 This submersible pump-type lift station is in generally good condition. No pump issues were observed or reported, but pumps were below the wetwell water surface and could not be directly observed. The wetwell and valve vault hatches were in good condition. Piping and valving were generally in good condition, with moderate corrosion noted. The wetwell itself was in good condition, with the coating intact. The electrical panel was in good condition.
- LS 32I This submersible pump-type lift station is in generally good condition. No pump issues were observed or reported, but pumps were below the wetwell water surface and could not be directly observed. The wetwell and valve vault hatches were in good condition. Piping and valving were generally in good condition, with light corrosion noted. the wetwell itself was in good condition. the coating was intact with minor bubbling of the surface observed. The electrical panel was recently replaced and is in excellent condition.
- LS 50M This submersible pump-type lift station is in generally good condition. No pump issues were observed or reported, but pumps were below the wetwell water surface and could not be directly observed. The wetwell and valve vault hatches were in good condition. Piping and valving were generally in good condition, with light corrosion noted. The wetwell itself was in good condition, with the liner fully intact. The electrical panel was in good condition.
- LS 51A4 This submersible pump-type lift station is in generally good condition. No pump issues were observed or reported, but pumps were below the wetwell water surface and could not be directly observed. The wetwell and valve vault hatches were in good condition. Piping and valving were generally in good condition, with light corrosion noted. The wetwell itself was in good condition. The wetwell liner was peeling in isolated places. The electrical panel was in good condition.
- LS 56A This submersible pump-type lift station is in generally good condition. No pump issues were observed or reported, but pumps were below the wetwell water surface and could not be directly observed. The wetwell and valve vault hatches were in good condition. The coating on the valve vault piping and valves was beginning to peel, but other than that, piping and valving were generally in good condition, with no corrosion noted. The wetwell itself was in good condition. The wetwell liner was peeling in isolated places. The electrical panel was in good condition.

Section 4

Regional Wastewater System

Section 4 Regional Wastewater System

This section describes the North Regional Wastewater System (NRWWS) including the service area, visual inspection and review of the renewal and replacement program.

4.1 General Description

WWS owns and operates the North Regional Wastewater Treatment Plant (NRWWTP), which has provided contract wholesale wastewater services to 11 large users plus the County since 1974. The large users include the Cities of Coconut Creek, Coral Springs, Deerfield Beach, Lauderdale, North Lauderdale, Oakland Park, Pompano Beach and Tamarac; and, North Springs Improvement District (NSID), Parkland Utilities, and Royal Utilities. Service is also provided to WWS Districts 1 and 2 retail wastewater systems. The NRWWS includes 11 master pumping stations and approximately 66 miles of force mains. All of the wastewater collected from retail Districts 1 and 2 and large user customers are treated at the NRWWTP located in Pompano Beach, Florida. The plant has a permitted treatment capacity of 95 MGD. The recent expansion project increased plant treatment capacity to 95 MGD, of which 87.015 MGD has been reserved by the large users and the County. During Fiscal year 2013, the annual average daily flow rate at the NRWWTP was approximately 67.88 MGD, and the plant currently has sufficient capacity to meet the projected demands of all large users and the County to at least the year 2035.

The large user agreements are substantially similar. Each is for a term that exceeds by one year the last payment of any wastewater system debt obligation applicable to the NRWWS. In addition to stipulating points of connection and establishing minimum quality limitations on all wastewater, the agreements designate reserve capacity in the plant for each user and provide for the method to charge each user for the availability and provision of service. The agreements also require the large users to deliver all wastewater collected to the County. On a monthly basis, each user is billed a fixed charge depending upon the user's reserve capacity in the plant. This fixed charge is designated to recover each large user's equitable share of debt service including coverage (1.2x principal and interest). The operation and maintenance costs associated with provision of treatment and transmission service, also billed monthly to each large user, are based upon the large user's pro rata usage of the NRWWS. Additionally, the contracts provide restrictions on excessive and peak flows, limitations on types of waste allowed to be discharged and requirements to pay for damages caused by a large user.

The NRWWTP was designed and constructed in accordance with a master plan approved by regulatory authorities specifically to encourage the use of regional, technologically advanced wastewater treatment processes and to discourage development and use of smaller, less efficient systems. A difficult permitting process, outstanding contractual obligations with the County and high capital costs of constructing and operating a new facility should discourage any large users from abandoning the NRWWS. The agreements as executed by the large users are binding and can only be terminated upon mutual consent of the County and the large user.

The NRWWTP utilizes an activated sludge treatment process for liquid treatment and an anaerobic digestion system for handling the biosolids produced from the liquid treatment process. After digestion, the sludge is dewatered and disposed of by landfilling and

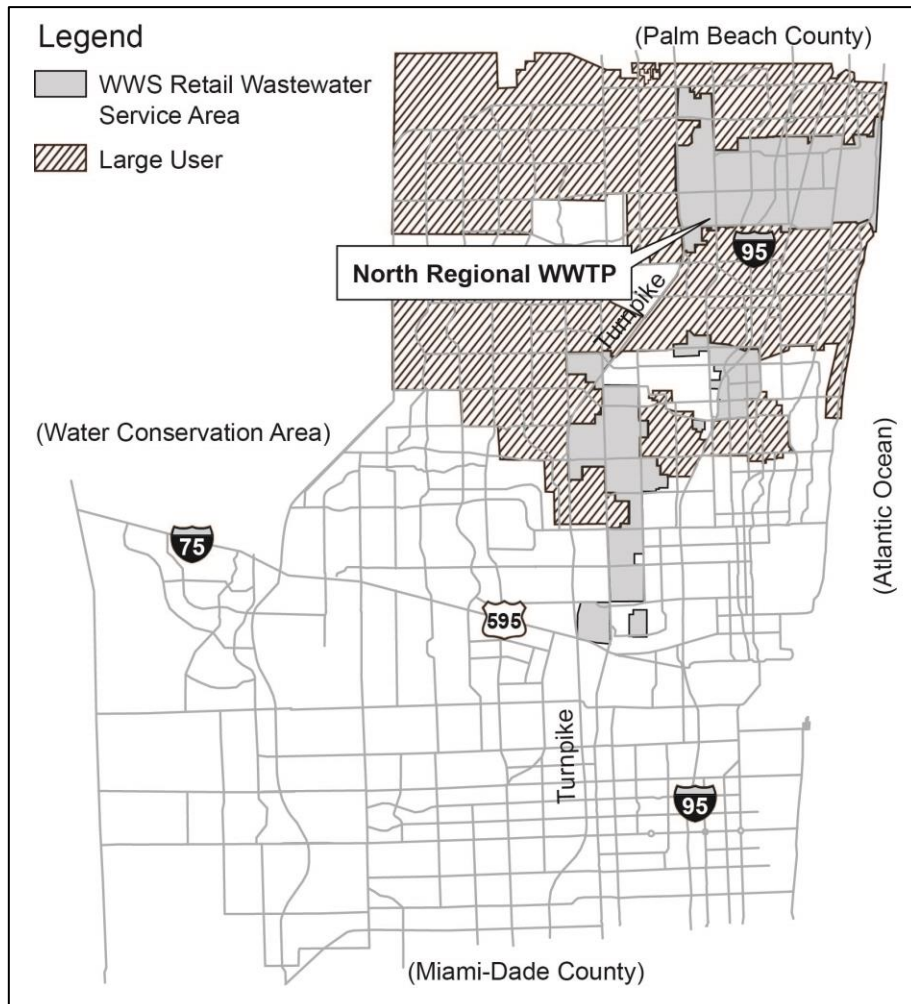
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landspreading. The effluent from the liquid treatment process is chlorinated and either pumped through the outfall pipe into the Atlantic Ocean, disposed of in on-site deep injection wells, or filtered via the County's 10 MGD reclaimed water system. The reclaimed water is used for irrigation and industrial process water at the Waste to Energy Plant (Wheelabrator North Broward Plant), the Septage Receiving Facility and the NRWTP as well as for landscape irrigation at a nearby commerce center.

Service Area and Customer Base

Figure 4-1 shows the NRWWS service area. All of the wastewater collected from retail Districts 1 and 2, and all large user customers, are treated at the NRWTP located in Pompano Beach, Florida.

Figure 4-1 WWS Wastewater Large User Service Areas



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The NRWWS service area provides service to 35 percent of the population in the County. In addition to providing treatment service to the County's retail customers in Districts 1 and 2 (District 3 treatment is provided by contract with the City of Hollywood at the South Regional Wastewater System), the NRWTP provides treatment to 11 large users plus the County. Service is provided pursuant to individual, contractual agreements between the County and each large user. Generally, such agreements specify each large user's reserve capacity in the plant and provisions for billing and payment for service. As noted, the large users and WWS have currently subscribed to 87.015 MGD of the 95 MGD of treatment and disposal capacity.

Table 4.1 provides a summary of historical large user wastewater flow rates for treatment and disposal. The reserve capacity for each large user of the NRWWS is shown in Table 4.2. Table 4.3 provides information on the wastewater annual flows for the past five years. While some of the large users individually may be utilizing high percentages of their reserve capacity, collectively the large users will not exceed permitted plant capacity through at least 2035. As such, obligations to individual large users for wastewater flows do not currently constitute a liability issue from the standpoint of available plant capacity.

Table 4-1 Summary of Historical Large User Wastewater Average Monthly Flow for Treatment and Disposal (1,000 Gallons)

Large User	FY 2011	FY 2012 ¹	FY 2013	Change From Prior Year	% of Change
Coconut Creek	106,383	120,600	124,323	3,723	3.09%
Coral Springs	209,733	260,668	244,380	(16,288)	-6.25%
Deerfield Beach	168,219	182,561	177,375	(5,186)	-2.84%
Lauderhill	166,710	200,317	188,594	(11,724)	-5.85%
North Lauderdale	89,867	118,946	107,685	(11,260)	-9.47%
NSID	82,665	92,960	82,726	(10,234)	-11.01%
Oakland Park	44,097	53,233	45,841	(7,392)	-13.89%
Parkland Utilities	6,220	6,415	6,217	(198)	-3.09%
Pompano Beach	374,685	417,423	409,431	(7,992)	-1.91%
Royal Utilities	7,500	7,532	8,791	1,259	16.72%
Tamarac	220,223	294,120	254,642	(39,478)	-13.42%
Subtotal	1,476,302	1,754,775	1,650,004	(104,770)	-5.97%
Broward County	337,189	410,946	414,721	3,776	0.92%
Total	1,813,491	2,165,720	2,064,726	(100,994)	-4.66%

¹ Higher flows in FY 2012 compared to FY 2011 and FY 2013 are believed to be related to infiltration and inflow associated with high rainfall in 2012.

Source: Broward County Water and Wastewater Services

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Table 4-2 North Regional Wastewater System Reserve Capacity as of September 30, 2013 (MGD)		
Large User	Capacity	
	Treatment	Transmission
Broward County	19.42	19.42
Coconut Creek ¹	6.54	4.41
Coral Springs	9.79	9.79
Deerfield Beach	8.50	8.50
Lauderhill	7.10	7.10
North Lauderdale	4.40	4.40
N S I D	3.53	3.53
Oakland Park	1.52	1.52
Parkland Utilities	0.27	0.27
Pompano Beach ¹	17.00	N/A
Royal Utilities	0.45	0.45
Tamarac	8.50	8.50
Total	87.02	67.89
<p>¹ All of Pompano Beach and portions of Coconut Creek do not use the North Regional Wastewater System transmission facilities.</p>		
<p>Source: Broward County Water and Wastewater Services</p>		

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Table 4-3 Summary of Large User Wastewater Treatment Annual Flows Five-Year History as of September 2013 (1,000 Gallons)

Large User (LU)	Fiscal year 2009	Fiscal year 2010	Fiscal year 2011 ¹	Fiscal year 2012 ²	Fiscal year 2013
Coconut Creek	1,229,427	1,316,095	1,276,592	1,447,199	1,491,870
Coral Springs	3,069,385	3,132,096	2,516,794	3,128,012	2,932,561
Deerfield Beach	2,561,348	2,561,252	2,018,628	2,190,729	2,128,498
Lauderhill	2,210,581	2,176,961	2,000,517	2,403,809	2,263,122
North Lauderdale	1,194,511	988,496	1,078,407	1,427,346	1,292,221
NSID	978,100	964,037	991,983	1,115,514	992,712
Oakland Park	642,310	740,767	529,162	638,795	550,088
Parkland	67,215	79,808	74,642	76,984	74,607
Pompano Beach	4,408,880	4,627,160	4,496,220	5,009,080	4,913,176
Royal Utilities	117,969	107,764	90,004	90,382	105,492
Tamarac	2,340,756	2,420,243	2,642,672	3,529,445	3,055,706
Total LU	18,820,482	19,114,679	17,715,621	21,057,295	19,800,053
Broward County	4,972,950	4,737,647	4,046,268	4,931,347	4,976,657
Total LU and County	23,793,432	23,852,326	21,761,889	25,988,642	24,776,710

1 The infiltration and inflow programs, water conservation efforts and water restrictions appear to have reduced water sales and the amount of water returned to the wastewater system between FY 2009 and FY 2011.

2 Higher flows in FY 2012 compared to FY 2011 and FY 2013 are believed to be related to infiltration and inflow associated with high rainfall in 2012

Source: Broward County Water and Wastewater Services

4.2 Wastewater System Regulatory Requirements

Operations of the NRWWTP are regulated by the EPA, the Florida Department of Environmental Protection (FDEP) and the Broward County Environmental Protection and Growth Management Department (EPGMD). Regulatory requirements are focused on effluent management, sludge disposal, reclaimed water and industrial pretreatment.

In Fiscal year 2013, the North Regional Wastewater Treatment Plant (NRWWTP) had no permit violations. The NRWWTP is in compliance with effluent quality standards. One hundred and five parameters are checked at different intervals daily to assess conformance with these standards, amounting to 16870 parameter checks in the year. During Fiscal year 2013, there were six limit excursions representing only 0.0.0356 percent of the total checks at the NRWWTP.

4.3 Wastewater Effluent Management

The NRWWTP currently disposes of treated effluent via an open ocean outfall and deep injection wells. Additionally, a portion of the effluent is treated to public-access quality and distributed for reuse via a reclaimed water system. The open ocean outfall is regulated through the Federal National Pollutant Discharge Elimination System (NPDES) permit program, administered by the FDEP. Deep injection wells are permitted by the FDEP Underground Injection Control Section.

The County's facility permit from the FDEP rates the NRWWTP at 95 MGD and acknowledges 66 MGD of effluent disposal capacity through the ocean outfall. Broward County submitted an application to the FDEP on August 2, 2007 for the renewal of the NPDES/Facility Permit for the NRWWTP, which expired on February 2, 2008. The new NRWWTP permit was issued on January 25, 2013 and became fully enforceable in March 2013.

The FDEP continues to promote a reduction of nutrients in the face of opposition to ocean discharges from interested groups. They have worked with the wastewater utilities with ocean outfalls (including Broward County) to reduce the economic impact of the Leah Schad Memorial Ocean Outfall Program, which became the law effective July 1, 2008. Initially, this law required that the disposal of effluent through ocean outfalls be eliminated by 2025. In 2013, the Florida Legislation passed the following amendments to the act:

- Allows peak flow backup discharges not exceeding 5% of the facility's cumulative baseline flow, measured on a 5-year rolling average and requires that such discharges meet the FDEP's applicable secondary waste treatment and water-quality-based effluent limitations.
- A detailed plan was submitted to FDEP in July, 2013 which identified technically, environmentally and economically feasible reuse options. The plan included an analysis of the costs associated with meeting state and mandated nutrient reduction requirements, and the detailed schedule for implementation of all necessary actions. .
- Requires FDEP, SFWMD and the outfall utilities to consider the above information for the purpose of adjusting, as needed, the reuse requirements, and requires FDEP to report to

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the Legislature any changes that may be necessary in the reuse requirements by February 15, 2015.

In order to meet the advanced wastewater treatment requirements of the rule, the County has implemented cumulative nutrient reduction strategies including modifying the existing treatment process to augment biological nutrient removal and reduce outfall discharges via diversion to the existing deep injection well system.

In addition to the ocean outfall, the effluent management system also includes six Class I deep injection wells. The Operation Permit 0051336-502-UO for Injection Wells 1 through 6 was issued on July 2, 2010 and is valid for five (5) years.

The County's effluent management program currently includes a 10 MGD system providing highly treated reclaimed water for industrial and landscape uses. As a requirement of the Leah Schad memorial Ocean outfall Program described above, the County will be required to increase production of reclaimed water by 2025 and is currently in discussions with Palm Beach County for the creation of a regional reclaimed water system to beneficially reuse up to 15 MGD of reclaimed water. Long-term effluent management improvements include combinations of injection wells, Biscayne Aquifer recharge, Floridan Aquifer recharge, offsite large user reuse, and residential reuse. An increase in the consumptive use permit raw water allocation for the water treatment facilities may be authorized by the SFWMD when effluent management results in the potential beneficial reuse of the reclaimed water.

4.4 Biosolids Management

Pollutant concentrations in wastewater residuals are regulated by both federal and state sludge regulations. The federal regulation that currently regulates disposal is 40 CFR Part 503. The Part 503 rule regulates five categories of wastewater residuals disposal: agricultural land application, non-agricultural land application, distribution and marketing, monofills and surface disposal. WWS currently employs landfilling (20,000 tons per year) and land-spreading (70,000 tons per year) for wastewater residuals disposal. The current contract to dispose of biosolids by landspreading extends to October, 2014, after which it will be re-bid.

The County is currently managing most biosolids by land application of the treated residuals. Land application is a beneficial reuse of this wastewater treatment byproduct and is subject to both federal and state regulations. The County produces Class B residuals allowable for application to non-food agricultural sites.

In August 2010, revisions to the state regulations governing the treatment and disposal of biosolids, Chapter 62-640 F.A.C., went into effect. The NRWTP became subject to the new regulations upon renewal of the facility's operating permit in January, 2013. New land application sites were permitted under these new regulations. While land application continues to be an option, permitting of sites will likely be at greater distances, potentially making hauling to new disposal sites more costly. The County has secured alternate disposal capacity at a nearby Class I landfill and continues to investigate cost-effective long-term biosolids management alternatives. Disposal at the landfill meets all current federal, state and local

regulations and since the landfill cogenerates electricity from its methane gas production, this disposal option is currently the most carbon neutral.

4.5 Wastewater Large User Agreements

The County is under obligation to provide large users with capacity under the terms of Large User Agreements (Agreements) it has executed with the cities of Coconut Creek, Coral Springs, Deerfield Beach, Lauderhill, North Lauderdale, Oakland Park, Pompano Beach and Tamarac, the North Springs Improvement District, and the private utility companies of Parkland Utilities, Inc. and Royal Utilities. The agreements provide for wastewater transmission, treatment and disposal services. The Agreements terminate at the end of the County's fiscal year following the date all obligations, notes or bonds at any time issued for the NRWWTTP and associated transmission and disposal facilities, or any part thereof, are retired or satisfied. The current large user reserved capacity in the NRWWTTP is set forth in Table 4-2.

The Agreements are substantially alike in form and a brief summary of significant provisions follows:

- A. Provisions Pertaining to Connection to the County System. The Agreements require that during the term of the Agreement, each user, except the City of Oakland Park, will deliver all existing water flows collected by it to the County. Oakland Park sends a portion of their flow to the City of Ft Lauderdale's wastewater treatment plant. The Consulting Engineers are of the opinion that outstanding contractual obligations with the County and high capital costs of constructing and operating a new facility capable of meeting current effluent quality requirements should discourage any withdrawal of users from the NRWWS.

The Agreements also identify the points of connection of the users' systems to the County's system, and state that the user will convey to the County land needed by the County for the point of connection and access thereto. The users agree to maintain their own systems, the elevation and pressure of which are required to be sufficient to deliver wastewater to the County's facility without backing up or reversing flow. The users' systems must include provisions to prevent excessive peak flow rates and extended periods of no flow. Each of the users must list in the Agreement estimates of its future flow projection and the user must submit annual updates of these estimates to the County. The County is required to use these estimates to plan future treatment capacity and to determine whether facilities should be extended or modified. The County's obligation to provide service is limited to the capacities reserved by users, which may be increased or decreased by amendment or modification to the Agreements. The Agreements allow users to lease or sell excess capacity to other users, subject to the County's approval. The County is required to install and maintain a meter at each point of connection to determine the volume and rates of flow and to inspect the meters at least annually to determine the accuracy thereof. The Agreements provide for credits or additional charges in the event of the inaccuracy of the meters. If the meters are

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inoperative, the users are required to pay an amount based on the average flow of the prior month.

- B. Provisions Relating to Discharge Sampling. The Agreements specify quality limitations for wastewater discharges. A user's failure to comply with these limitations places the user in default under this Agreement and allows the County either to initiate programs to bring the user's discharge into compliance at the user's expense or to seek damages from the user. A user's system must include a sampling station and the user must, upon receipt of written request from the County, submit a complete laboratory analysis of a composite sample of combined wastes leaving the user's facilities. The County and the user may enter into an agreement whereby the County would accept wastewater with a strength or other characteristic that exceeds parameters listed in an existing agreement. In this case, the County may impose surcharges on the system supplying such a wastewater.
- C. Provisions Pertaining to Charges. The County is required to conduct an annual review of the costs of providing service to users, which will provide the preliminary basis for establishing fees, rates and other charges for the next succeeding fiscal year. The fees and rates charged to the users constitute the full cost of the transmission, treatment and disposal services provided to the users, including operation and maintenance charges and debt service charges for both the NRWWTP and the NRWWS transmission facilities, and include an Improvement Repair and Replacement Surcharge. Such fees, rates and charges are required to be set at a public hearing by the Board, which must be held after 30 days written notice to the users. The Board is required to consider recommendations of the individual users or the advisory board, which is composed of representatives from each of the users. The operation and maintenance charges applicable to the NRWWTP or the transmission system are included in the monthly rate charged to the users based upon the users' actual monthly flow in thousands of gallons. The rate is to be set by dividing the total annual budgeted operation and maintenance expense for each fiscal year by the number of gallons estimated to be treated or transmitted in that fiscal year, and is to be adjusted at year end to reflect the actual number of gallons treated and actual operation and maintenance expense. This adjustment is either collected from, or remitted to, the large users in the subsequent year.

The debt service charge included in monthly rates charged to the large users include principal, interest and coverage requirements on debt obligations issued at any time for the NRWWS and is computed by determining the ratio of the amount of capacity reserved by the user to the amount reserved by all users. The debt service charge for the NRWWS transmission facilities is computed by reference to transmission reserved capacity in the same manner. A user's contribution to the Improvement, Repair and Replacement Surcharge, which is part of the monthly rate charged to users, may not exceed 10 percent of that user's monthly bill. In addition, the Agreements provide for

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additional charges in the event that a customer requests additional transmission or treatment capacity or in the event that the monthly flow of a user exceeds the capacity reserved by such user for three consecutive months. A user that fails to pay the monthly bill within 45 days of its due date is required to pay an interest penalty on the unpaid balance; and if the payment is not made within 60 days, the user is in default of the Agreement and the County may enforce the Agreement by suit. The users agree to establish service charges or other means of obtaining funds sufficient to enable them to pay the monthly charge.

- D. Provisions Pertaining to Additional Obligations of Both Parties. The Agreements provide that the County will extend and expand its NRWWS to provide for the user's scheduled flow. The users must deliver their wastewater to the County facilities for treatment and the County must accept all wastewater flows collected by the users, provided the amount of such flow does not exceed the capacity reserved by such users.
- E. Provisions Pertaining to Violations and Exceptions to the Terms of Agreements. If a user violates the Agreement, the County must give written notice of the violation and allow a reasonable time to correct the violation. The user must correct the violation within the stated time. If either party violates the Agreement, that party becomes liable to the other for any expense, loss or damage occasioned by such violation; provided that any payment by the County to a user for violation of any provision of the Agreement shall be from any legally available source other than the revenues pledged to any bondholders. If there is a dispute concerning a violation that cannot be settled, the user will pay the full amount billed, and the amount in dispute will be escrowed or held in a joint trust, interest-bearing bank account and held pending settlement of such dispute. Each user agrees to hold the County harmless from costs and expenses incurred by such user or the County in any litigation resulting from the improper introduction of materials by such user into the County facility. Any temporary cessation of wastewater transmission and treatment services caused by an act of God, a fire, strikes, casualty, necessary maintenance work, breakdown of or injury to machinery, pumps or pipeline shall not constitute a breach of the Agreement. The County is required to accept and dispose of wastewater transmitted by the users, if physically possible, regardless of the degree of treatment available, until written notice to the contrary is received from a government agency.
- F. Provisions Relating to the Term of the Agreements and Cancellation. The users and the County were bound by the Agreements at the date of their execution. The County and each user may terminate their Agreements by mutual written consent. Otherwise, the Agreements terminate at the end of the County's next full fiscal year after all obligations issued at any time during the term of the Agreements for the NRWWS have been retired or satisfied.

4.6 Visual Inspection and Review

North Regional Wastewater Treatment Plant

The visual inspection of the NRWTP was performed on April 29, 2014. The inspection consisted of visual observation of selected major process units and supporting equipment to generally establish the condition and functionality of major unit processes. In general, equipment appeared to be able to perform its intended function. Based on the facility's ability to continuously meet permit requirements, the facility appears to be operated in a sound manner. A summary of key observations for each process area are as follows:

- Headworks: In general, headworks equipment appeared to be in good condition and functioning normally.
- Treatment Module A
 - In general, aeration basin structures and piping appeared sound. Aeration unit motors were in fair condition, with some motors having cracked fan shrouds and/or making noises that indicate that preventative maintenance may be needed in the near term. Removal of the existing aerator motors and gear reduction drives during the planned future conversion to fine-bubble aeration will resolve these issues.
 - All except one clarifier appeared to be in good condition, with all showing moderate corrosion in the area of the drive mechanisms. One clarifier was out of service, reportedly due to issues with the drive mechanism.
 - In general, the Module A return Activated Sludge (RAS) pumping station appeared to be in good condition.
- Treatment Module B
 - In general, aeration basin structures and piping appeared sound. Aeration unit motors were in fair condition, with several motors having cracked fan shrouds and/or making noises that indicate that preventative maintenance may be needed in the near term. Removal of the existing aerator motors and gear reduction drives during the planned future conversion to fine-bubble aeration will resolve these issues.
 - Clarifiers were generally in good condition, with all showing moderate corrosion in the area of the drive mechanisms.
 - In general, the Module B return Activated Sludge (RAS) pumping station appeared to be in good condition, with one pump out of service for maintenance.

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- Treatment Module C
 - In general, aeration basin structures, piping, and equipment appeared to be in good condition.
 - In general, clarifiers were in good to fair condition. The drive mechanisms for two of the clarifiers are scheduled for replacement.
 - In general, the Module C return Activated Sludge (RAS) pumping station appeared to be in good condition. Preventative maintenance may be needed on the seal of one of the three pumps.
- Treatment Module D
 - In general, aeration basin structures, piping, and equipment appeared to be in good condition.
 - In general, clarifiers were in good to fair condition. The drive mechanisms for two of the clarifiers are scheduled for replacement.
 - In general, the Module C return Activated Sludge (RAS) pumping station appeared to be in good condition. Preventative maintenance may be needed on the seal of one of the three pumps.
- Treatment Module E
 - In general, aeration basin structures, piping, and equipment appeared to be in good condition. Local readouts for instruments were generally sun-faded and should be considered for replacement.
 - In general, clarifiers were in good condition.
 - In general, the Module E return Activated Sludge (RAS) pumping station appeared to be in good condition.
- Ocean outfall pump station
 - Outfall pumps: the five vertical turbine ocean outfall pumps generally appeared to be in good condition.
 - Electrical equipment: The motors, liquistat system and associated cooling units appear to be generally functioning in a satisfactory manner. The liquistat unit for pump 4 reportedly has occasional minor leakage – this should be investigated and addressed.

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- Chlorine contact basins associated with the outfall were generally in good condition except for steel pieces in the influent cascade that have nearly corroded away. The structural significance of these members should be investigated, and they should be replaced if needed.
- The chlorine gas feed system appeared to be generally in good condition. An electrical panel was open with no maintenance personnel present – it is recommended that panels be left closed at all times whenever possible. Also, one of the evaporator units appeared to be out of service.
- Deep Injection Well pump station
 - The deep injection well pumps, motors, and supporting electrical equipment all appeared to be in good condition.
- Water reuse system
 - The reuse system feed pumping station generally appeared to be in good condition.
 - The self-backwashing sand filters were generally in good condition.
 - The reuse chlorine contact chambers generally appeared to be in good condition.
 - The high head and low head reuse pumps generally appeared to be in good condition.
- Digester complex
 - Seven out of eight digesters generally appeared to be in good condition, with sanding and re-coating needed in select areas. Digester P-3 has been out of service for an extended period of time, but is scheduled to be repaired in FY 2014.
 - Sludge Pumping – the County has been replacing old piston-style pumps with new progressive cavity (Moyno) pumps. The new pumps are generally in good condition.
 - Boilers
 - The boilers serving digesters 1, 2, 3, and SEC appear to be in good condition. Of the five boilers serving digesters 4-7, one (boiler 8) is non-functional. It is recommended that WWS consider repairing or replacing the non-functional unit.

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- There is a propane tank serving the boilers that has extensive peeling paint and a moderate amount of surface rust. It is recommended that the integrity of this tank be evaluated by an expert and that the tank be repaired, refurbished, or replaced as needed.
- The digester cluster electrical gear appears to be generally in fair condition, with a light to moderate amount of surface rust present on cabinet and panel surfaces.
- Biosolids processing:
 - Dissolved Air Flootation (DAF) thickeners generally appeared to be functioning adequately. DAF unit 4 was out of service due to a twisted scraper – this should be repaired and the unit returned to service. The polymer feed system serving the DAF building appeared to be in good condition.
 - Belt filter presses and associated equipment were generally in good condition, with the exception of significant amounts of corrosion observed on some drive motors, especially on the fan shrouds. Presses 1 and 2 had mild to moderate corrosion on motors and shrouds, and presses 3, 4, and 8 had shrouds that were corroded through or missing pieces. It is recommended that all corroded fan shrouds be replaced. Also, it was observed that the solids on the top, gravity thickening portion of press 4 did not seem to be dewatering as effectively as the other presses. This press should be evaluated to ascertain if maintenance or repair is needed. The supporting polymer feed system components, including pumps, tanks, piping, and electrical gear, appeared to be in very good condition.
- Load Center 5-6: This facility has one of the two transformers out of service and serves critical components at the NRWWTP. The structure appears to have limited working room and clearance internally. Repair or replacement of this entire load center is critical. WWS staff is in the process finalizing a consultant agreement to address this issue.
- Load center 11-12: This load center appears to be in very good condition.

Plant modifications performed through FY-2013:

- Replacement of liquid Rheostat 5.
- Install drive at clarifier D-3 MOD.
- Repaint the monitoring wells.
- Rehabilitation of plant lift station No.6 (ongoing)

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Plant modifications to be initiated for FY 2013/2014:

- Repair aeration weirs at A-1 and A-2 MOD (ongoing).
- Replacement of boiler No. 6 at north complex (ongoing).
- Replace pump and shredder at No.7 slot (ongoing).
- Replacement of generator No.4 (ongoing).
- Eliminate evaporators at the chlorine facility; change piping and add two (2) scales (ongoing).
- Replacement of cover at P3 Digester (ongoing).
- Replacement of aerator shroud at B-2 Basin (ongoing).
- Replacement of clarifier drive at D-2 and D-3 (ongoing).
- Add skids for chlorine injection system for clarifier rings at A, B and C MOD (ongoing)
- Repaint aerator weirs at A-1 thru A-6 steel structure (ongoing).
- Replacement of 20 underground reuse valves throughout the plant (ongoing).
- Replacement of damaged concrete slab for effluent pump No. 3. Completion of repair of digester P-3.
- Installation of FOG unit in partnership with Chevron
- Headworks gates and screen upgrades
- Re-installation of ocean outfall pump 3

Septage Receiving Facility

The Septage Receiving Facility receives waste from septic tank pump outs, portable toilets, vacuum trucks, grease traps, leachate from landfills, etc. The waste is separated into two categories: liquids and solids. The equipment which must be maintained includes transfer pumps and electrical control panels, a diesel generator set, biofilters and miscellaneous valves.

The Septage Receiving Facility was inspected on April 23, 2014. The facility inclusive of liquid pumps, solids discharge area, liquids discharge area, and office building appear to be in good working condition. Facility staff report that they experience intermittent losses in SCADA

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communication and must issue paper load tickets when this happens. Major upgrades to this facility are planned for 2014 as part of the NRWTP Cogeneration project with Chevron Energy Solutions.

Facility modifications performed in FY-2013:

- None

The proposed modifications to be initiated for FY 2014/2015:

- Demolition of existing equipment, fencing and access ways required (ongoing).
- Installation of aerator grid chamber (ongoing).
- Repair existing septage receiving station, including rehabilitating the wet well, replacement of cover and removal of non-working equipment (ongoing).
- Installation of new biofilter odor control system (ongoing).
- Landscaping and irrigation system improvements (ongoing).

Master Lift Stations

Five Master Lift Stations (MLS 220, 221, 226, 410, and 455) were inspected on April 23, 2014. Lift stations were chosen based on their previous inspection history, with stations representing the longest time since inspection being selected. Three out of five lift stations appeared to be in acceptable condition and operating satisfactorily. Of the remaining two, one station (MLS 226) had an electrical transformer that appeared to be approximately 20 degrees off level, and the other appeared to need operational assessment due to frequent motor starts, stops, and speed changes. At most stations, it was observed that instrumentation/control panels with live electrical wires were left open. This is reportedly due to them overheating when left closed. The underlying cause of the overheating should be investigated and addressed. A summary of the findings at each station is presented below.

MLS 220 This master lift station, a submersible-type station, is generally in good condition. Pumps and motors were mostly submerged during the inspection, but the exposed portions appeared to be in good condition, and no unusual noises or vibrations were noted. According to staff, the base elbow for pump 2 may need to be replaced. The pump discharge piping and rails inside the wetwell appeared to generally in fair condition, with light to moderate corrosion noted. The wetwell liner appeared to be “bubbling” in places, but was generally intact. Valves appeared to be in good condition. The backup power generator appeared to be in

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good condition. Electrical components generally appeared to be in good condition. The concrete slab top and electrical cabinets were generally in good condition.

- MLS 221 This master lift station, a submersible-type station, is generally in fair condition. Pumps and motors were mostly submerged during the inspection, but the exposed portions appeared to be in good condition, and no unusual noises or vibrations were noted. The pump discharge piping inside the wetwell appeared to be moderately to severely corroded and should be assessed for possible replacement. Most of the wetwell liner appears to be missing, and the underlying concrete is beginning to deteriorate – rehabilitation of the wetwell should be considered. Valves appeared to be in good condition; concrete supports for two valves were extended, but the work appears rough and the supports were not re-coated. The support under the third pump's check valve had been chipped out and left with rebar exposed – repair of this support should be completed. The backup power generator appeared to be in good condition. An electrical control panel was observed to be open – the underlying reason for leaving this open should be identified and corrected. Electrical components generally appeared to be in good to fair condition, with the level transmitter flex conduit in need of replacement due to breakage. The building interior and exterior were generally in good condition, but building doors were difficult to operate.
- MLS 226 This master lift station, a submersible-type station, is generally in fair condition. Pumps and motors were mostly submerged during the inspection, but the exposed portions appeared to be in good condition, and no unusual noises or vibrations were noted. Most of the wetwell liner appears to be missing – re-lining of the wetwell should be considered. Valves appeared to be in good condition; concrete supports for valves do not touch (and therefore do not support) the valves currently installed and should be extended or replaced. The backup power generator appeared to be in good condition. An electrical control panel was observed to be open – the underlying reason for leaving this open should be identified and corrected. The electrical transformer for the site was tilted by about 20 degrees – this should be leveled and underground conduit attached to it be checked for possible damage. The building interior and exterior were generally in good condition.
- MLS 410 This master lift station, an inline booster-type station, is generally in good condition. Pumps, motors, and interior station piping were in good condition, with some corrosion present at pump bases. Pump control valves appeared to be in good condition. Other valves were generally in good condition, except for two isolation plug valves on the exterior of the building, which reportedly do not seat

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completely. These valves should be serviced as required to regain full functionality. The backup power generator appeared to be in good condition; however, potential issues with the Automatic Transfer Switch (ATS) have been noticed and should be investigated further. An electrical control panel was observed to be open – the underlying reason for leaving this open should be identified and corrected. The building interior and exterior were generally in good condition.

MLS 455 This master lift station, an inline booster-type station, is generally in fair condition. Pumps, motors, and interior station piping were generally in good physical condition, with some corrosion present at pump bases and pump 2's motor having been removed for maintenance. Moderate corrosion was noted at pump base plates and inside of the pump seal water tank – pump bases should be sanded and recoated and the seal water tank should either be sanded and recoated or replaced. Valves were generally in good condition. Station electrical gear also appeared to be in good condition. The backup power generator appeared to be in good condition. The flow meter pit appeared to be in good condition. An electrical control panel was observed to be open – the underlying reason for leaving this open should be identified and corrected. The building interior and exterior were generally in good condition, except that interior lights were fairly dim.

This MLS appears to have significant operational issues that need to be addressed. During the course of the inspection, both pumps 1 and 3 appeared to “hunt” constantly through a wide range of VFD speeds. Also, pumps started and stopped frequently, with cycle times as low as about two minutes. When operating at low speeds, both pumps 1 and 3 made noises suggestive of potential cavitation. The operation of this station should be reviewed and relevant settings and equipment changed/fixed as needed to achieve acceptable operation.

Section 5 Regional Raw Water Supply

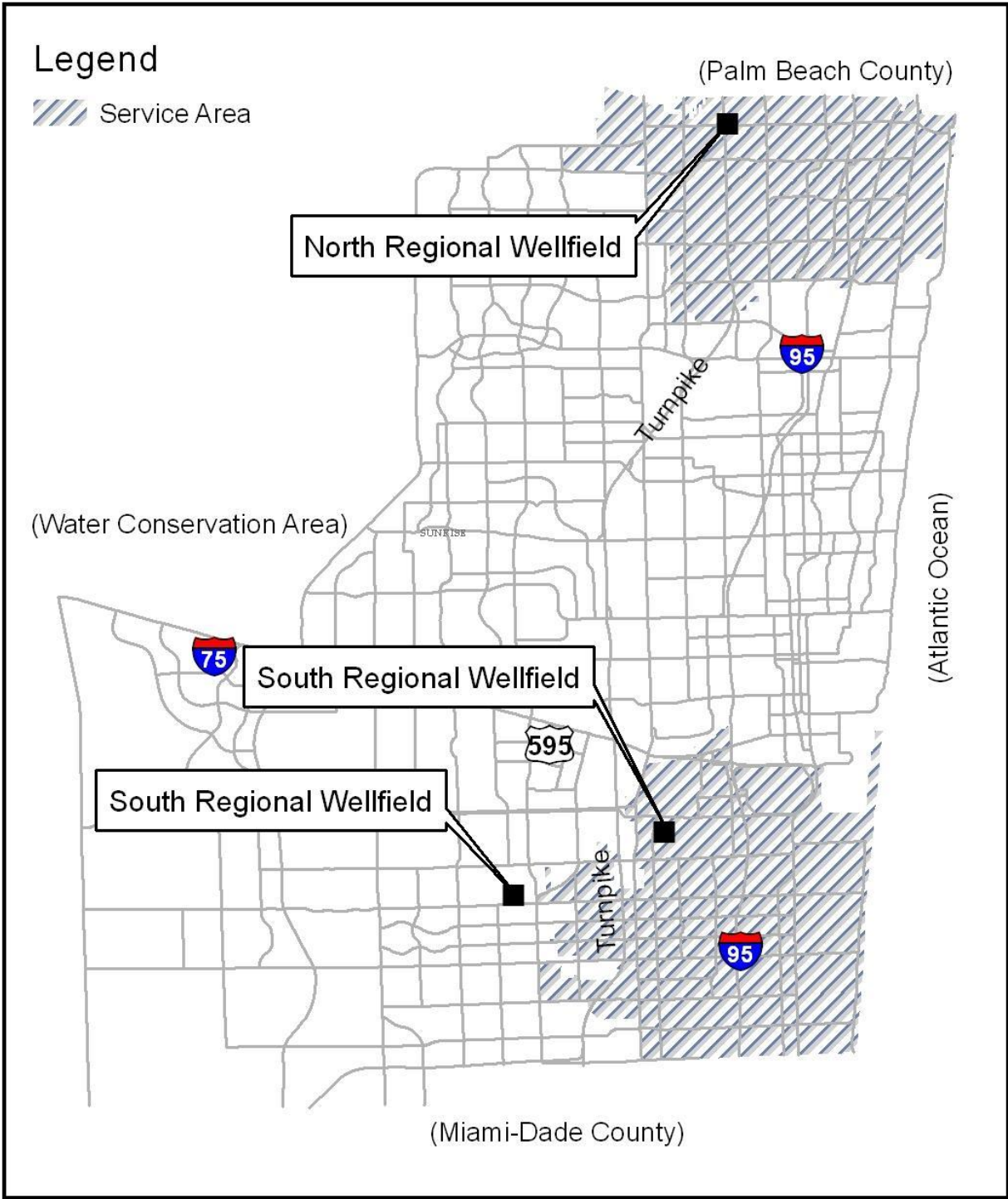
There are currently two wellfields operated by Broward County as part of the regional system, the North Regional Wellfield (NRW) and South Regional Wellfield (SRW). This section describes the regional raw water supply system, including the large users, physical descriptions and permit limitations.

5.1 General Description

The Biscayne Aquifer, currently the County's primary source of drinking water, is subject to saltwater intrusion. In 1986, the County adopted the Regional Raw Water Supply (RRWS) Program, which called for centralized wellfields located further inland to ensure a long term water supply for Broward County. Under the program, new wellfields and raw water delivery systems were financed, constructed and are operated as a regional system for large users. Large users are Dania Beach, Deerfield Beach, Hallandale Beach, Florida Power and Light Corporation, Hollywood and WWS District 2. The wellfields were constructed using general County revenues and the assets were contributed to the Utility. Figure 5-1 depicts the regional wellfield locations and service areas. Physical descriptions of the NRW and the SRW are presented in Tables 5-1 and 5-2.

Section 5 Regional Raw Water Supply

Figure 5-1 Regional Raw Water Service Areas



Section 5 Regional Raw Water Supply

Table 5-1 NRW Physical Descriptions

Wellfield	Well No.	Size (in)	Depth (ft.)	Casing Depth (ft.)	Type of Casing	Normal Yield (GPM)	Capacity (GPM)	Service Status
NRW	1	20	170	112	PVC	1400	1400	ON LINE
NRW	2	20	130	116	PVC	1400	1400	ON LINE
NRW	27	20	130	95	PVC	1400	1400	OFF LINE
NRW	29	20	130	94	PVC	1400	1400	ON LINE
NRW	30	20	121	92	PVC	1400	1400	ON LINE
NRW	31	20	121	92	PVC	1400	1400	ON LINE
NRW	32	20	120	88	PVC	1400	1400	ON LINE
NRW	33	20	121	92	PVC	1400	1400	ON LINE
NRW	45	20	112	94	PVC	1400	1400	ON LINE
NRW	46	20	170	131	PVC	1400	1400	ON LINE

Source: Broward County Water and Wastewater Services

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Table 5-2 SRW Physical Descriptions

Wellfield	Well No.	Size (in)	Depth (ft.)	Casing Depth (ft.)	Type of Casing	Normal Yield (GPM)	Capacity (GPM)	Service Status
SRW	5	20	110	75	PVC	2083	1400	ABANDONED*
SRW	6	20	110	75	PVC	2083	1400	**OFF LINE
SRW	17	12	115	81	PVC	2800	2800	ON LINE
SRW	18	12	140	80	PVC	2800	2800	ON LINE
SRW	19	12	140	80	PVC	2800	2800	ON LINE
SRW	20	12	140	80	PVC	2800	2800	ON LINE
SRW	21	12	140	80	PVC	2800	2800	ON LINE
SRW	22	12	140	80	PVC	2800	2800	ON LINE
SRW	23	12	140	80	PVC	2800	2800	ON LINE
SRW	24	12	140	80	PVC	2800	2800	**OFF LINE

*Abandoned due to saltwater intrusion.

**Out of Service for maintenance.

Source: Broward County Water and Wastewater Services

5.2 North Regional Wellfield

The NRW includes 10, 2-MGD wells and approximately 30,000 linear feet of pipeline, ranging from 12-inches to 48-inches in diameter. A permit application combining the District 2A retail wellfield and NRW permits was approved by the SFWMD and issued in March 2008. The permitted withdrawal capacity of the 2A/NRW is 24.3 MGD on a maximum month basis and 17.5 MGD on an annual average basis. The permit expires in the year 2028. The well casings at the NRW are set in the Biscayne Aquifer at a depth of approximately 100 feet below land surface. The NRW has two emergency generators capable of powering pumps for six wells. Usage data for the NRW are presented in Table 5.3.

Table 5-3 Large User Actual Flow North Regional Raw Water Flow Distribution (1,000 Gallons)

Fiscal year	Deerfield	BC2A	NRWF
FY 2009	216,400	2,280,890	2,497,290
FY 2010	220,694	2,299,487	2,520,181
FY 2011	201,111	2,926,030	3,127,141
FY 2012	200,980	2,567,130	2,768,110
FY 2013	204,231	2,295,427	2,499,658

Source: Broward County Water and Wastewater Services

5.3 South Regional Wellfield

The SRW includes eight 4-MGD wells, one 2-MGD wells and approximately 79,000 linear feet of transmission pipeline, ranging in size from 20-inches to 42-inches in diameter. The SRW has two emergency generators capable of powering pumps for six of the wells (three wells per generator). The remaining wells have connections for a portable generator. The permitted capacity of the SRW is 22.4 MGD on a maximum month basis and 14.2 MGD on an annual average basis. The permit expired in October 2007 (and is currently administratively extended), and the application submitted for permit renewal is under review by the SFWMD. Permit reissuance is expected in the normal course of events. Well 6 was formerly associated with WTP 3A. The well casings at the SRW are set in the Biscayne Aquifer at a depth of approximately 100 feet below land surface. Usage data for the SRW are presented in Table 5-4. All wells in the SRW have PVC casings.

Section 5 Regional Raw Water Supply

Table 5-4 Large User Actual Flow South Regional Raw Water Flow Distribution (1,000 Gallons)

FISCAL YEAR	Hallandale	Hollywood	Dania	FPL	SRWF
FY 2009	1,392,030	1,632,870	348,470	567,210	3,940,580
FY 2010	1,401,787	1,539,507	433,268	479,590	3,854,152
FY 2011	1,316,530	1,634,700	590,960	526,280	4,068,470
FY 2012	1,338,773	1,379,070	677,090	506,214	3,901,147
FY 2013	1,270,864	1,449,876	651,827	582,357	3,954,924

Source: Broward County Water and Wastewater Services

5.4 Contractual Agreements

The contractual agreements with each of the large users are substantially similar. All except Hollywood's do not have an expiration date. The City of Hollywood agreement which has a four-year term with an automatic renewal for four years unless otherwise terminated. The large user agreements provide for a method to charge each user a pro rata share of system operations and maintenance costs. Historical and projected revenues for the raw water system are shown in Table 7-6 and generally represent less than one percent of Utility revenues. As noted, the capital costs of system construction were funded using general County revenues.

5.5 Large Users

The North and South Regional Wellfields serve different areas in Broward County. The NRW serves the City of Deerfield Beach and the County's District 2 WTP. The SRW serves the Cities of Dania Beach, Hollywood, and Hallandale Beach, as well as Florida Power and Light.

5.6 Regional Raw Water Supply Regulations

The volume of raw water withdrawal from the Utility's regional raw water supply wellfields is regulated by the SFWMD. Each wellfield is governed by a water use permit that stipulates the raw water maximum allowable annual and daily withdrawals. These permits are reissued for periods of five to 20 years. The permit for the combined 2A/NRW was issued in March 2008 for a 20-year period. The application for the renewal of the SRW permit has been filed. The Utility has responded to permit application review comments from the SFWMD and has coordinated the review of this application with the raw water permitting needs of the Cities of Hallandale

Section 5 Regional Raw Water Supply

Beach and Dania Beach. Because the SFWMD permit terms and conditions are dependent on the issuance of the Hallandale Beach water use permit, SFWMD has indicated that the SRW permit will not be issued until after the Hallandale Beach permit is issued in the near future.

Monitoring of well pumpage, groundwater levels in proximity to wetlands and saltwater intrusion is conducted to comply with specific limiting conditions of the water use permits. For wells that are in service, the County operating personnel regularly monitor pH, alkalinity, hardness, iron, chloride, color, heterotrophic plate count (HPC), coliforms, quarterly wellfield protection monitoring and annual analysis to comply with the SDWA as well as the FDEP. All water quality regulations are enforced by the FDEP.

5.7 Visual Inspection and Review

North Regional and South Regional Wellfields

Visual inspections of the County's regional wellfields were performed on by Brown and Caldwell on April 28, 2014. The findings of these inspections are summarized below.

North Regional Wellfield

Overall, the NRW appeared to be in good operating condition and in very good to excellent physical condition. Most wells appeared to have been recently painted, and the vaults and surrounding concrete areas pressure washed as part of annual maintenance. A summary of the observed condition of each well is presented below. Two wells were offline at the time of the site visits.

Well 1 Well 1 was generally in excellent condition. Security fencing and locked vaults were intact. The wellhead and associated piping and valves appeared to be in excellent condition. Electrical equipment, including the backup generator serving Wells 1, 2, and 46, was in very good condition. The sump pumps appear to be in operational condition – the well vault showed no obvious evidence of flooding. The emergency generator building interior and exterior were in very good condition.

Well 27 Well 27 was generally in very good condition. Security fencing and locked vaults were intact. The wellhead and associated piping and valves appeared to be in very good condition. Electrical equipment was in very good condition. The sump pumps appear to be in operational condition – the well vault showed no obvious evidence of flooding. This well was temporarily out of service until the 4-log treatment project at the 2A water plant is complete, expected in FY 2014.

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- Well 29 Well 29 was generally in very good condition. Security fencing and locked vaults were intact. The wellhead and associated piping and valves appeared to be in very good condition. Electrical equipment was in very good condition. The sump pumps appear to be in operational condition – the well vault showed no obvious evidence of flooding.
- Well 30 Well 30 was generally in excellent condition. Security fencing and locked vaults were intact. The wellhead and associated piping and valves appeared to be in excellent condition. Electrical equipment was in very good condition. The sump pumps appear to be in operational condition – the well vault showed no obvious evidence of flooding.
- Well 31 Well 31 was generally in excellent condition. Security fencing and locked vaults were intact. The wellhead and associated piping and valves appeared to be in excellent condition. Electrical equipment was in very good condition. The sump pumps appear to be in operational condition – the well vault showed no obvious evidence of flooding.
- Well 32 Well 32 was generally in excellent condition. Security fencing and locked vaults were intact. The wellhead and associated piping and valves appeared to be in excellent condition. Electrical equipment, including the backup generator serving Wells 31, 32, and 33, was in very good condition. The sump pumps appear to be in operational condition – the well vault showed no obvious evidence of flooding. The emergency generator building interior and exterior was in very good condition; however, repair of the roof hatch is required due to observed leakage.
- Well 33 Well 33 was generally in very good condition. Security fencing and locked vaults were intact. The wellhead and associated piping and valves appeared to be in very good condition. Electrical equipment was in very good condition. The sump pumps appear to be in operational condition – the well vault showed no obvious evidence of flooding.
- Well 45 Well 45 was generally in excellent condition. Security fencing and locked vaults were intact. The wellhead and associated piping and valves appeared to be in excellent condition. Electrical equipment was in very good condition. The sump pumps appear to be in operational condition – the well vault showed no obvious evidence of flooding. This well was temporarily out of service for a flow meter replacement, which will be completed in FY 2014.

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Well 46 Well 46 was generally in excellent condition. Security fencing and locked vaults were intact. The wellhead and associated piping and valves appeared to be in excellent condition. Electrical equipment was in very good condition. The sump pumps appear to be in operational condition – the well vault showed no obvious evidence of flooding.

South Regional Wellfield

The SRW was generally in good condition; however, issues were identified that warrant immediate attention. In particular, a gap was noted between the wellhead and its supporting block on well 17, and a fist-sized hole in the vault wall and a potential gap between the wellhead and its supporting block was observed at well 23. Both of these represent a potential path for surface water to enter wells and should be addressed promptly. Well 21 had cracks and fractures in the concrete around the vault door, which should be addressed within a reasonable amount of time. Two wells were off line when the inspections were done.

Well 17 A gap was observed between the wellhead and the concrete base, which represents a potential entry point for surface water – it is recommended that this be repaired promptly. Security fencing and locked vaults were intact. The piping and valves appeared to be in good condition, with some minor corrosion present. Electrical equipment was in good condition. The sump pumps appear to be in operational condition – the well vault showed no obvious evidence of flooding.

Well 18 Well 18 was generally in good condition. Security fencing and locked vaults were intact. The wellhead and associated piping and valves appeared to be in good condition. Electrical equipment was in good condition, including the backup generator serving this well and two adjacent wells. The well vault showed evidence of recent flooding of approximately 12-inches. The sump pumps were recently replaced, which should provide adequate protection against future flooding. Minor grout repair may be needed in the vicinity of the vault hatch. The interior and exterior of the generator building were in good condition.

Well 19 Well 19 was generally in good condition. Security fencing and locked vaults were intact. The wellhead and associated piping and valves appeared to be in good condition, except for a small leak near the first flange adjacent to the wellhead. Electrical equipment appeared to be in good condition. The sump pumps appear to be in operational condition – the well vault showed no obvious evidence of flooding. One of the ladder extension arms was missing and needs to be replaced.

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- Well 20 Well 20 was generally in good condition. Security fencing and locked vaults were intact. The wellhead and associated piping and valves appeared to be in good condition. Electrical equipment had experienced a recent failure, but repairs were underway. The sump pumps appear to be in operational condition – the well vault showed no obvious evidence of flooding. Minor grout repair may be needed in the vicinity of the vault hatch. This well was out of service pending completion of electrical work.
- Well 21 Well 21 was generally in good condition, with an issue at the top of the concrete vault that needs to be addressed. Security fencing and locked vaults were intact. The wellhead and associated piping and valves appeared to be in good condition, except for a pressure gauge that appeared to be reading inaccurately and may need replacement. Electrical equipment was in very good condition. The sump pumps appear to be in operational condition – the well vault showed no obvious evidence of flooding. The vault had cracks and fractures in the concrete around the lid – these should be repaired to limit the potential for water intrusion into the vault.
- Well 22 Well 22 was generally in good to fair condition. Security fencing and locked vaults were intact. The wellhead and associated piping and valves appeared to be in good condition, with light corrosion in places. Electrical equipment was in very good condition. The sump pumps appear to be in operational condition – the well vault showed no obvious evidence of flooding. The vault had some grout missing around the door that needs replacement, an approximately 1/16-inch crack along the bottom, and evidence of ants tunneling through the vault walls. Black widow spiders were also observed in this vault.
- Well 23 Well 23 was generally in good to fair condition. Security fencing and locked vaults were intact. The wellhead appeared to have a possible gap between it and the concrete block that could be a potential path for water intrusion – this should be investigated promptly and repaired if an issue exists. Associated piping and valves appeared to be in good condition, with light corrosion in places. Electrical equipment was in very good condition. The sump pumps appear to be in operational condition – the well vault showed no obvious evidence of flooding. The vault had some grout missing at the corners near the hatch that needs replacement. A large hole (approximately fist-sized) was observed in the side of the vault, which represents a path for water intrusion. This should be repaired immediately.
- Well 24 Well 24 was generally in good condition. Security fencing and locked vaults were intact. The wellhead and associated piping and valves appeared to be in good

Section 5 Regional Raw Water Supply

condition. The well had a spool piece removed and was configured to allow sampling. Electrical equipment was in very good condition. The sump pumps appear to be in operational condition – the well vault showed no obvious evidence of flooding. The grading around the vault does not appear to slope away from the vault – this should be further investigated, and the area around the well re-graded as required.

Section 6

Capital Improvement Program

Section 6 Capital Improvement Program

This section includes descriptions of the five-year Capital Improvement Program (CIP) for the Retail Water and Wastewater Systems and the Regional Wastewater and Water Supply Systems.

6.1 Description of the Capital Improvement Program

As part of the growth management efforts mandated by State law, the County initiated planning efforts to accommodate future growth and compliance with regulatory requirements. The overall plan is periodically updated with the latest revision expected to be completed by the end of 2014. The revision completed in 2004 addresses the need for services and facilities based upon anticipated build-out conditions of the service area in the year 2025. It is noted that the Utility conducts an annual CIP review process wherein all projects are thoroughly vetted, estimated and scheduled. Each review builds upon prior analyses and utilizes new planning data when available. Recent additional planning efforts include completion of the Alternative Water Supply Master Plan and the Effluent Disposal and Reclaimed Water Master Plan. WWS has selected a consulting firm for the new Retail Water and Wastewater Master Plan.

As noted, the Utility develops a five-year CIP recognizing costs associated with the condition of the system, future growth and regulatory requirements. Table 6.1 presents the current CIP categorized by expenditure category. The Board approved the CIP for Fiscal years 2014 through 2018 in September, 2013. The five-year CIP reflects the total estimated project costs for each project, which is expected to be initiated within the five-year plan regardless of the estimated time required to design and complete construction of the project. Projects remain open until all related construction activities are complete. The budgets by capital project type through Fiscal year 2018 are presented in Table 6.2.

Section 6 Capital Improvement Program

Table 6-1 Capital Improvement Program as of September 30, 2013

Capital Budgets	Water Treatment	Water and Sewer Mains	Wastewater Treatment	Regional Transmission	Engineering Services & Misc.	Total
Unspent Prior Budget	\$13,293,112	\$34,360,637	\$92,838,167	\$13,237,936	\$4,777,472	\$158,507,324
2014	3,043,990	32,550,240	29,162,870	6,160,060	3,809,740	74,726,900
2015	37,403,000	16,618,280	83,422,000	1,165,750	3,225,000	141,834,030
2016	1,000,000	9,740,000	10,167,000	15,693,530	2,925,000	39,525,530
2017	300,000	4,890,000	25,847,000	11,727,300	4,550,000	47,314,300
2018	4,260,000	10,891,000	46,007,000	2,963,580	2,900,000	67,021,580
Totals	\$59,300,102	\$109,050,157	\$287,444,037	\$50,948,156	\$22,187,212	\$528,929,664
Five Year CIP Funding:						
Bonds FY 2014-2018	35,000,000	30,000,000	110,000,000	10,000,000	-	\$185,000,000
Cash FY 2014-2018 ¹	10,000,000	48,000,000	37,000,000	10,000,000	20,000,000	125,000,000
Beyond 2018 ²	14,300,100	31,050,160	140,444,040	30,948,160	2,187,210	218,929,670
Totals	\$59,300,100	\$109,050,160	\$287,444,040	\$50,948,160	\$22,187,210	\$528,929,670
¹ Cash reflects net revenues, capital recovery charges, large user contributions, and grants						
² Reflects effects of construction period. It is currently expected that \$310M of the \$528M program will be spent by 2018. Since the construction period extends beyond 2018, the remaining \$219M will be spent in subsequent years.						
Source: Broward County Water and Wastewater Services						

Section 6 Capital Improvement Program

Table 6-2 Capital Projects Budgets by Type Through Fiscal year 2018

Water Treatment	Budget
Water Treatment Plant Expansion	\$49,594,805
Water Treatment Plant IRR ¹ & Misc. Projects	\$6,955,213
Energy Efficiency for Retail Facilities	\$2,750,084
Water Treatment Subtotal	\$59,300,102
Water Distribution and Sewer Collection	
Neighborhood Improvement Program (NIP)	\$17,282,447
Local Utility Improvement Projects (UAZ)	\$34,391,887
Misc. Main Improvements	\$22,175,074
Potable Water Storage Improvements	\$21,688,527
Lift Station Improvements	\$13,512,222
Water Distribution and Sewer Collection Subtotal	\$109,050,157
Wastewater Treatment	
NRWWTP Effluent Disposal /Treatment Enhancements	\$154,756,716
Wastewater Plant IRR ¹ & Misc. Projects	\$131,633,574
NRWWTP Ocean Outfall Improvements	\$1,053,747
Wastewater Treatment Subtotal	\$287,444,037
Regional Transmission	
Master Pump Station Improvements	\$39,161,956
Force Main Extensions/Improvements	\$11,786,200
Regional Transmission Subtotal	\$50,948,156
Engineering/Misc. Services	\$22,187,212
GRAND TOTAL	\$528,929,664

¹ IRR = Improvement, Repair and Replacement

Source: Broward County Water and Wastewater Services

The estimated funding requirements for this five-year period ending Fiscal year 2018 are expected to be met by net revenues, debt proceeds, capital recovery charges, contributions from large users, grants and future borrowings. The Utility currently forecasts cash financing at least 40 percent of the actual funding requirements. Many of the projects and improvements in

Section 6 Capital Improvement Program

the CIP are in the planning stages with cost estimates that are preliminary and contracts have not been awarded. The County plans to prioritize projects as needed to maintain an affordable rate structure. Proposed rates are annually presented to the Board for discussion at an August workshop with action taken at the September budget hearings. Current projections anticipate levelized rate increases of approximately three percent or less annually through Fiscal year 2018. The County estimates it will issue approximately \$250 million in bonds in 2018 (the "Series 2018A Bonds").

The County reviews and updates the CIP annually and includes separate estimates for the Water and Wastewater Systems. The total cost of the CIP could vary from these annual estimates depending upon future demands, regulatory requirements, actual contract awards and other economic factors.

6.2 Retail Water and Wastewater System Improvements

The five-year CIP for the retail water and wastewater systems has the principal objectives of: rehabilitating or replacing water distribution systems and extending sanitary sewers to currently unsewered customers. The estimated cost of these improvements totals approximately \$109 million. The Multi-District Inflow and Infiltration Program is continuing with \$10.5 million budgeted for repairs to the wastewater collection system.

6.3 Water Treatment

The five-year CIP includes projects of approximately \$62 million to improve the retail water treatment plants, which includes \$47 million for the expansion of Water Treatment Plant 1A, and \$7 million for improvement, repair and replacement (IRR) of process equipment and security improvements.

6.4 Neighborhood Improvement Program

The Neighborhood Improvement Program (NIP) was initiated by the County in 1993 to upgrade the infrastructure in what were unincorporated neighborhoods. The improvements include upgrades to the existing water and sewer system, installation of drainage, new pavement, swales and landscaping. The total estimated cost of the program is approximately \$743 million dollars. Approximately \$388 million, or 53 percent of total cost, is for water and sewer upgrades of which approximately \$319 million has been spent to date. The remaining 47 percent of total cost associated with sidewalk, drainage and landscaping improvements is being funded by the County's general fund. A summary of the NIP projects is listed on Table 6.3.

Section 6 Capital Improvement Program

Table 6-3 Summary of Neighborhood Improvement Program as of September 30, 2013

Neighborhood Improvement Project	Total Costs All Improvements ¹	Percent Complete	Bid Packages	Number Completed	Under Const.
North County	\$219,799,697	87%	15	13	2
South County and Riverland Village	117,719,334	100%	17	17	0
North Andrews Gardens	102,691,795	100%	9	9	0
Central County	124,711,020	100%	12	12	0
North Central County	72,111,300	100%	5	5	0
Broadview Estates	32,518,050	100%	2	2	0
Broadview Park	54,976,808	100%	4	4	0
Hillsboro Pines	11,010,000	5%	1	0	0
Twin Lakes South	7,253,725	80%	1	0	1
Program Total Costs	\$742,791,729		66	62	3

¹ Includes costs for water, wastewater, streets, sidewalks, drainage and landscaping improvements. Only water, wastewater and a portion of street costs (\$388M) are funded by the Utility.

Source: Broward County Water and Wastewater Services

The NIP encompasses an area the size of a medium city with 9,335 acres, 92,500 people and 28,555 homes. The planned improvements include 295 miles of roadways, 428 miles of sidewalk and 623 miles of pipeline, which will enable the elimination of 10,607 septic tanks. Construction started in 1996 and is currently scheduled to be completed in 2018. Of the 66 planned bid packages, 62 have been completed and 3 are in construction. The final bid pack, Hillsboro Pines is expected to begin construction in 2015.

6.5 Local Utility Program

WWS began implementing local utility improvement projects by Utility Analysis Zones (UAZ) in mid-2009. Where the NIP included drainage, landscaping and sidewalk improvements, which were paid for from County general funds, the UAZ projects focus solely on water and sanitary sewer improvements. The total cost estimate for these improvements is nearly \$275 million dollars over the next 20 plus years.

6.6 Other Including Mains, Lift Station Improvements and Potable Storage

The CIP includes \$22 million for water and wastewater main improvement projects to address aging water and wastewater lines; increase transmission and distribution capacities, and to extend service to new customers. \$21 million of potable water storage improvements are included for the purpose of replacing existing aging systems and enhancing water storage capacities to meet current and future demands. The CIP also includes \$14 million of retail wastewater lift station rehabilitation projects to increase the reliability of the wastewater collection system and prevent the occurrence of sanitary sewer overflows.

6.7 Regional Wastewater Treatment

Under current regulations, the Utility is required to reduce the nutrient loadings discharged to the ocean outfall between 2009 and 2025, and to eliminate use of the outfall, except as a back-up discharge that is part of a functioning reuse system after December 31, 2025. These were estimated to result in plant process improvement requirements with estimated costs ranging from \$766 million to \$889 million in accordance with the Effluent Disposal Master Plan. With amendment to the Ocean Outfall legislation in 2013, and the potential of sending reclaimed water to Palm Beach County, estimated costs are expected to be substantially reduced to approximately \$170 million. The Utility is currently working on a long-term agreement with Palm Beach County (PBC) to supply bulk reclaimed water to customers in PBC. The County has included approximately \$155 million in the current 5 year CIP to start addressing these improvements to meet the future requirements. Various other system Utility Improvement Repair and Replacement (IRR) projects are budgeted at approximately \$132 million and include digester improvements, grit removal improvements, control center upgrades, general improvements and replacements.

6.8 Regional Wastewater Transmission

The CIP includes a series of master pump station improvements to ensure adequate system capacity, as well as reliability in the regional transmission system. The CIP anticipates investing approximately \$39 million in improvements to the master pumping stations.

Section 7 Financial Conditions

This section describes financial operations of the utility; rates, fees and charges; revenue projections; a comparison of utility service costs with other utilities; and adequacy of insurance coverage.

7.1 Overview of Financial Operations

Operating and general maintenance costs of the retail portion of the Utility are recovered through service charges, connection charges and miscellaneous fees and charges. Capital costs for system development, large maintenance projects and renewal and replacement projects are funded through net revenues, bond proceeds, developer contributions, contributions from other municipalities and capital recovery charges.

User charges and fees are developed by WWS and approved by the Board. The Board has specific legal authority to fix charges and collect rates, fees and charges from its customers and to acquire, construct, finance and operate the Utility. The existing rate structure for retail customers is based on meter size and consumption. The County, as a matter of policy, on an annual basis reviews revenue requirements and institutes required rate increases. WWS rates for Fiscal year 2014 remained the same as Fiscal year 2013. The current retail water and wastewater rates were approved by the Board in September 2012 and became effective October 1, 2013. These rates are presented in Tables 7-1, 7-2 and 7-3. The rate resolutions also address rates for irrigation, reclaimed water, septage and high strength industrial wastewater surcharge, an emergency rate adjustment for water conservation during drought conditions, capital recovery charges per equivalent residential unit (ERU), customer deposits and specific service charges. Capital recovery charges underwrite the investment in additional capacity needed to serve new (additional) customers.

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Table 7-1 Broward County Water and Sewer Monthly Service Costs for a Residential Customer Using 5,000 Gallons per Month

Fiscal Year	Water Fixed Charge ¹	Water Volume Charge	Total Water	% Change From Prev. Year	Sewer Fixed Charge	Sewer Volume Charge	Total Sewer	% Change From Prev. Year	Total Water and Sewer	Total % Change From Prev. Year
2010	12.14	11.75	23.89	3.9%	15.43	14.90	30.33	6.0%	54.22	5.1%
2011	14.20	8.58	22.78	-4.6%	17.44	15.65	33.09	9.1%	55.87	3.0%
2012	14.68	8.89	23.57	3.5%	17.44	16.60	34.04	2.9%	57.61	3.1%
2013 ²	14.89	9.01	23.90	1.4%	17.44	17.15	34.59	1.6%	58.49	1.5%
2014	14.89	9.01	23.90	0.0%	17.44	17.15	34.59	0.0%	58.49	0.0%

¹ Includes customer charge.

² Based on rates adopted by the Board effective October 1, 2012.

Source: Broward County Water and Wastewater Services

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Table 7-2 Broward County Schedule of Retail Rates Minimum Monthly Charges by Customer Class and Meter Size Effective October 1, 2012

Customer Class	Meter Size (inches)	Water (\$)	Wastewater (\$)
Residential Commercial, Municipal and Institutional	5/8" Residential	10.75	17.44
	1" Residential	31.94	24.39
	5/8	16.66	20.37
	1	37.71	63.09
	1 1/2	78.45	125.91
	2	187.08	369.21
	3	496.00	961.30
	4	3,334.47	2,169.64
	6	8,545.46	13,333.15
	8	10,259.22	14,451.73
Sale for Resale	4 or less	3,334.47	-
	6	8,545.46	-
	8	10,259.22	-
	10+	49,723.00	-
Multi-Family and Mobile Home (per unit)	All sizes	8.67	12.60
Hotels and Motels (per unit)	All sizes	5.60	11.09
Recreational Vehicles (per unit)	All sizes	6.52	11.38
Private Fire Protection	All Sizes	114	-
Irrigation	5/8	14.16	-
	1	26.42	-
	1 1/2	77.28	-
	2	179.68	-
	3	431.22	-
	4	1,907.96	-
Reclaimed Water (based on 1,000 GPD demand and 20% discount on capital contribution)	All sizes	6.00	-
¹ Rates for fiscal year 2014 remain the same as for fiscal 2013			
Source: Broward County Water and Wastewater Services			

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Table 7-3 Broward County Schedule of Retail Rates Volume Charge (1,000 Gallons) by Customer Class and Meter Size Effective October 1, 2012¹

Customer Class (all Meter sizes unless noted)	Water		Wastewater		
	Volume (per 1,000 Gals)	Charge (\$)	Volume (per 1,000 Gals)	Charge (\$)	
Residential	0-3	1.39	0 - 15	3.43	
	4-6	2.42	Over 15	No Charge	
	7-12	5.72			
	Over 12	6.94			
Commercial, Municipal and Institutional	0 - 75% of Avg. Consumption	3.47	All Volumes	3.43	
	Over 75% of Avg. Consumption	6.94			
Sale for Resale	Water Treatment Charge	2.2	N/A	-	
	Water Transmission Charge	0.08	N/A	-	
Multi-Family and Mobile Homes (per unit)	0-2	1.39			
	3-4	2.42	0-8	3.43	
	5-6	5.72			
	Over 6	6.94	Over 8	No Charge	
Hotels and Motels (per unit)	0 - 75% of Avg. Consumption	3.47	All Volumes	3.43	
	Over 75% of Avg. Consumption	6.94			
Recreational Vehicles (per unit)	0 - 75% of Avg. Consumption	3.47	All Volumes	3.43	
	Over 75% of Avg. Consumption	6.94			
Private Fire Protection	All Volumes	5.72	N/A	-	
Irrigation					
	5/8" meter	0-8	5.72	N/A	-
		Over 8	6.94	N/A	-
	1" meter	0-22	5.72	N/A	-
		Over 22	6.94	N/A	-
	1 1/2" meter	0-55	5.72	N/A	-
		Over 55	6.94	N/A	-
	2 to 3" meter	0-142	5.72	N/A	-
Over 142		6.94	N/A	-	
Reclaimed Water	All Volumes	0.07	N/A	-	

¹ Rates for fiscal year 2014 remain the same as for fiscal 2012

Source: Broward County Water and Wastewater Services

Since 1994, average residential use of water has decreased from 220 gpd (gallons per day) to 185 gpd. The decrease appears to be the result of ongoing water restrictions and the water conservation initiatives of Broward County and the SFWMD. Further study completed as part of the comprehensive Rate Study completed in fiscal year 2010 has determined that the treatment plant must produce 206 gpd of water to deliver 185 gpd to the average residential customer. Converting this demand to the maximum average daily flow (a factor of 1.33x) yields the requirement of 274 gpd of plant capacity necessary to serve an ERU (equivalent residential unit). Similarly, the ratio of billed water to treated wastewater is 1.13x, which yields the requirement of 209 gpd of wastewater treatment capacity per ERU. The capital recovery charges effective for fiscal year 2013 are \$1,590 and \$2,010 for water and sewer respectively. At the beginning of the NIP projects, the County adopted the policy of not charging for the first ERU for wastewater per customer.

Charges for large users of the NRWWS are defined by the large user agreements, and consist of charges for operation and maintenance costs assessed on the basis of flows, debt service costs assessed on the basis of reserve capacity, and improvement, repair, and replacement fund costs that are assessed as a percentage of other charges. The charges for operation and maintenance costs are adjusted annually to reflect each user's proportionate share of actual costs during the fiscal year.

7.2 Water and Wastewater Rates and Charges

Since 1994, the County has recognized advantages in encouraging retail customers to conserve water. At the time, the County established and has continued to use a rate schedule that sets higher water rates for levels of consumption beyond basic use. As a result of a rate study completed in 2010, an additional rate tier was added. The current rate schedule is composed of four tiers:

- Rates for basic use
- Rates for normal use
- Rates for discretionary use
- Rates for excessive use

As noted in Table 7-1, there was no change in the average monthly residential bill of 5,000 gallons from Fiscal year 2013 to Fiscal year 2014. Tables 7-2 and 7-3 show the minimum monthly fixed charges and volume charges for all customer classes based upon rates approved by the County which went into effect October 1, 2012. A five-year summary of billing volumes is shown in Table 7-4.

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Table 7-4 Retail Water and Wastewater Billing Volumes as of September 30, 2013

(1,000 Gallons)

Fiscal Year Ended 9/30	Treated Retail	Coconut Creek	Treated Water Total ¹	Wastewater Water ¹
2009	7,128,645	1,872,821	9,001,466	4,828,210
2010	6,880,573	1,748,303	8,628,876	4,744,985
2011	6,885,439	1,731,297	8,616,736	4,891,742
2012	6,695,748	1,643,812	8,339,560	4,872,721
2013	6,579,923	1,699,799	8,279,722	4,996,843

¹ Droughts from April 2007 through 2009 resulted in reduced water use due to demand management efforts comprised of water conservation initiatives including year-round lawn irrigation restrictions. Reduced water use may translate to reduced billed wastewater.

Source: Broward County Water and Wastewater Services

In the event additional water restrictions are imposed, the County has instituted an automatic adjustment as noted in Table 7-5 to the water levels at which increased rates are applied to encourage customers to reduce consumption. The automatic rate adjustment was adopted by the Board as a way to maintain the revenues required for operations while water consumption is curtailed. The SFWMD imposes phased restrictions as drought conditions warrant to achieve reduction of water used.

With the automatic adjustment, the higher water rates established for larger consumption levels are applied at lower levels of consumption. The result is that customers who do conserve as required may experience a reduction in their water bills. Conversely, customers who fail to achieve reductions will pay even greater amounts for water consumed than they would otherwise pay without the adjustment. As targeted reductions increase, the associated levels at which increased rates become effective decrease.

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Table 7-5 Automatic Rate Adjustments for Periods of Mandated Water Restrictions

Customer Class and Block	Restrictions Per Unit Per Month (1,000 gallons)		
	Standard	Drought	Extreme Drought
Single Family (all meter sizes)			
First Tier	0-3	0-2	1
Second Tier	4-6	3-5	2-4
Third Tier	7-12	6-9	5-6
Final Tier	Over 12	Over 9	Over 6
Multi-Family (per unit, all meters)			
First Tier	0-2	1	1
Second Tier	3-4	2-3	2
Third Tier	5-6	4-5	3
Final Tier	Over 6	Over 5	Over 3
Irrigation			
5/8" Meter, First Tier	0-8	0-4	0-2
5/8" Meter, Second Tier	Over 85	Over 4	Over 2
1" Meter, First Tier	0-22	0-11	0-5
1" Meter, Second Tier	Over 22	Over 11	Over 5
1 1/2" Meter, First Tier	0-55	0-27	0-14
1 1/2" Meter, Second Tier	Over 55	Over-27	Over 14
2" and Over Meter, First Tier	0-142	0-71	0-35
2" and Over Meter, Second Tier	Over 142	Over 71	Over 35
Commercial, Municipal, Institutional, Hotels, Motels and Recreational Vehicles			
First Tier	0-75%	0-60%	0-45%
Second Tier	Over 75%	Over 60%	Over 45%

Source: Broward County Water and Wastewater Services

The NRWWS large users' rates are reviewed and adjusted annually by the County as part of the budget process. The rates are based on the County's estimation of total costs and total flows. Debt service requirements (including required coverage) for the NRWWS are allocated to each large user in proportion to their reserved capacity. A surcharge of up to 10 percent is added to fund improvements, repairs and replacements to the NRWWS. Currently the surcharge is 5%. These funds are currently maintained separately from the Renewal, Replacement and Improvement Fund established by resolutions of the Board authorizing the issuance of bonds for the Utility (collectively, the "Bond Resolutions") to provide a reserve for the Utility.

Presently, the Renewal, Replacement and Improvement Fund is required by the Bond Resolution to maintain a minimum balance of five percent of the previous year's revenues, or a greater amount if recommended by the Consulting Engineer. Five percent of FY 2013 revenues are approximately \$5.93 million. The current balance in the Renewal, Replacement and Improvement Fund is \$5.93 million, as recommended by Brown and Caldwell.

7.3 Revenue Projections

Annual water and wastewater revenues and expenditures for Fiscal year 2013 are based on actual values from financial statements prepared as of September 30, 2013. Fiscal year 2014 revenues and expenditures have been projected based upon the rates approved by the County, which were implemented October 1, 2012 in conjunction with estimated expenses through Fiscal Year 2014. Revenues for Fiscal years 2014 through 2018 have been based on average annual number of customers, historical average consumption and the retail service rates shown in Table 7-3.

The Utility operates a mature system with limited future growth expected. Growth rates in the retail water and retail wastewater system customer base beginning in Fiscal year 2014 have been estimated at one percent annually for water and three percent annually for wastewater. Operation and Maintenance costs are assumed to increase by an average of two percent annually for both water and wastewater beginning in Fiscal year 2014. Retail rate increases from Fiscal years 2014 through FY 2018 of approximately three percent or less per year for both retail water and wastewater are necessary to meet the projected revenues as presented in Table 7-6 and Table 7-7. The Board has not yet considered these rate increases. Should such rate increases not be approved, coverage would be reduced. The revenue forecast for the large users of the NRWWS have been projected to recover costs as defined under the large user agreement.

Table 7-6 shows historical and projected ratios of large user's (regional and resale) revenues to total revenues. Proposed Series 2018A debt service assumes a 5% interest rate per annum and maturities over a 25 year period, back-loaded to support levelized total debt service payments. In Fiscal year 2013, the total revenues generated by the Utility were sufficient to meet the bond covenant requirement of 120 percent coverage of all debt service obligations. The audited financial statements at September 30, 2013 present the computation of debt service coverage on all outstanding revenue bonds as 1.69. In addition, a Balance Available for Renewal, Replacement and Capital Expenditures of approximately \$22.3 million was generated during Fiscal year 2013. Debt service coverage for Fiscal year 2009 through 2013 and projected values for Fiscal year 2014 through Fiscal year 2018 are presented in Table 7-7.

An estimate of interest income is projected annually from Fiscal year 2014 through Fiscal year 2018. Interest income is generated from three main sources: debt service reserve fund, general reserve fund, and investments of fund balances as permitted under the Bond Resolution.

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	Historical					Projected				
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
	Total Revenues ¹	111,614	111,634	116,474	118,221	122,358	125,000	127,798	133,690	138,551
Large User Revenues (Excluding Broward County)	29,943	31,361	30,660	31,228	32,957	33,000	34,433	35,992	36,853	35,198
Percentage Large User to Total Revenues	26.8%	28.1%	26.3%	26.4%	26.9%	26.4%	26.9%	26.9%	26.6%	24.8%
Regional Raw Water Revenues	1,076	833	820	701	876	800	827	844	861	878
Percentage Regional Raw Water Total Revenues	1.0%	0.7%	0.7%	0.6%	0.7%	0.6%	0.6%	0.6%	0.6%	0.6%
Sale for Resale/Water*	5,044	4,931	5,328	5,520	5,740	5,800	5,800	5,916	6,034	6,155
Percentage Sale for Resale Revenues to Total Revenues	4.5%	4.4%	4.6%	4.7%	4.7%	4.6%	4.5%	4.4%	4.4%	4.3%
¹ Total Revenues do not include interest earned on the construction account.										
* Principally Sales to City of Coconut Creek										
Source: Broward County Water and Wastewater Services										

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Table 7-7 Schedule of Historical and Projected Net Revenues, Debt Service, and Debt Service Coverage (\$1,000)

	Historical					Projected				
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Revenues:										
Water	\$ 42,305	\$ 42,771	\$ 45,114	\$ 43,458	\$ 43,990	\$ 45,000	\$ 45,768	\$ 47,550	\$ 49,236	\$ 51,681
Wastewater	61,640	62,946	64,843	66,249	69,419	71,000	72,532	76,381	79,313	80,136
Other ¹	4,451	4,159	4,947	8,030	8,769	8,650	8,999	9,261	9,504	9,798
Interest Income	3,218	1,758	1,570	793	353	350	498	498	498	498
Total Revenues	\$ 111,614	\$ 111,634	\$116,474	\$118,530	\$122,531	\$125,000	\$127,797	\$133,690	\$138,551	\$142,113
Current Expenses:										
Water Transmission & Distrib	\$ 8,838	\$ 8,962	\$ 8,817	\$ 8,811	\$ 9,043	\$ 9,133	\$ 9,718	\$ 9,913	\$ 10,111	\$ 10,313
Water Source of Supply, Treatment & Pumping	9,961	9,420	9,184	8,702	8,713	8,800	9,364	9,551	9,742	9,937
Wastewater Collection & Transmission	9,751	10,185	9,866	11,169	11,141	11,252	11,973	12,212	12,457	12,706
Wastewater Treatment	15,529	14,955	14,729	15,324	14,936	15,085	16,051	16,372	16,700	17,034
Customer Service	4,134	5,229	5,400	5,499	4,729	4,776	5,082	5,184	5,287	5,393
Administrative/General	16,576	16,736	15,947	14,568	14,813	14,961	15,919	16,238	16,562	16,894
Total Current Expenses	\$ 64,789	\$ 65,487	\$ 63,943	\$ 64,073	\$ 63,375	\$ 64,009	\$ 68,108	\$ 69,470	\$ 70,860	\$ 72,277
Net Revenues	\$ 46,825	\$ 46,147	\$ 52,531	\$ 54,457	\$ 59,156	\$ 60,991	\$ 59,689	\$ 64,220	\$ 67,691	\$ 69,836
Debt Service:										
Senior Lien Debt:										
Series 1988-A Bonds	\$ 2,380	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Series 2003-A Bonds	5,061	5,867	5,868	3,459	1,048	-	-	-	-	-
Series 2003-B Bonds	8,291	9,970	9,970	9,079	8,188	-	-	-	-	-
Series 2005-A Bonds	3,837	3,837	3,837	3,147	2,456	2,456	2,457	2,457	2,457	2,457
Series 2009-A Bonds	5,361	10,324	10,324	10,322	10,325	10,325	10,321	10,328	10,324	10,324
Series 2012-A Bonds	-	-	-	3,219	8,251	8,251	8,252	8,251	8,253	8,253
Series 2012-B Bonds	-	-	-	2,623	5,522	5,522	5,523	5,523	5,523	5,523
Series 2012-C Bonds	-	-	-	283	1,706	10,941	10,945	10,940	10,943	10,943
Series 2016-A Bonds	-	-	-	-	-	-	-	-	-	7,565
Total Debt Service	\$ 24,930	\$ 29,998	\$ 29,999	\$ 32,132	\$ 37,496	\$ 37,495	\$ 37,498	\$ 37,499	\$ 37,500	\$ 45,065
Debt Coverage Senior Lien	1.88	1.54	1.75	1.69	1.58	1.63	1.59	1.71	1.81	1.55

¹ Commencing in fiscal year 2012, other revenues include the customer service charge previously reflected as water revenues.

Source: Broward County Water and Wastewater Services

7.4 Comparison of Utilities Service Costs for Municipalities and the Unincorporated Area in Broward County

Table 7-8 shows the current water and wastewater monthly service charges for residential customers of municipalities and the unincorporated area in the County, as well as Miami-Dade and Palm Beach Counties.

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Table 7-8 Comparative Rate Survey as of 12/31/2013			
(Based On Usage of 5,000 Gallons Per Month for a 5/8" meter)			
Utility	Water	Sewer	Total
Davie	35.62	66.45	102.07
Dania Beach	35.00	58.82	93.82
Sunrise (outside City)	42.19	51.48	93.67
Wilton Manors	50.80	40.42	91.22
Oakland Park	43.28	39.79	83.07
Hollywood	26.93	54.27	81.20
Sunrise (inside City)	33.73	41.17	74.90
Parkland	23.56	49.76	73.32
Margate (outside City)	35.13	35.75	70.88
North Lauderdale	27.91	40.80	68.71
Average Water & Sewer for Broward	28.94	37.63	66.57
Coconut Creek	37.23	28.55	65.78
Cooper City	25.94	39.36	65.30
Pompano Beach (outside City)	30.10	32.19	62.29
Tamarac	20.71	40.62	61.33
Hallandale Beach	24.36	34.76	59.12
Miramar	25.89	32.95	58.84
Broward County (WWS)	23.90	34.59	58.49
NSID	31.26	26.68	57.94
Royal Utility	26.14	30.87	57.01
Margate (inside City)	28.11	28.60	56.71
Coral Springs	19.21	36.59	55.80
Deerfield Beach	28.25	24.53	52.78
Plantation	19.65	32.30	51.95
Fort Lauderdale	19.39	32.49	51.88
Lauderhill	19.03	31.87	50.90
CSID	25.01	25.01	50.02
Pompano Beach (inside City)	24.08	25.76	49.84
Pembroke Pines	22.62	26.19	48.81
Water Only			
Hillsboro	34.20		34.20
Sewer Only			
Pembroke Park		50.33	50.33
Lauderdale by the sea		35.88	35.88
Tri-County Utilities			
Palm Beach County	22.69	24.68	47.37
Miami Dade County	9.32	18.53	27.86

7.5 Insurance Coverage

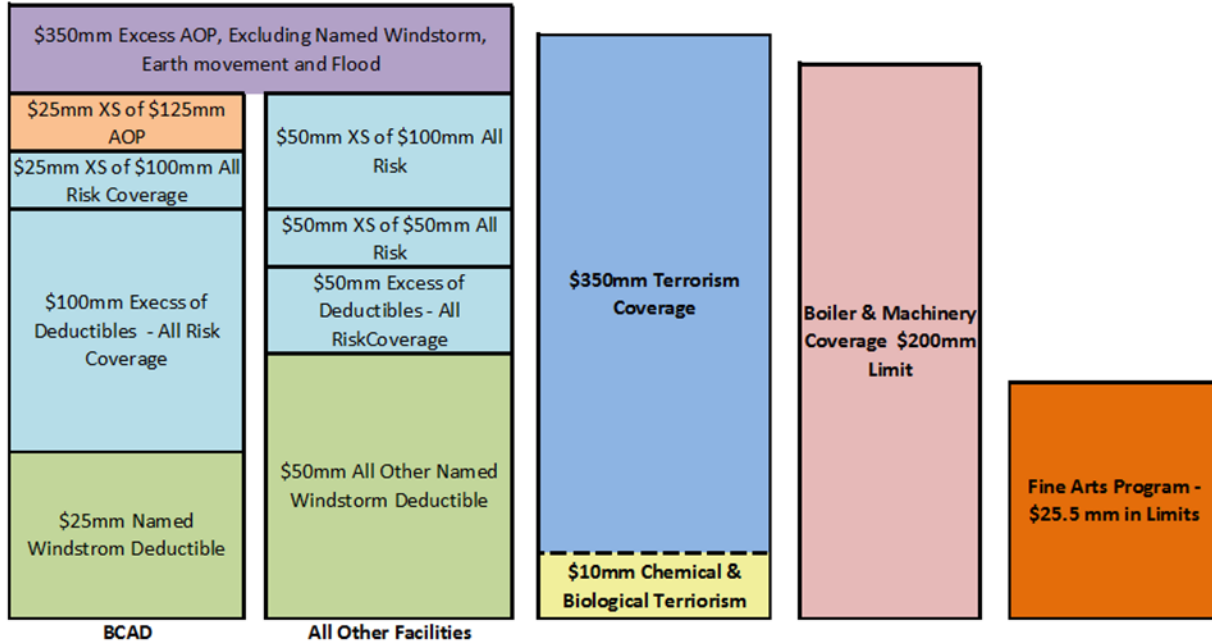
The bond covenants require that customary insurance be carried on the physical assets of the system. The property insurance carried by WWS on its physical assets is part of a County-wide policy. The term of the present policy is from February 1, 2013 to February 1, 2014.

During fiscal year 2013, Broward County decided to make a change in the structure of its property insurance program. At the beginning of the fiscal year, Broward County's primary property insurer was Factory Mutual Insurance Company aka FM Global, as had been the case for over thirty years. Broward County was working with FM Global for several years on developing and implementing a County-wide wind loss mitigation program aimed at hardening major County facilities to withstand a Category 3 hurricane.

In February 2013, Broward County decided to end its long-term relationship with FM Global, and opted for a multi-tiered, multi carrier property insurance program. The new program shares the risk among some twenty-five insurance companies (carriers) rather than depending upon the financial stability of a single one. Furthermore, should a carrier(s) either decide to no longer cover risks in Florida or have a financial downgrade, they can easily be replaced by another. Insurance carriers involved with Broward County's property program include Lexington, Lloyds of London, Swiss Re, and Westchester to name a few. Global Risk Consultants was selected to continue Broward County's wind loss mitigation program. With the help of their engineers, the County continues to review its buildings for hardening opportunities.

Under the new multi-tiered and multi-carrier program, Broward County decided to split its property program into two distinct and separate towers of insurance; one for Broward County Aviation Department (BCAD) and the other for the remainder of Broward County facilities including WWS. The BCAD tower has an All Risk including Named Windstorm limit of \$125 million per occurrence and carries a Named Windstorm deductible of \$25 million per occurrence. The remainder of Broward County property is covered under a \$150 million per occurrence limit tower that covers All Risk including Named Windstorm and carries a \$50 million per occurrence deductible. Both towers carry additional All Other Perils (AOP) limits (excluding Named Windstorm, Earth Movement and Flood) of \$350 million per occurrence. AOP losses under both towers carry a deductible of \$250,000 per occurrence. Please refer to Figure 7-1 below.

Figure 7-1 Broward County Insurance Towers



This new property program saved Broward County over \$4 million in premium or approximately 16% compared to the prior year. WWS's insured assets comprise 12.6% of Broward County's assets and by extension WWS pays approximately 12.6% of Broward County property premium. This translates to a savings for WWS of approximately \$600,000 in renewal costs with no loss of coverage. To put this into perspective, Broward County incurred this savings at a time when property insurance premiums in the Southeastern United States were rising from between 1% and 30% according to the Council of Insurance Agents and Brokers¹.

It is anticipated that a softening of the Catastrophic Property marketplace will continue into 2013 and 2014 as long as there are no major catastrophic losses throughout the world as has been the case since early 2011. The State of Florida has been fortunate to avoid any major hurricanes making landfall since Hurricane Wilma in 2005. The last major hurricane to hit the United States was Hurricane Ike in 2008. In 2012, Super Storm Sandy hit the northeast corridor with what turned out to be mostly flood losses. That part of the country has actually seen a somewhat hardening property marketplace since Sandy hit the area.

It is anticipated that if we continue to avoid any major catastrophic events, natural or otherwise, that there will be a continuing softening of the Catastrophic Property marketplace in Southeastern Florida. That being the case, Broward County will be looking to potentially develop

¹ 1-10% in 72% of accounts, 10-20% in 23% of accounts

<http://www.ciab.com/WorkArea/DownloadAsset.aspx?id=3901&libID=3923>

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a similar stand-alone insurance tower for WWS as it did for BCAD. Assuming there are continued premium savings and no reduction in coverage or limits, this type of alternative might be a strong one to consider.

The four major aboveground water and wastewater facilities and their estimated value as of February, 2013 are as follows:

Table 7-9 Estimated Value of Aboveground Water and Wastewater Facilities	
Facility	FY 2013 Estimated Bldg. Value (\$1,000s)
NRWWTP Complex	\$750,000
Water Treatment Plant 2 A	\$ 80,000
Water Treatment Plant 1 A	\$ 64,000
3 A Repump Station	\$ 15,000

The level of coverage (less deductible) is sufficient to fund the loss of the single most expensive asset, the NRWWTP Complex; although the potential for the complete destruction of this facility is minimal. Any losses in excess of the coverage amount would have to be covered by the County through its own resources or through federal or state emergency management assistance.

Appendix A

Table A-1
Water Production, Wastewater Treatment, and Regional Raw Water
(Million Gallons)

	FY-2004	FY-2005	FY-2006	FY-2007	FY-2008	FY-2009	FY-2010	FY-2011	FY-2012	FY-2013
Water Production										
Plant 1A	3,158	3,210	3,147	2,977	3,059	2,835	2,865	2,635	2,672	2,613
Plant 1B	0	0	0	0	0	0	0	0	0	0
Plant 2A	5,913	5,752	5,568	5,179	4,599	4,571	4,555	4,572	4,259	4,444
Plant 3A	0	0	0	0	0	0	0	0	0	0
Plant 3B	0	0	0	0	0	0	0	0	0	0
Plant 3C	0	0	0	0	0	0	0	0	0	0
Broadview	0	0	0	0	0	0	0	0	0	0
Purchased Water From Municipality	2,571	2,831	2,568	2,608	2,486	2,597	2,203	2,204	2,187	2,390
Total Water Production	11,642	11,793	11,283	10,764	10,143	10,003	9,623	9,411	9,118	9,447
Wastewater Treatment										
North Regional WWTP	24,841	25,807	25,110	24,257	25,156	23,793	23,852	21,762	25,989	24,777
WW Flows to Hlwd. Regional Treatment	926	913	988	967	1,053	1,162	1,069	958	1,158	1,142
Total Wastewater Treatment	25,767	26,720	26,098	25,224	26,209	24,955	24,921	22,720	27,147	25,919
Regional Raw Water										
	6,247	5,668	6,597	6,795	7,023	6,438	6,374	7,196	6,669	6,455
Notes:										
1. Water for 1B and Broadview produced by 1A.										
2. Water for 3B/3C purchased from Hollywood (after October 15, 1996).										
Source: Broward County Water and Wastewater Services										

Table A - 2
Average Number of Accounts
As of September 30, 2013

Consumer & Meter Size (inches)	WATER			SEWER		
	Number of Units	Number of Accounts	Average Consumption per Month (1,000 Gallons)	Number of Units	Number of Accounts	Average Consumption per Month (1,000 Gallons)
Residential Single Family						
5/8"	46,179	46,153	230,806	40,368	40,354	200,827
1"	1,790	1,757	24,718	1,843	1,811	43,679
1 1/2"	72	72	1,881	179	179	12,080
2"	2	2	251	31	31	1,093
TPK Residential Single Family						
5/8"	28	11	23	26	9	22
1 1/2"	137	3	309	36	1	8
2"	171	2	181	275	1	1,184
Residential Multi-Family, Hotel & RVs	33,039	2,078	123,365	31,646	1,802	116,425
Commercial						
5/8"	2,719	2,718	12,851	1,875	1,875	9,637
1"	1,457	1,401	16,766	725	722	12,165
1 1/2"	693	691	23,251	539	537	17,835
2"	627	627	49,340	450	450	43,788
3"	55	55	5,820	16	16	4,684
4"	10	10	16,852	8	8	5,450
6"	8	8	10,161	1	1	1,472
Irrigation						
5/8"	301	301	1,878	2	2	4
1"	291	291	4,694	-	-	-
1 1/2"	213	213	10,662	-	-	-
2"	133	133	14,213	-	-	-
Sale for Resale						
10"	3	3	141,650	-	-	-
TOTAL	87,928	56,529	689,673	78,020	47,799	470,352

Source: Broward County Water and Wastewater Services

**Table A-3
Broward County Water and Wastewater Services
Retail Water & Wastewater
Customer Average Monthly Demand & Revenues
As of September 30, 2013**

Revenue Class	Water			Wastewater		
	Demand	Revenue		Demand	Revenue	
	Total 1,000 Gal	\$ Total	\$ Per 1,000 Gal	Total 1,000 Gal	\$ Total	\$ Per 1,000 Gal
Residential Single Family	258,170	1,314,229	5.09	209,689	1,468,789	7.00
Residential Multi Family	110,864	558,351	5.04	99,802	689,229	6.91
Commercial	147,840	1,075,946	7.28	106,909	773,624	7.24
Sale for Resale	141,650	471,285	3.33	N/A	N/A	N/A
Irrigation	31,447	245,044	7.79	N/A	N/A	N/A
Total	689,971	3,664,854	5.31	416,401	2,931,641	7.04

Source: Broward County Water and Wastewater Services

Table A-4
WATER & WASTEWATER SERVICES
ACTIVITY BASED COSTING REPORT
FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2013

RETAIL WATER	Wellfields	Treatment	Purchased Water	Distribution	Total Water
PERSONAL SERVICES	245,305	2,659,882	-	1,468,072	4,373,259
OPERATING MATERIAL	30,012	497,368	-	329,156	856,535
OTHER MATERIAL	-	32,337	-	1,269	33,606
UTILITIES-OTHER	-	591	-	14,901	15,492
ELECTRIC	20,830	810,490	-	325,411	1,156,731
TREAT/TRANS	-	-	-	-	-
PURCHASED WATER	-	-	5,295,475	-	5,295,475
RENTAL/LEASES	-	886	-	667	1,553
MOTOR POOL	-	271,125	-	103,332	374,458
CONTRACT SERVICE	-	273,454	-	378,929	652,383
OTHER	12,211	138,331	-	203,422	353,965
EDUCATIONAL COURSES	-	5,762	-	4,977	10,739
COMPUTER MAINTENANCE	-	-	-	-	-
TRAVEL	-	-	-	-	-
OTHER CHEMICALS	-	929,009	-	35,179	964,188
CHEMICALS CHLORINE	-	-	-	8,406	8,406
CHEMICALS LIME	443	1,235,430	-	-	1,235,873
SUBTOTAL	308,800	6,854,666	5,295,475	2,873,722	15,332,663
<u>OPERATING COST RECLASS</u>					
ONE CALL	-	-	-	137,070	137,070
PAINT SHOP	-	64,549	-	-	64,549
HEAVY EQUIPMENT	-	-	-	-	-
SUBTOTAL	-	64,549	-	137,070	201,618
<u>ALLOCATE:</u>					
SECTION ADMIN.	1,347	28,057	-	8,704	38,108
DIVISION ADMINISTRATION	15,211	337,646	260,844	141,553	755,254
SUBTOTAL DIRECT OVERHEAD	16,558	365,703	260,844	150,257	793,363
TOTAL	\$ 325,358	\$ 7,284,919	\$ 5,556,318	\$ 3,161,049	\$ 16,327,644

**Table A - 4.1
WATER & WASTEWATER SERVICES
ACTIVITY BASED COSTING REPORT
FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2013**

ACTIVITY - Retail Wellfields	District One			District Two			Total		
	Operations	Maintenance	Total O & M	Operations	Maintenance	Total O & M	Operations	Maintenance	Total O & M
PERSONAL SERVICES	-	18,236	18,236	-	227,069	227,069	-	245,305	245,305
OPERATING MATERIAL	-	28,642	28,642	-	1,369	1,369	-	30,012	30,012
OTHER MATERIAL	-	-	-	-	-	-	-	-	-
UTILITIES-OTHER	-	-	-	-	-	-	-	-	-
ELECTRIC	-	-	-	20,830	-	20,830	20,830	-	20,830
TREAT/TRANS	-	-	-	-	-	-	-	-	-
PURCHASED WATER	-	-	-	-	-	-	-	-	-
RENTAL/LEASES	-	-	-	-	-	-	-	-	-
MOTOR POOL	-	-	-	-	-	-	-	-	-
CONTRACT SERVICE	-	-	-	-	-	-	-	-	-
OTHER	-	10,436	10,436	-	1,775	1,775	-	12,211	12,211
EDUCATIONAL COURSES	-	-	-	-	-	-	-	-	-
COMPUTER MAINTENANCE	-	-	-	-	-	-	-	-	-
TRAVEL	-	-	-	-	-	-	-	-	-
OTHER CHEMICALS	-	-	-	-	-	-	-	-	-
CHEMICALS CHLORINE	-	-	-	-	-	-	-	-	-
CHEMICALS LIME	-	-	-	443	-	443	443	-	443
SUBTOTAL	-	57,314	57,314	21,272	230,213	251,485	21,272	287,528	308,800
<u>OPERATING COST RECLASS</u>									
ONE CALL	-	-	-	-	-	-	-	-	-
PAINT SHOP	-	-	-	-	-	-	-	-	-
HEAVY EQUIPMENT	-	-	-	-	-	-	-	-	-
SUBTOTAL	-	-	-	-	-	-	-	-	-
<u>ALLOCATE:</u>									
SECTION ADMIN.	-	205	205	97	1,046	1,143	97	1,251	1,347
DIVISION ADMINISTRATION	-	2,823	2,823	1,048	11,340	12,388	1,048	14,163	15,211
SUBTOTAL DIRECT OVERHEAD	-	3,028	3,028	1,144	12,386	13,530	1,144	15,414	16,558
TOTAL	\$ -	\$ 60,342	\$ 60,342	\$ 22,417	\$ 242,599	\$ 265,016	\$ 22,417	\$ 302,941	\$ 325,358

**Table A - 4.2
WATER & WASTEWATER SERVICES
ACTIVITY BASED COSTING REPORT
FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2013**

OPERATION AND MAINTENANCE EXPENSES:	ACTIVITY - Retail Water Treatment									ACTIVITY - Purchased Water
	WTP 1-A			WTP 2-A			Total Treatment			
	Operations	Maintenance	Total O & M	Operations	Maintenance	Total O & M	Operations	Maintenance	Total O & M	
PERSONAL SERVICES	876,088	600,734	1,476,822	715,175	467,885	1,183,060	1,591,263	1,068,619	2,659,882	-
OPERATING MATERIAL	9,749	278,022	287,771	12,909	196,688	209,597	22,658	474,709	497,368	-
OTHER MATERIAL	11,527	2,126	13,653	14,137	4,547	18,684	25,664	6,673	32,337	-
UTILITIES-OTHER	591	-	591	-	-	-	591	-	591	-
ELECTRIC	358,311	-	358,311	452,179	-	452,179	810,490	-	810,490	-
TREAT/TRANS	-	-	-	-	-	-	-	-	-	-
PURCHASED WATER	-	-	-	-	-	-	-	-	-	5,295,475
RENTAL/LEASES	366	426	791	95	-	95	460	426	886	-
MOTOR POOL	78,439	62,941	141,380	94,963	34,781	129,745	173,403	97,723	271,125	-
CONTRACT SERVICE	13,907	82,690	96,597	34,114	142,743	176,857	48,021	225,433	273,454	-
OTHER	138,947	(163,112)	(24,166)	133,056	29,441	162,497	272,003	(133,671)	138,331	-
EDUCATIONAL COURSES	1,724	328	2,052	2,044	1,666	3,710	3,768	1,994	5,762	-
COMPUTER MAINTENANCE	-	-	-	-	-	-	-	-	-	-
TRAVEL	-	-	-	-	-	-	-	-	-	-
OTHER CHEMICALS	384,849	-	384,849	544,160	-	544,160	929,009	-	929,009	-
CHEMICALS CHLORINE	-	-	-	-	-	-	-	-	-	-
CHEMICALS LIME	435,533	-	435,533	799,897	-	799,897	1,235,430	-	1,235,430	-
SUBTOTAL	2,310,032	864,155	3,174,187	2,802,729	877,751	3,680,480	5,112,761	1,741,905	6,854,666	5,295,475
OPERATING COST RECLASS										
ONE CALL	-	-	-	-	-	-	-	-	-	-
PAINT SHOP	-	22,517	22,517	-	42,032	42,032	-	64,549	64,549	-
HEAVY EQUIPMENT	-	-	-	-	-	-	-	-	-	-
SUBTOTAL	-	22,517	22,517	-	42,032	42,032	-	64,549	64,549	-
ALLOCATE:										
SECTION ADMIN.	8,249	3,086	11,335	12,734	3,988	16,722	20,983	7,074	28,057	-
DIVISION ADMINISTRATION	113,787	42,566	156,354	138,056	43,236	181,293	251,844	85,803	337,646	260,844
SUBTOTAL DIRECT OVERHEAD	122,036	45,652	167,689	150,791	47,224	198,015	272,827	92,876	365,703	260,844
TOTAL	\$ 2,432,068	\$ 932,324	\$ 3,364,392	\$ 2,953,520	\$ 967,007	\$ 3,920,526	\$ 5,385,588	\$ 1,899,330	\$ 7,284,919	\$ 5,556,318

Table A - 4.3
WATER & WASTEWATER SERVICES
ACTIVITY BASED COSTING REPORT
FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2013

ACTIVITY -Distribution	District One			District Two			District Three			Total Distribution		
	Operations	Maintenance	Total O & M	Operations	Maintenance	Total O & M	Operations*	Maintenance	Total O & M	Operations	Maintenance	Total O & M
PERSONAL SERVICES	-	214,247	214,247	-	214,795	214,795	668,718	370,312	1,039,030	668,718	799,354	1,468,072
OPERATING MATERIAL	-	111,569	111,569	-	53,334	53,334	6,618	157,635	164,253	6,618	322,538	329,156
OTHER MATERIAL	-	-	-	-	-	-	1,269	-	1,269	1,269	-	1,269
UTILITIES-OTHER	-	-	-	-	-	-	14,901	-	14,901	14,901	-	14,901
ELECTRIC	143,854	-	143,854	-	-	-	181,557	-	181,557	325,411	-	325,411
TREAT/TRANS	-	-	-	-	-	-	-	-	-	-	-	-
PURCHASED WATER	-	-	-	-	-	-	-	-	-	-	-	-
RENTAL/LEASES	-	-	-	-	-	-	667	-	667	667	-	667
MOTOR POOL	-	-	-	-	-	-	103,332	-	103,332	103,332	-	103,332
CONTRACT SERVICE	-	117,260	117,260	-	122,321	122,321	1,498	137,850	139,348	1,498	377,430	378,929
OTHER	-	126,924	126,924	-	91,027	91,027	(213,256)	198,728	(14,528)	(213,256)	416,678	203,422
EDUCATIONAL COURSES	-	-	-	-	-	-	4,977	-	4,977	4,977	-	4,977
COMPUTER MAINTENANCE	-	-	-	-	-	-	-	-	-	-	-	-
TRAVEL	-	-	-	-	-	-	-	-	-	-	-	-
OTHER CHEMICALS	-	-	-	-	-	-	35,179	-	35,179	35,179	-	35,179
CHEMICALS CHLORINE	-	-	-	-	-	-	8,406	-	8,406	8,406	-	8,406
CHEMICALS LIME	-	-	-	-	-	-	-	-	-	-	-	-
SUBTOTAL	143,854	570,000	713,854	-	481,476	481,476	813,867	864,525	1,678,391	957,721	1,916,001	2,873,722
OPERATING COST RECLASS												
ONE CALL	47,362	-	47,362	47,964	-	47,964	41,743	-	41,743	137,070	-	137,070
PAINT SHOP	-	-	-	-	-	-	-	-	-	-	-	-
HEAVY EQUIPMENT	-	-	-	-	-	-	-	-	-	-	-	-
SUBTOTAL	47,362	-	47,362	47,964	-	47,964	41,743	-	41,743	137,070	-	137,070
ALLOCATE:												
SECTION ADMIN.	514	2,035	2,549	-	2,188	2,188	880	3,087	3,967	1,394	7,310	8,704
DIVISION ADMINISTRATION	7,086	28,077	35,163	-	23,717	23,717	40,089	42,585	82,674	47,175	94,378	141,553
SUBTOTAL DIRECT OVERHEAD	7,600	30,112	37,712	-	25,904	25,904	40,969	45,672	86,641	48,569	101,688	150,257
TOTAL	\$ 198,816	\$ 600,112	\$ 798,929	\$ 47,964	\$ 507,380	\$ 555,345	\$ 896,579	\$ 910,197	\$ 1,806,776	\$ 1,143,359	\$ 2,017,689	\$ 3,161,049

*includes Underground

**Table A - 4.4
WATER & WASTEWATER SERVICES
ACTIVITY BASED COSTING REPORT
FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2013**

ACTIVITY -Collection	District One			District Two			District Three			Total Collection		
	Operations	Maintenance	Total O & M	Operations	Maintenance	Total O & M	Operations*	Maintenance	Total O & M	Operations	Maintenance	Total O & M
PERSONAL SERVICES	-	165,109	165,109	-	158,143	158,143	269,949	46,032	315,981	269,949	369,285	639,234
OPERATING MATERIAL	-	45,517	45,517	-	22,997	22,997	25,877	12,605	38,483	25,877	81,120	106,997
OTHER MATERIAL	-	-	-	-	-	-	1,116	-	1,116	1,116	-	1,116
UTILITIES-OTHER	-	-	-	-	-	-	3,735,146	-	3,735,146	3,735,146	-	3,735,146
ELECTRIC	-	-	-	1,347	-	1,347	-	-	-	1,347	-	1,347
TREAT/TRANS	-	-	-	-	-	-	-	-	-	-	-	-
PURCHASED WATER	-	-	-	-	-	-	-	-	-	-	-	-
RENTAL/LEASES	-	-	-	-	-	-	-	-	-	-	-	-
MOTOR POOL	-	-	-	-	-	-	103,621	-	103,621	103,621	-	103,621
CONTRACT SERVICE	-	74,678	74,678	-	48,912	48,912	801	189,232	190,033	801	312,822	313,623
OTHER	-	105,873	105,873	-	105,921	105,921	(308,254)	41,765	(266,490)	(308,254)	253,559	(54,695)
EDUCATIONAL COURSES	-	-	-	-	-	-	-	-	-	-	-	-
COMPUTER MAINTENANCE	-	-	-	-	-	-	2,146	-	2,146	2,146	-	2,146
TRAVEL	-	-	-	-	-	-	-	-	-	-	-	-
OTHER CHEMICALS	-	-	-	-	-	-	-	-	-	-	-	-
CHEMICALS CHLORINE	-	-	-	-	-	-	-	-	-	-	-	-
CHEMICALS LIME	-	-	-	-	-	-	-	-	-	-	-	-
SUBTOTAL	-	391,178	391,178	1,347	335,974	337,321	3,830,402	289,634	4,120,036	3,831,749	1,016,786	4,848,534
ALLOCATE:												
SECTION ADMIN.	-	1,397	1,397	6	1,526	1,533	13,338	1,034	14,372	13,344	3,958	17,302
DIVISION ADMINISTRATION	-	19,269	19,269	66	16,549	16,616	188,677	14,267	202,944	188,744	50,085	238,829
ONE CALL	29,702	-	29,702	30,103	-	30,103	15,654	-	15,654	75,458	-	75,458
PAINT SHOP	-	-	-	-	-	-	-	-	-	-	-	-
HEAVY EQUIPMENT	-	-	-	-	-	-	-	-	-	-	-	-
SUBTOTAL DIRECT OVERHEAD	29,702	20,665	50,367	30,176	18,076	48,251	217,669	15,301	232,970	277,546	54,042	331,589
TOTAL	\$ 29,702	\$ 411,843	\$ 441,545	\$ 31,522	\$ 354,050	\$ 385,572	\$ 4,048,071	\$ 304,935	\$ 4,353,006	\$ 4,109,295	\$ 1,070,828	\$ 5,180,123

* includes Underground

**Table A - 4.5
WATER & WASTEWATER SERVICES
ACTIVITY BASED COSTING REPORT
FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2013**

ACTIVITY -Lift Stations	District One			District Two			District Three			Field Support	Total Lift Stations		
	Operations	Maintenance	Total O & M	Operations	Maintenance	Total O & M	Operations	Maintenance	Total O & M		Operations	Maintenance	Total O & M
PERSONAL SERVICES	-	238,027	238,027	-	431,597	431,597	-	256,621	256,621	336,462	336,462	926,246	1,262,707
OPERATING MATERIAL	-	153,053	153,053	-	643,993	643,993	-	179,074	179,074	35,334	35,334	976,120	1,011,454
OTHER MATERIAL	-	-	-	-	-	-	-	-	-	37,805	37,805	-	37,805
UTILITIES-OTHER	2,259	-	2,259	2,399	-	2,399	-	-	-	-	4,658	-	4,658
ELECTRIC	170,692	-	170,692	171,728	-	171,728	99,171	-	99,171	-	441,592	-	441,592
TREAT/TRANS	-	-	-	-	-	-	-	-	-	-	-	-	-
PURCHASED WATER	-	-	-	-	-	-	-	-	-	-	-	-	-
RENTAL/LEASES	-	-	-	-	-	-	-	-	-	458	458	-	458
MOTOR POOL	-	-	-	-	-	-	-	-	-	171,283	171,283	-	171,283
CONTRACT SERVICE	-	164,404	164,404	-	155,598	155,598	-	63,352	63,352	15,231	15,231	383,354	398,585
OTHER	273	152,576	152,848	1,963	253,925	255,887	1,565	165,617	167,182	(532,790)	(528,990)	572,117	43,127
EDUCATIONAL COURSES	-	-	-	-	-	-	-	-	-	-	-	-	-
COMPUTER MAINTENANCE	-	-	-	-	-	-	-	-	-	6,241	6,241	-	6,241
TRAVEL	-	-	-	-	-	-	-	-	-	-	-	-	-
OTHER CHEMICALS	-	-	-	-	-	-	-	-	-	-	-	-	-
CHEMICALS CHLORINE	-	-	-	-	-	-	-	-	-	-	-	-	-
CHEMICALS LIME	-	-	-	-	-	-	-	-	-	-	-	-	-
SUBTOTAL	173,224	708,060	881,284	176,090	1,485,113	1,661,203	100,736	664,664	765,401	70,023	520,074	2,857,837	3,377,910
ALLOCATE:													
SECTION ADMIN.	619	2,528	3,147	800	6,748	7,548	360	2,373	2,733	-	1,778	11,650	13,428
DIVISION ADMINISTRATION	8,533	34,878	43,410	8,674	73,154	81,827	4,962	32,740	37,702	3,449	25,618	140,771	166,389
ONE CALL	-	-	-	-	-	-	-	-	-	-	-	-	-
PAINT SHOP	-	21,016	21,016	-	21,016	21,016	-	21,016	21,016	-	-	63,048	63,048
HEAVY EQUIPMENT	-	-	-	-	-	-	-	-	-	-	-	-	-
GENERATORS	57,860	-	57,860	81,340	-	81,340	49,475	-	49,475	-	188,675	-	188,675
SUBTOTAL DIRECT OVERHEAD	67,011	58,422	125,433	90,814	100,917	191,731	54,796	56,129	110,926	3,449	216,071	215,468	431,539
TOTAL	\$ 240,236	\$ 766,482	\$ 1,006,717	\$ 266,904	\$ 1,586,030	\$ 1,852,934	\$ 155,533	\$ 720,793	\$ 876,326	\$ 73,472	\$ 736,145	\$ 3,073,305	\$ 3,620,775

Table A - 4.6
WATER & WASTEWATER SERVICES
ACTIVITY BASED COSTING REPORT
FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2013

ACTIVITY -Retail Sewer	Collection O & M	Lift Stations O & M	Retail Sewer TOTAL
PERSONAL SERVICES	639,234	1,262,707	1,901,941
OPERATING MATERIAL	106,997	1,011,454	1,118,451
OTHER MATERIAL	1,116	37,805	38,921
UTILITIES-OTHER	3,735,146	4,658	3,739,805
ELECTRIC	1,347	441,592	442,939
TREAT/TRANS	-	-	-
PURCHASED WATER	-	-	-
RENTAL/LEASES	-	458	458
MOTOR POOL	103,621	171,283	274,904
CONTRACT SERVICE	313,623	398,585	712,208
OTHER	(54,695)	43,127	(11,569)
EDUCATIONAL COURSES	-	-	-
COMPUTER MAINTENANCE	2,146	6,241	8,387
TRAVEL	-	-	-
OTHER CHEMICALS	-	-	-
CHEMICALS CHLORINE	-	-	-
CHEMICALS LIME	-	-	-
SUBTOTAL	4,848,534	3,377,910	8,226,445
<u>OPERATING COST RECLASS</u>			
ONE CALL	75,458	-	75,458
PAINT SHOP	-	63,048	63,048
HEAVY EQUIPMENT	-	-	-
GENERATORS	-	188,675	188,675
SUBTOTAL	75,458	251,722	327,181
<u>ALLOCATE:</u>			
SECTION ADMIN.	17,302	13,428	30,730
DIVISION ADMINISTRATION	238,829	166,389	405,217
SUBTOTAL DIRECT OVERHEAD	256,130	179,817	435,947
TOTAL	\$ 5,180,123	\$ 3,809,449	\$ 8,989,573

Table A - 4.7
WATER & WASTEWATER SERVICES
ACTIVITY BASED COSTING REPORT
FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2013

ACTIVITY - Regional Raw Water	North System			South System			Total		
	Operations	Maintenance	Total O & M	Operations	Maintenance	Total O & M	Operations	Maintenance	Total O & M
PERSONAL SERVICES	0	37,925	37,925	0	62,125	62,125	0	100,050	100,050
OPERATING MATERIAL	282	35,319	35,601	0	97,851	97,851	282	133,170	133,452
OTHER MATERIAL	0	0	0	0	0	0	0	0	0
UTILITIES-OTHER	0	0	0	0	0	0	0	0	0
ELECTRIC	112,785	0	112,785	350,796	0	350,796	463,581	0	463,581
TREAT/TRANS	0	0	0	0	0	0	0	0	0
PURCHASED WATER	0	0	0	0	0	0	0	0	0
RENTAL/LEASES	0	0	0	0	0	0	0	0	0
MOTOR POOL	0	0	0	0	0	0	0	0	0
CONTRACT SERVICE	0	0	0	7,706	6,031	13,737	7,706	6,031	13,737
OTHER	640	2,196	2,836	160,500	36,121	196,621	161,140	38,316	199,456
EDUCATIONAL COURSES	0	0	0	0	0	0	0	0	0
COMPUTER MAINTENANCE	0	0	0	0	0	0	0	0	0
TRAVEL	0	0	0	0	0	0	0	0	0
OTHER CHEMICALS	0	0	0	0	0	0	0	0	0
CHEMICALS CHLORINE	0	0	0	0	0	0	0	0	0
CHEMICALS LIME	0	0	0	0	0	0	0	0	0
SUBTOTAL	113,707	75,440	189,147	519,002	202,127	721,129	632,709	277,567	910,276
OPERATING COST RECLASS									
ONE CALL	2,107	0	2,107	2,107	0	2,107	4,214	0	4,214
PAINT SHOP	0	0	0	0	0	0	0	0	0
HEAVY EQUIPMENT	0	0	0	0	0	0	0	0	0
SUBTOTAL	2,107	0	2,107	2,107	0	2,107	4,214	0	4,214
ALLOCATE:									
SECTION ADMIN.	517	343	859	1,853	722	2,575	2,370	1,065	3,435
DIVISION ADMINISTRATION	5,601	3,716	9,317	25,565	9,956	35,521	31,166	13,672	44,838
SUBTOTAL DIRECT OVERHEAD	6,118	4,059	10,176	27,418	10,678	38,096	33,536	14,737	48,273
TOTAL	\$ 121,932	\$ 79,499	\$ 201,431	\$ 548,528	\$ 212,805	\$ 761,333	\$ 670,460	\$ 292,304	\$ 962,763

Table A - 4.8
WATER & WASTEWATER SERVICES
ACTIVITY BASED COSTING REPORT
FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2013

ACTIVITY - Wastewater Treatment (Other)	Reuse Distribution			C&M & Septage	Total
	Operations	Maintenance	Total O & M		
PERSONAL SERVICES	-	1,369	1,369	957,874	959,244
OPERATING MATERIAL	-	-	-	47,083	47,083
OTHER MATERIAL	-	-	-	10,975	10,975
UTILITIES-OTHER	-	-	-	-	-
ELECTRIC	-	-	-	-	-
TREAT/TRANS	-	-	-	-	-
PURCHASED WATER	-	-	-	-	-
RENTAL/LEASES	-	-	-	774	774
MOTOR POOL	-	-	-	29,084	29,084
CONTRACT SERVICE	-	-	-	21,935	21,935
OTHER	-	9	9	63,894	63,903
EDUCATIONAL COURSES	-	-	-	-	-
COMPUTER MAINTENANCE	-	-	-	4,073	4,073
TRAVEL	-	-	-	-	-
OTHER CHEMICALS	-	-	-	-	-
CHEMICALS CHLORINE	-	-	-	-	-
CHEMICALS LIME	-	-	-	-	-
SUBTOTAL	-	1,378	1,378	1,135,693	1,137,071
<u>OPERATING COST RECLASS</u>					
ONE CALL	-	-	-	-	-
PAINT SHOP	-	-	-	-	-
HEAVY EQUIPMENT	-	-	-	-	-
SUBTOTAL	-	-	-	-	-
<u>ALLOCATE:</u>					
SECTION ADMIN.	-	1	1	-	1
DIVISION ADMINISTRATION	-	68	68	55,942	56,010
SUBTOTAL DIRECT OVERHEAD	-	69	69	55,942	56,011
TOTAL	\$ -	\$ 1,447	\$ 1,447	\$ 1,191,635	\$ 1,193,082

**Table A - 4.9
WATER & WASTEWATER SERVICES
ACTIVITY BASED COSTING REPORT
FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2013**

ACTIVITY - Wastewater Treatment	Solids			Liquids			Reuse			Total Plant			Other	Total Treatment
	Operations	Maintenance	Total O & M	Operations	Maintenance	Total O & M	Operations	Maintenance	Total O & M	Operations	Maintenance	Total O & M		
PERSONAL SERVICES	1,869,882	1,332,511	3,202,393	-	276,990	276,990	-	46,175	46,175	1,869,882	1,655,675	3,525,557	959,244	4,484,801
OPERATING MATERIAL	62,759	1,560,744	1,623,503	-	86,842	86,842	-	33,663	33,663	62,759	1,681,250	1,744,009	47,083	1,791,092
OTHER MATERIAL	10,740	7,929	18,668	-	-	-	-	-	-	10,740	7,929	18,668	10,975	29,643
UTILITIES-OTHER	-	-	-	353	-	353	-	-	-	353	-	353	-	353
ELECTRIC	3,098,888	-	3,098,888	-	-	-	-	-	-	3,098,888	-	3,098,888	-	3,098,888
TREAT/TRANS	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PURCHASED WATER	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RENTAL/LEASES	900	14,068	14,968	-	-	-	-	-	-	900	14,068	14,968	774	15,742
MOTOR POOL	145,079	48,227	193,306	-	-	-	-	-	-	145,079	48,227	193,306	29,084	222,389
CONTRACT SERVICE	1,751,509	539,281	2,290,790	-	296,081	296,081	-	235,553	235,553	1,751,509	1,070,915	2,822,424	21,935	2,844,359
OTHER	47,141	59,509	106,650	-	8,980	8,980	-	2,911	2,911	47,141	71,400	118,540	63,903	182,444
EDUCATIONAL COURSES	2,735	-	2,735	-	-	-	-	-	-	2,735	-	2,735	-	2,735
COMPUTER MAINTENANCE	-	2,110	2,110	-	-	-	-	-	-	-	2,110	2,110	4,073	6,183
TRAVEL	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OTHER CHEMICALS	754,758	-	754,758	-	-	-	-	-	-	754,758	-	754,758	-	754,758
CHEMICALS CHLORINE	122,322	-	122,322	-	-	-	-	-	-	122,322	-	122,322	-	122,322
CHEMICALS LIME	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SUBTOTAL	7,866,713	3,564,379	11,431,092	353	668,892	669,245	-	318,302	318,302	7,867,066	4,551,573	12,418,640	1,137,071	13,555,711
OPERATING COST RECLASS														
ONE CALL	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PAINT SHOP	-	22,517	22,517	-	-	-	-	-	-	-	22,517	22,517	-	22,517
HEAVY EQUIPMENT	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SUBTOTAL	-	22,517	22,517	-	-	-	-	-	-	-	22,517	22,517	-	22,517
ALLOCATE:														
SECTION ADMIN.	5,446	2,468	7,914	0	463	463	-	220	220	5,447	3,151	8,598	1	8,599
DIVISION ADMINISTRATION	387,498	175,574	563,071	17	32,948	32,966	-	15,679	15,679	387,515	224,201	611,716	56,010	667,726
SUBTOTAL DIRECT OVERHEAD	392,944	178,041	570,985	18	33,411	33,429	-	15,899	15,899	392,962	227,352	620,313	56,011	676,324
TOTAL	\$ 8,259,657	\$ 3,764,938	\$ 12,024,595	\$ 371	\$ 702,303	\$ 702,674	\$ -	\$ 334,201	\$ 334,201	\$ 8,260,028	\$ 4,801,442	\$ 13,061,470	\$ 1,193,082	\$ 14,254,552

**Table A - 4.10
WATER & WASTEWATER SERVICES
ACTIVITY BASED COSTING REPORT
FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2013**

ACTIVITY - Regional Transmission (Master Lift Stations)	District Four		
	Operations	Maintenance	Total O & M
PERSONAL SERVICES	280,353	566,152	846,506
OPERATING MATERIAL	7,496	456,387	463,884
OTHER MATERIAL	399	-	399
UTILITIES-OTHER	44,834	-	44,834
ELECTRIC	540,929	-	540,929
TREAT/TRANS	-	-	-
PURCHASED WATER	-	-	-
RENTAL/LEASES	-	-	-
MOTOR POOL	-	47,652	47,652
CONTRACT SERVICE	1,334	119,146	120,481
OTHER	8,375	(54,996)	(46,621)
EDUCATIONAL COURSES	-	-	-
COMPUTER MAINTENANCE	3,113	-	3,113
TRAVEL	-	-	-
OTHER CHEMICALS	-	-	-
CHEMICALS CHLORINE	-	-	-
CHEMICALS LIME	-	-	-
SUBTOTAL	886,833	1,134,342	2,021,175
<u>OPERATING COST RECLASS</u>			
ONE CALL	13,446	-	13,446
SUBTOTAL	13,446	-	13,446
<u>ALLOCATE:</u>			
SECTION ADMIN.	614	785	1,399
DIVISION ADMINISTRATION	43,684	55,875	99,559
SUBTOTAL DIRECT OVERHEAD	44,297	56,661	100,958
TOTAL	\$ 944,577	\$ 1,191,002	\$ 2,135,579

**Table A-4.11
WATER & WASTEWATER SERVICES
GENERAL & ADMINISTRATIVE
ACTIVITY BASED COSTING REPORT
FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2013**

ACTIVITY	WWS Administration		WWED	WWIT				Fiscal Operations Division				Total
	Administration	Project & Community Coordinator	Engineering	Infrastructure Support	Application Development	Desktop Support	SCADA	Customer Service	Grounds & Buildings	Warehouse Costs	Other FOD Costs	
PERSONAL SERVICES	964,808	418,334	1,265,083	398,226	373,470	468,137	425,459	2,358,562	332,152	297,589	825,570	8,127,389
OPERATING MATERIAL	-	-	9,774	-	-	31,672	-	622,995	47,163	58,162	6,751	776,516
OTHER MATERIAL	17,035	398	22,710	38,624	41,393	27,659	254	23,156	-	7,546	69,302	248,077
UTILITIES-OTHER	1,425	-	2,169	151,882	-	-	-	-	17,064	-	-	172,541
ELECTRIC	-	-	-	-	-	-	45,161	-	258,607	-	-	303,767
TREAT/TRANS	-	-	-	-	-	-	-	-	-	-	-	-
PURCHASED WATER	-	-	-	-	-	-	-	-	-	-	-	-
RENTAL/LEASES	2,019	-	3,632	-	-	-	-	2,990	-	-	-	8,640
MOTOR POOL	-	-	49,537	-	-	-	-	83,233	20,294	-	-	153,064
CONTRACT SERVICE	7,718	8,966	50,444	113,794	338,273	21,727	83,891	1,439,476	603,813	2,920	-	2,671,022
OTHER	(14,700)	10,687	1,629	212	-	-	-	1,732	21,051	1,975	78	22,664
COUNTY SERVICES	3,360,793	-	-	-	-	-	-	739	-	-	-	3,361,532
EDUCATIONAL COURSES	773	466	10,688	38,314	28,183	-	7,498	199	-	249	759	87,128
COMPUTER MAINTENANCE	-	-	-	75,351	-	383	-	-	-	-	-	75,734
PURCHASED INSURANCE	2,328,539	-	-	-	-	-	-	-	-	-	-	2,328,539
TRAVEL	2,836	-	1,267	-	539	-	-	270	-	-	299	5,210
OPERATING COSTS RECLASS	152,024	-	-	-	-	-	-	-	-	-	-	152,024
CHEMICALS CHLORINE	-	-	-	-	-	-	-	-	-	-	-	-
CHEMICALS LIME	-	-	-	-	-	-	-	-	-	-	-	-
SUBTOTAL	6,823,270	438,851	1,416,932	816,404	781,858	549,578	562,263	4,533,351	1,300,144	368,441	902,758	18,493,849
ALLOCATE:												
DIVISION ADMINISTRATION				223,318	213,868	150,330	153,800	195,815	56,159	15,915	38,994	1,048,198
TOTAL	6,823,270	438,851	1,416,932	1,039,722	995,725	699,908	716,063	4,729,166	1,356,303	384,356	941,752	19,542,047
TOTAL TO BE ALLOCATED	6,823,270	438,851	1,416,932	1,039,722	995,725	699,908	716,063	4,729,166	1,356,303	384,356	941,752	19,542,047
BALANCE AFTER ALLOCATION	-	-	-	-	-	-	-	-	-	-	-	-

Table A-5
Water & Wastewater Services
Disaggregation of Operating & Maintenance Expenses
FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2013

OPERATION AND MAINTENANCE EXPENSES:	RETAIL WATER	RETAIL WASTEWATER	WHOLESALE RAW WATER	WHOLESALE TREATMENT	WHOLESALE TRANSMISSION	WWS ADMIN, IT & FOD	ENGINEERING	TOTAL
Personal Services	4,373,259	1,901,941	100,050	4,484,801	846,506	6,862,306	1,265,083	19,833,946
Utility Services	1,172,223	4,182,744	463,581	3,099,242	585,763	474,139	2,169	9,979,860
Material & Supplies	890,142	1,157,371	133,452	1,820,735	464,282	992,109	32,484	5,490,575
Chemicals	2,208,467	-	-	877,080	-	-	-	3,085,547
Motor Pool	374,458	274,904	-	222,389	47,652	103,527	49,537	1,072,466
Contractual Services	652,383	712,208	13,737	2,844,359	120,481	2,620,578	50,444	7,014,190
Purchased Insurance	-	-	-	-	-	2,328,539	-	2,328,539
County Administrative Service	-	-	-	-	-	3,361,532	-	3,361,532
Purchased Water	5,295,475	-	-	-	-	-	-	5,295,475
Rental & Leases	1,553	458	-	15,742	-	5,009	3,632	26,394
Travel	-	-	-	-	-	3,944	1,267	5,210
Other	353,965	(11,569)	199,456	182,444	(46,621)	173,059	1,629	852,364
Educational Courses	10,739	-	-	2,735	-	76,440	10,688	100,603
Computer Maintenance	-	8,387	-	6,183	3,113	75,734	-	93,418
IRR & EXPENSED PROJECTS	-	-	-	-	-	-	-	-
SUBTOTAL O & M EXPENSES	15,332,663	8,226,445	910,276	13,555,711	2,021,175	17,076,917	1,416,932	58,540,118
SECTION ADMINISTRATION	38,108	30,730	3,435	8,599	1,399	-	-	82,270
DIVISION ADMINISTRATION	755,254	405,217	44,838	667,726	99,559	1,048,198	-	3,020,792
ONE CALL	137,070	75,458	4,214	-	13,446	-	-	230,189
PAINT SHOP	64,549	63,048	-	22,517	-	-	-	150,113
HEAVY EQUIPMENT	-	-	-	-	-	-	-	-
GENERATORS	-	188,675	-	-	-	-	-	188,675
LAB	446,298	2,324	18,596	681,070	13,947	-	-	1,162,235
SUBTOTAL OPERATING OVERHEAD	1,441,279	765,452	71,083	1,379,911	128,351	1,048,198	-	4,834,274
TOTAL COSTS	16,773,942	8,991,897	981,359	14,935,622	2,149,526	18,125,116	1,416,932	63,374,393
CUSTOMER SERVICE	2,247,998	1,866,376	47,292	472,917	94,583	(4,729,166)	-	-
WWS ADMINISTRATION	5,668,654	3,038,758	331,645	5,047,405	726,420	(13,395,950)	(1,416,932)	(0)
SUBTOTAL ALLOCATION	7,916,652	4,905,134	378,936	5,520,321	821,003	(18,125,116)	(1,416,932)	(0)
TOTAL OPERATING EXPENSES	\$ 24,690,594	\$ 13,897,031	\$ 1,360,295	\$ 20,455,943	\$ 2,970,529	\$ -	\$ -	\$ 63,374,393

Source: Broward County Water & Wastewater Services

Table A-6
Operating and Maintenance Expense for Large User Rate
Fiscal Year 2013 and 2014 (1)
\$ per 1000 Gallons

	Fiscal 2013		Fiscal 2014	
	Treatment & Disposal	Transmission	Treatment & Disposal	Transmission
Total Direct Operating Costs	15,085,080	2,795,060	16,109,960	2,534,790
Allocated A & G Costs	5,498,530	801,500	5,311,270	690,960
Projected Annual Average Daily Flow (MGD)	65.2	50.4	71.2	55.9
Operating and Maintenance Rate Per 1,000 Gallons	0.780	0.195	0.747	0.158

NOTE: (1) This charge does not include costs of debt service which are fixed monthly charges to large users or IRR.

Source: Broward County Water & Wastewater Services

Table A-7
Historical and Budgeted Large Users
Operating & Maintenance Rates

Period Large User Charge in Effect	Treatment & Disposal Rate Per 1,000 Gallons	Transmission Rate Per 1,000 Gallons	Combined Rate Per 1,000 Gallons
Fiscal 2005	\$0.61	\$0.12	\$0.73
Fiscal 2006	\$0.58	\$0.12	\$0.70
Fiscal 2007	\$0.69	\$0.14	\$0.83
Fiscal 2008	\$0.70	\$0.14	\$0.84
Fiscal 2009	\$0.68	\$0.14	\$0.81
Fiscal 2010	\$0.80	\$0.18	\$0.97
Fiscal 2011	\$0.89	\$0.21	\$1.10
Fiscal 2012	\$0.84	\$0.19	\$1.03
Fiscal 2013	\$0.78	\$0.20	\$0.98
Fiscal 2014 (Proposed)	\$0.75	\$0.16	\$0.91

Source: Broward County Water & Wastewater Services

Table A - 8
Broward County Public Works Department
Water & Wastewater Fund
Statement of Net Position (1)
September 30, 2013, 2012, 2011, 2010, and 2009 (In Thousands)

	FY 2013	FY 2012	FY 2011	FY 2010	FY 2009
ASSETS					
Current Assets:					
Unrestricted Assets:					
Cash & Cash Equivalents	\$ 14,441	\$ 4,531	\$ 34,511	\$ 19,154	\$ 17,467
Investments	39,703	32,234	7,335	-	-
Receivable (Net)	13,460	12,867	12,765	14,779	14,903
Inventory	8,070	7,557	7,121	7,242	6,590
Prepaid Items	2,051	1,391	703	1,263	1,108
Total Current Unrestricted Assets	77,725	58,580	62,435	42,438	40,068
Restricted Assets:					
Current Restricted Assets	39,144	39,280	28,484	28,056	25,950
Total Current Assets	116,869	97,860	90,919	70,494	66,018
Noncurrent Assets:					
Noncurrent Restricted Assets	122,932	148,407	35,549	71,423	109,033
Capital Assets:					
Utility Plant in Service (2)	1,102,690	1,035,917	-	-	-
Land	4,904	4,904	4,901	4,896	4,896
Buildings (2)	-	-	209,769	209,769	199,110
Equipment (2)	26,710	24,509	761,713	739,770	641,411
Construction in Progress	40,268	70,212	108,117	65,978	115,109
Total Capital Assets	1,174,572	1,135,542	1,084,500	1,020,413	960,526
Less Accumulated Depreciation	(452,215)	(418,484)	(388,541)	(358,282)	(329,407)
Total Capital Assets, Net	722,357	717,058	695,959	662,131	631,119
Deferred Bond Issuance Costs	-	-	2,466	2,750	3,012
Total Noncurrent Assets	845,289	865,465	733,974	736,304	743,164
Total Assets	\$ 962,158	\$ 963,325	\$ 824,893	\$ 806,798	\$ 809,182
DEFERRED OUTFLOWS OF RESOURCES					
Deferred Charge on Refunding	\$ 13,311	\$ 14,798	\$ -	\$ -	\$ -
LIABILITIES					
Current Liabilities:					
Payable From Unrestricted Assets:					
Accounts Payable and Accrued Liabilities	\$ 3,216	\$ 4,485	\$ 9,453	\$ 10,680	\$ 8,472
Due to Other County Funds	-	-	21,355	-	-
Due to Other Governments	3,258	2,425	2,177	1,949	2,003
Compensated Absences	1,763	1,781	1,796	1,696	1,663
Total Current Liabilities Payable from Unrestricted Assets	8,237	8,691	34,781	14,325	12,138
Payable From Restricted Assets					
Accounts Payable and Accrued Liabilities	5,013	8,436	12	-	-
Accrued Interest Payable	12,068	11,914	9,984	10,117	10,258
Revenue Bonds Payable	13,360	10,440	10,110	9,765	7,810
Customer Deposits	8,703	8,490	8,378	8,174	7,882
Total Current Liabilities Payable from Restricted Assets	39,144	39,280	28,484	28,056	25,950
Total Current Liabilities	47,381	47,971	63,265	42,381	38,088
Noncurrent Liabilities:					
Revenue Bonds Payable	551,826	567,379	402,623	412,674	422,419
Other Post Employment Benefits Liability	617	538	470	346	220
Compensated Absences	1,822	2,220	2,487	2,963	2,501
Total Noncurrent Liabilities	554,265	570,137	405,580	415,983	425,140
Total Liabilities	\$ 601,646	\$ 618,108	\$ 468,845	\$ 458,364	\$ 463,228
NET POSITION					
Net Investment in Capital Assets	\$ 249,985	\$ 259,115	\$ 276,709	\$ 275,516	\$ 274,924
Restricted For:					
Debt Service Reserve	50,859	47,939	40,110	39,765	37,810
Renewal, Replacement and Improvement	5,930	5,830	5,600	5,600	5,000
Unrestricted	67,049	47,131	33,629	27,553	28,220
Total Net Position	\$ 373,823	\$ 360,015	\$ 356,048	\$ 348,434	\$ 345,954

(1) Effective with the implementation of GASB No. 63 in fiscal year 2013, Net Assets was renamed Net Position

(2) Reclassified capital assets to Utility Plant in Service category in fiscal years 2013 and 2012.

Table A - 9
Broward County Public Works Department
Water & Wastewater Fund
Statement of Revenue, Expense, and Changes in Net Position (1)
September 30, 2013, 2012, 2011, 2010, and 2009 (In Thousands)

	FY 2013	FY 2012	FY 2011	FY 2010	FY 2009
Operating Revenue:					
Retail Services:					
Water	\$ 43,114	\$ 45,642	\$ 44,294	\$ 41,939	\$ 41,229
Wastewater	34,485	33,476	32,664	29,926	29,668
Septic Charges	1,977	1,545	1,519	1,659	2,028
Other Services	6,807	4,070	4,094	3,890	4,141
	86,383	84,733	82,571	77,414	77,066
Wholesale Services:					
Water	876	701	820	833	1,076
Wastewater	32,957	31,228	30,660	31,361	29,943
Total Operating Revenue	120,216	116,662	114,051	109,608	108,085
Operating Expenses:					
Personal Services	23,208	23,108	24,664	26,882	26,310
Utilities Services	15,338	15,400	14,273	14,017	14,446
Chemicals	3,086	2,784	2,803	2,556	2,567
County Services	3,236	3,334	3,390	3,583	3,255
Material and Supplies	5,635	4,432	5,656	4,837	4,963
Motor Pool	1,449	1,520	1,387	1,279	1,226
Contractual Services	8,203	8,420	6,196	7,412	7,967
Other	3,220	5,075	5,574	4,921	4,054
Total Operating Expense Before Depreciation	63,375	64,073	63,943	65,487	64,788
Operating Income Before Depreciation	56,841	52,589	50,108	44,121	43,297
Depreciation Expense	33,947	31,039	30,975	28,924	33,120
Operating Income	22,894	21,550	19,133	15,197	10,177
Non-Operating Revenue (Expense):					
Grants	20	-	-	-	-
Interest Income	353	793	1,570	1,758	3,218
Interest Expense	(17,235)	(18,557)	(17,608)	(17,772)	(15,626)
Other Expense	(24)	(11)	(295)	(4,591)	(310)
Other Income	1,938	1,053	853	269	310
Bond Issuance Costs	-	(2,306)	-	-	-
Write off Discontinued Project Costs	(179)	-	-	-	-
Gain/(Loss) on Disposal of Assets	4	22	25	38	(2,428)
Total Non-Operating (Expense)	(15,123)	(19,006)	(15,455)	(20,298)	(14,836)
Income Before Capital Contributions	7,771	2,544	3,678	(5,101)	(4,659)
Capital Contributions:					
Total Capital Contributions	6,037	4,768	3,936	7,581	6,085
Change In Net Position	13,808	7,312	7,614	2,480	1,426
Total Net Position - Beginning, as Restated in 2012	360,015	352,703	348,434	345,954	344,528
Total Net Position - Ending	\$ 373,823	\$ 360,015	\$ 356,048	\$ 348,434	\$ 345,954

(1) Effective with the implementation of GASB No. 63 in fiscal year 2013, Net Assets was renamed Net Position.

Table A - 10					
Broward County Public Works Department					
Water & Wastewater Fund					
Statement of Cash Flows (1)					
September 30, 2013, 2012, 2011, 2010, and 2009 (In Thousands)					
	FY 2013	FY 2012	FY 2011	FY 2010	FY 2009
Cash Flows From Operating Activities:					
Cash Received from Customers	\$ 120,655	\$ 117,325	\$ 116,498	\$ 109,970	\$ 104,322
Cash Payments to Suppliers for Goods and Services	(42,004)	(41,486)	(38,846)	(39,031)	(41,711)
Cash Payments to Employees for Services	(23,503)	(23,410)	(24,888)	(26,137)	(25,771)
Other Cash Received (Paid)	980	1,053	853	(4,045)	315
Net Cash Provided by Operating Activities	56,128	53,482	53,617	40,757	37,155
Cash Flows From Noncapital Financing Activities:					
Cash from Noncapital Grants	20	-	-	-	-
Net Cash Provided by Noncapital Financing Activities	20	-	-	-	-
Cash Flows From Capital and Related Financing Activities					
Acquisition and Construction of Capital Assets	(35,632)	(43,827)	(64,245)	(52,409)	(48,488)
Proceeds from Internal Loan	-	3,513	21,355	-	-
Payments on Internal Loan	-	(24,869)	-	-	-
Interest Paid on Internal Loan	-	(175)	-	-	-
Proceeds from Sale of Capital Assets	12	22	25	38	-
Proceeds From Revenue Bonds	-	157,651	-	-	174,089
Commercial Paper Debt Retired	-	-	-	-	(58,578)
Capital Recovery Fees	3,721	701	688	422	672
Capital Recovery Fees Refunded	(41)	(65)	(26)	(147)	(976)
Capital Surcharges Contributed from Other Governments	1,633	1,709	1,721	1,742	2,179
Principal Paid on Revenue Bonds	(10,440)	(10,110)	(9,706)	(7,789)	(7,822)
Interest Paid on Revenue Bonds	(23,982)	(19,724)	(17,457)	(18,155)	(9,022)
Interest Paid on Commercial Paper	-	-	-	-	(863)
Other Costs Paid	(18)	(11)	(295)	(33)	(163)
Net Cash (Used For) Provided by Capital and Related Financing Activities	(64,747)	64,815	(67,940)	(76,331)	51,028
Cash Flows From Investing Activities:					
Purchase of Investment Securities	(135,467)	(70,241)	(102,646)	(51,449)	(64,839)
Proceeds from Sale and Maturities of Investment Securities	128,729	49,500	87,341	53,937	30,841
Interest on Investments	367	793	1,569	1,758	3,214
Net Cash (Used For) Provided by Investing Activities	(6,371)	(19,948)	(13,736)	4,246	(30,784)
Net Increase (Decrease) In Cash & Cash Equivalents	(14,970)	98,349	(28,059)	(31,328)	57,399
Cash & Cash Equivalents, Beginning of Year	149,757	51,408	82,624	113,953	56,554
Cash & Cash Equivalents, End of Year	\$ 134,787	\$ 149,757	\$ 54,565	\$ 82,625	\$ 113,953
Cash and Cash Equivalents - Unrestricted Assets	\$ 14,441	\$ 4,531	\$ 41,846	\$ 19,154	\$ 17,467
Cash and Cash Equivalents - Restricted Assets	120,236	145,116	12,719	63,470	96,486
Total Cash & Cash Equivalents	\$ 134,677	\$ 149,647	\$ 54,565	\$ 82,624	\$ 113,953
Reconciliation of Operating Income to Net Cash Provided by Operating Activities:					
Operating Income	\$ 22,894	\$ 21,550	\$ 19,133	\$ 15,196	\$ 10,176
Depreciation	33,947	31,039	30,975	28,924	33,120
Miscellaneous Non-Operating Income (Expense)	1,030	1,053	853	(4,045)	315
Change in Assets and Liabilities:					
(Increase) Decrease in Accounts Receivable	(607)	304	2,014	125	(2,766)
(Increase) Decrease in Inventory	(513)	(436)	121	(652)	(1,152)
(Increase) Decrease in Prepaid Items	131	(687)	560	107	(521)
Increase (Decrease) in Accounts Payable	(1,455)	601	(247)	119	(1,560)
Increase (Decrease) in Accrued Liabilities	(8)	(87)	27	124	110
Increase (Decrease) in Due Other Governments	833	248	228	(54)	(1,361)
Increase (Decrease) in Customer Deposits	213	111	205	292	364
Increase (Decrease) in Compensated Absences	(416)	(282)	(376)	495	315
Increase (Decrease) in Other Post Employment Benefits	79	68	124	126	115
Total Adjustments	33,234	31,932	34,484	25,561	26,979
Net Cash Provided By Operating Activities	\$ 56,128	\$ 53,482	\$ 53,617	\$ 40,757	\$ 37,155

A-11
Water and Wastewater Retail Statistics
(1,000's gallons)
As of September 30, 2013

Water	Produced	Purchased	Billed	System Uses & Losses
District 1	2,612,982	94,000	2,434,882	272,100
District 2	4,444,091	0	2,251,611	-
District 2 - Resale	0	0	1,699,799	492,681
District 3A	0	984,875	855,806	129,069
District 3BC	0	1,310,936	1,037,624	273,312
Total	7,057,073	2,389,811	8,279,722	1,167,162

Wastewater	Billed *	Wastewater Transmission to Plant
District 1	2,212,796	2,541,783
District 2	1,869,776	2,434,874
District 3A	595,748	613,819
District 3BC	318,524	332,510
Total	4,996,843	5,922,986

* Based upon water billed to wastewater customers. Residential billing capped at 15,000 gallons.

Source: Broward County Water and Wastewater Services

Table A-12**Water and Wastewater Services****Capital Improvement Program Budget History and Projections**

FY	Capital Budget	Debt Financed	Cash Financed
2003	\$ 61,437,979	\$ 34,520,790	\$ 8,662,944
2004	79,961,293	32,979,435	21,242,578
2005	88,852,571	22,792,255	40,999,372
2006	76,378,590	34,207,745	24,427,103
2007	78,678,510	38,775,056	13,951,976
2008	84,191,260	34,080,229	14,277,285
2009	70,447,060	34,136,740	9,585,084
2010	39,665,540	44,291,612	12,341,221
2011	81,438,970	51,020,406	11,397,849
2012	34,695,650	24,055,268	23,488,586
2013	85,366,450	26,910,286	3,291,213
2014	74,726,900	20,000,000	10,000,000
2015	141,834,030	35,000,000	25,000,000
2016	39,525,530	40,000,000	25,000,000
2017	47,314,300	40,000,000	25,000,000
2018	\$ 67,021,580	\$ 40,000,000	\$ 25,000,000

Source: Broward County Water and Wastewater Services

Table A-13
Water and Wastewater Services
Historical Capital Recovery Fees Collected

Fiscal Year Ended 9/30	Water	Wastewater	Total
2003	1,399,779	773,322	2,173,101
2004	173,292	398,051	571,343
2005	1,245,231	1,344,064	2,589,295
2006	1,088,629	1,288,714	2,377,343
2007	2,825,876	1,068,021	3,893,897
2008	914,606	942,749	1,857,355
2009	-220,999	-83,229	-304,228
2010	75,862	198,779	274,641
2011	287,404	374,258	661,661
2012	35,454	600,408	635,862
2013	1,665,189	2,014,861	3,680,050

Source: Broward County Water and Wastewater Services