City of Dania Beach, Florida
Water and Wastewater Rate Study
Draft Report

December 2, 2010

Division Headquarters
27368 Via Industria, Suite 110
Temecula, CA 92590
800.755.6864 phone
888.326.6864 fax

Florida Office
7380 Sand Lake Road, Suite 500
Orlando, FL 32819
407.352.3958 phone
888.326.6864 fax

Regional Offices
Oakland, CA
Sacramento, CA

www.willdan.com

December 2, 2010

Mr. Mark Bates
Director of Finance
City of Dania Beach
100 West Dania Beach Blvd
Dania Beach, FL 33004

Dear Mr. Bates,

Willdan Financial Services (Willdan) is pleased to present this report on the Water and Wastewater Rate Studies conducted for the City of Dania Beach (City).

This report was undertaken as the City is facing several challenges to continuing its high-quality operations. The focus of this study is to ensure that the utilities have sufficient revenues to meet their operational, capital and debt service obligations and that rates are set proportionate to the costs of providing utility service to each customer class. Our report outlines the approach, methodology, findings, and conclusions of this study.

This report has been prepared using generally accepted rate setting techniques. The City's utility accounting, budgeting, and consumption records were the primary sources for the data contained within the report. Furthermore, Willdan has worked closely with City staff over the course of this project. The conclusions contained within this report provide the City with a set of recommendations to provide stable technically defensible funding for continued high-quality operations.

It was a pleasure working with you, and we also wish to express our thanks to other staff members at the City, for their support and cooperation extended throughout the study.

Sincerely,

Willdan Financial Services

Gregg Tobler
Senior Project Analyst

Table of Contents

Executive Summary

The city of Dania Beach (City) desires rates that fund operations, maintenance, and present and future capital costs for an automated meter reading system, water membrane plant upgrade (nano), sanitary sewer infiltration/inflow, infrastructure rehabilitation, and enhancements. The City is facing several challenges to continuing its utility operations, including inadequate annual utility rate revenues to keep pace with increasing operational and capital costs; while maintaining self funding utility enterprise funds.

The City retained Willdan Financial Services (Willdan) to prepare a rate study for the water utility and sewer utility to ensure the utility has sufficient revenues to meet their operational, capital improvement and debt service obligations and that rates are set proportionate to the costs of providing utility service to each customer class. Therefore, the purpose of the proposed rate study is to provide recommendations on changes to the current utility rate structure to meet these challenges. As part of this rate study, Willdan facilitated dialogue with City staff during several conference calls. During these discussions, the City made recommendations to incorporate into the study where appropriate. This report documents the findings, analyses and recommendations of the comprehensive rate study effort.

Graphs (Figure E-1) and (Figure E-2) below demonstrate the current and projected financial conditions of the water and wastewater system, respectively, absent a comprehensive rate restructuring and assuming no rate increases over the next 5 years. As the figure illustrates, holding rate structures and rates constant will result in depleted reserve funds, possibly leading to a potential General Fund subsidy or borrowing, reduced quality of operations or services, and deferred capital projects that are needed due to aging infrastructure.

Figure E-1: Projection Using Current Water Rates

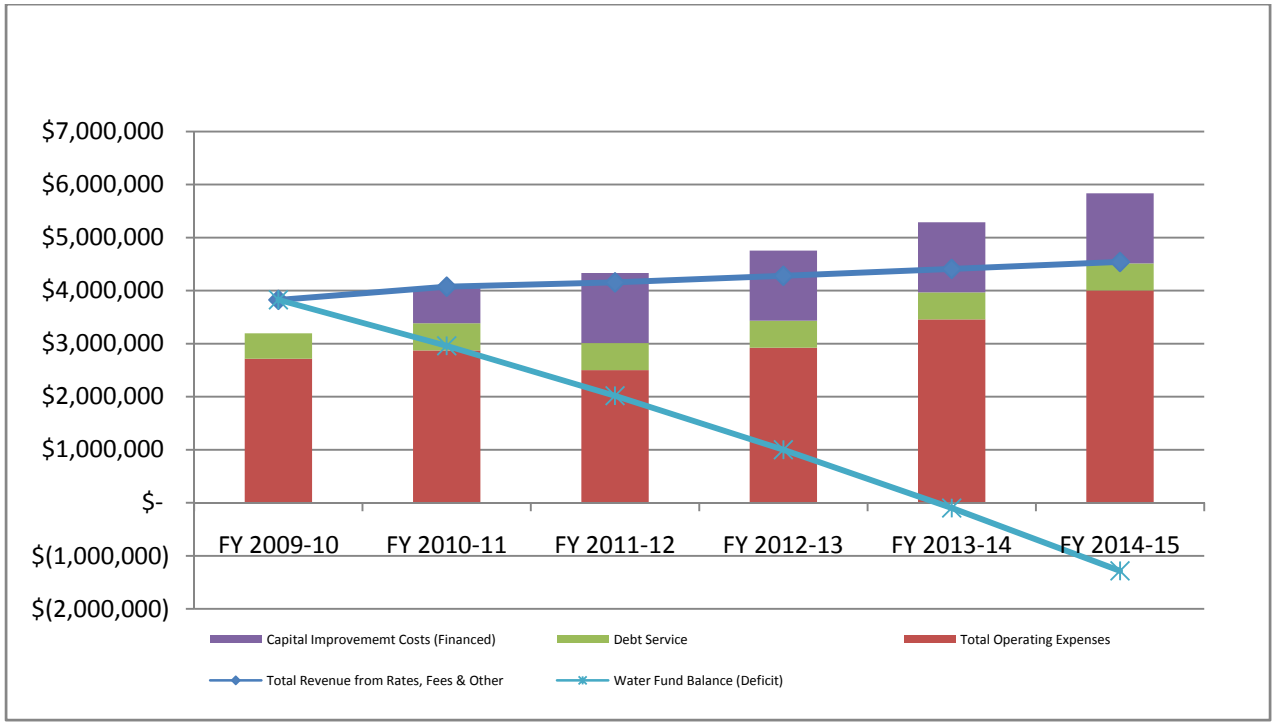
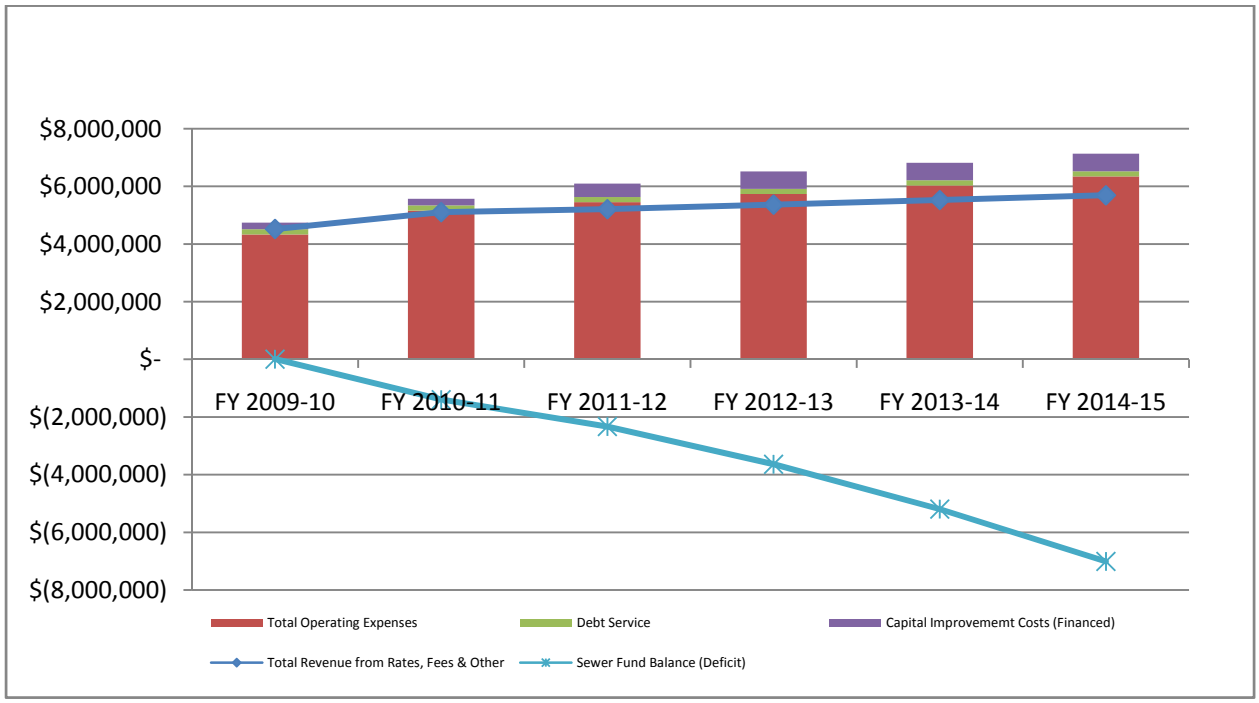


Figure E-2: Projection Using Current Wastewater Rates



Graphs (Figure E-3) and (Figure E-4) below demonstrate the projected financial condition of the water and wastewater systems, respectively, assuming adoption of a comprehensive rate restructuring and recommended rate increases over the next 5 years. As the figures illustrate, the proposed rate structure and rate increases will enable the City to continue its operations, reduce the likelihood of General Fund subsidy, establish prudent reserve fund levels, and fund capital projects that are urgently needed through a bond financing.

Figure E-3: Projection Using Proposed Water Rates

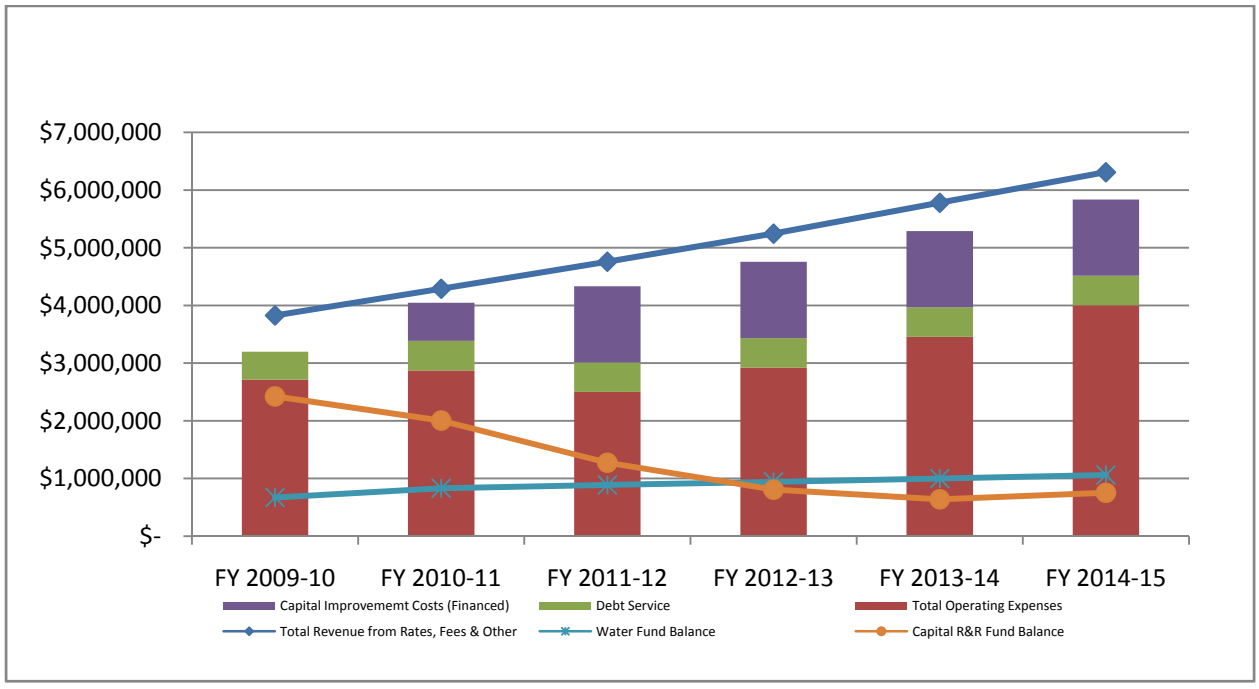
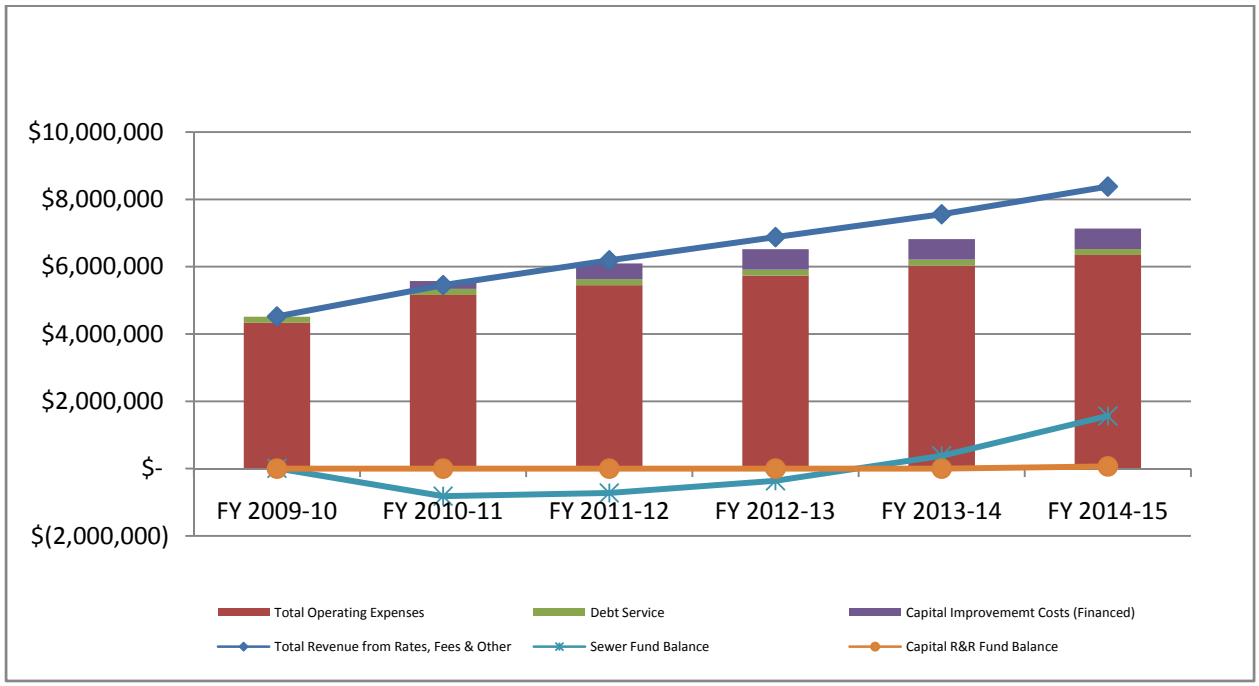


Figure E-4: Projection Using Proposed Wastewater Rates



Project Background

The City of Dania Beach owns and operates a water system for the residents and businesses within City. As of Fiscal Year 2009/10, the water system provides service to approximately 4,717 residential and non-residential potable water customers. As of Fiscal Year 2009/10, the wastewater system provides service to approximately 4,432 residential and non-residential wastewater customers. The City operates the water and wastewater systems as self-supporting enterprises, separate from other enterprises and General Fund activities.

The City's Public Works Department is responsible for water storage and delivery. Additionally, the Department is responsible for water resource management, water policy development, and water conservation programs. The City receives its water from the Biscayne Aquifer; presently the City has an annual water consumption level of 719,804,859 gallons.

The City's Water Division is currently implementing major improvements to water plant, addition of NANO filtration plant and to its meter reading system by replacing existing meters with new meters and installing an automated meter reading system. The new meters will help eliminate water loss due to the old meters being inaccurate and slow. The meter reading system will allow the City to accurately track and retain detailed consumption records.

The City's Wastewater Division is currently implementing upgrades to its sanitary sewer infiltration/inflow system. The City has present and future lift station rehabilitation projects for the wastewater utility system.

The City is facing several challenges to continuing its utility operations. Utility revenues are not keeping pace with increasing operational and capital costs. In addition, customer account growth has slowed to a 1.0% annual rate and utility infrastructure is aging and must be replaced.

Due to the recent market conditions, the City desires an updated rate analysis and model to better forecast the revenue stream required for services provided. The City desires rates that fully fund operations, maintenance, present and future capital costs.

Key Financial Plan Objectives

Several objectives were identified during the study to guide decisions regarding the proposed financial plans and rate structures. The major objectives of the study were:

- Utility rates and fees should generate sufficient revenues to meet operating costs, capital program requirements, debt service obligations, and maintain adequate reserves consistent with sound financial management practices
- Utility rates should be set proportionate to the cost of providing utility service to each customer class to promote fairness and equity
- A financial plan that minimizes the need to continually update the water rate structure
- Utility rate and fee structures should be supported by a financial model that is easy to update should costs and assumptions change in the future beyond what was projected at the time of this report

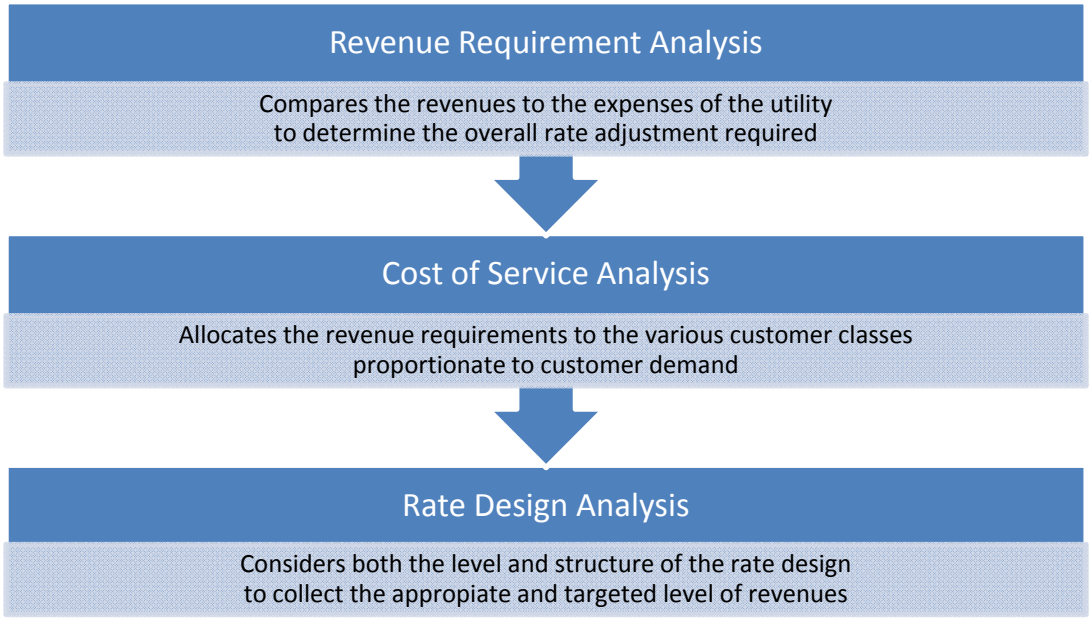
In reviewing the above objectives, it should be noted that the City has limited control over external forces such as growth, consumer behavior, the cost of purchasing water, and system usage. Recognizing these factors, we believe that the recommendations in this study provide a fair, reasonable, and balanced set of proposed rates and fees for the City that, to the extent possible, meets these key objectives.

Overview of the Rate Study Process

The scope of this study included the development of cost-based water user charges through a comprehensive cost of service and rate design analysis. Utility rates must be set at a level where a utility's operating and capital expenses are met with the revenues received from customers. This is a significant point, as failure to achieve this level may lead to insufficient funds being available to appropriately maintain the system. A comprehensive rate study typically consists of following three interrelated analyses (Figure 1-1 provides an overview of these processes).

- Financial Planning/Revenue Requirement Analysis: Create a ten-year plan to support an orderly, efficient program of on-going maintenance and operating costs, capital improvement and replacement activities, and retirement of outstanding debt. In addition, the long-term plan should fund and maintain reserve balances to adequate levels based on industry standards and City fiscal policies.
- Cost of Service Analysis: Identifies and apportions annual revenue requirements to the different customer classes based on their demand on each utility system.
- Rate Design: Develops a fixed/variable schedule of rates for each customer class to proportionately recover the costs attributable to them. This is also, where other policy objectives can be achieved, such as discouraging wasteful water use. The policy objectives are balanced with the cost of service objectives to maintain the delicate balance between customer equity, and financial stability.

Figure 1-1: Comprehensive Rate Study Interrelated Analysis



Organization of the Report

This report is organized to provide an overview of utility rate setting principles, then a separate detailed review of the rate design process. The following sections comprise the water rate study report:

- Rate Setting Principles
- Water Rate Analysis
- Wastewater Rate Analysis

Rate Setting Principles

The primary objective of conducting a comprehensive rate study is to determine the adequacy of the existing rates (pricing and structure) and provide the basis for any necessary adjustments to meet the Department's operating and capital needs. The City desires rate structures that fully fund operations, maintenance, and present and future capital costs (plant expansions, distribution systems, and collection (lift station) system rehabilitation, enhancements, or expansion).

Established Principles & Guidelines

Over the past years, many generally accepted principles or guidelines have been established to assist in developing utility rates. The purpose of this section of the report is to provide a general background of the methodology and guidelines used for setting cost based utility rates. This will provide the reader with a higher-level understanding of the general process detailed later in this report.

As a practical matter, there should be a general set of principles to develop rates. The American Water Works Association (AWWA) establishes these principles in the M1 Manual – *Principles of Water Rates, Fees and Charges.* These guiding principles help to ensure there is a consistent global approach that is employed by all utilities in the development of their rates (water and water-related utilities including sewer and reclaimed water).

Below is a summary listing of the established guidelines, which public utilities should consider when setting their rates. These closely reflect the City's specified objectives.

- Rates should be cost-based and equitable, and set at a level such that they provide revenue sufficiency.
- Rates and process of allocating costs should conform to generally accepted rate setting techniques.
- Rates should provide reliable, stable and adequate revenue to meets the utility's financial, operation, and regulatory requirements.
- Rate levels should be stable from year to year (limit "rate shocks").
- Rates should be easy to understand and administer.

These guidelines, along with the City's objectives, have been utilized within this study to help develop utility rates that are cost-based and equitable.

Revenue Requirements

The method used by most public utilities to establish their revenue requirements is called the "cash basis" approach of setting rates. As the name implies, a public utility combines its cash expenditures over a period of time to determine their required revenues from user rates and other forms of income. The figure below presents the "cash basis" methodology.

Figure 2-1: Overview of the "Cash Basis" Design

+ Operation and Maintenance Expenses
+ Taxes/Transfers
+ Capital Additions Financed with Rate Revenue
+ Debt Service (Principal and Interest)
= Total Revenue Requirements

To ensure existing ratepayers are not paying for growth-related capital projects, Willdan reviewed existing, approved/pending, and proposed Capital Improvement Projects (CIPs) with City staff to allocate projects between new (growth) and existing customers (operations and maintenance or "O&M"). Additionally, capital replacement expense is sometimes included to stabilize annual required revenue requirements by spreading the replacement costs of a depreciated asset over the expected life of the asset or through the term of bond issue, when municipal bond financing is used.

Based on the revenue requirement analysis, the utility can determine the overall level of rate adjustment needed in order for the utility to meet its overall expenditure needs.

Financial Planning

In the development of the revenue requirements, many assumptions are utilized to project future expenditures, customer and consumption growth, and necessary revenue adjustments. The City's budget documents are used as the initial starting point; however, assumptions play a necessary role in projecting future required revenue.

Conservative growth assumptions and prudent financial planning are fundamental to ensuring adequate rate revenue to promote financial stability. The financial model developed for this study appropriately considers the City's existing debt service coverage ratios and operating reserve balances. In addition, during our analysis, municipal bond financing was considered as one method to fund repair and replacement costs of depreciated infrastructure and assets. This enables the City to mitigate future rate increases as money for repair and replacement is amortized over a bond term of 20 years. As debt is redeemed, new bond issues may be utilized to fund additional capital improvements required due to the aging infrastructure.

Rate Design

The final element, the rate design process, applies the results from the revenue requirements to develop rates that achieve the general guidelines and objectives of the City. These objectives may include consideration of cost-based rates, but may also consider items such as ability to pay, continuity of past rate philosophy, encouragement of economic development, ease of administration, and legal requirements. While cost-based rates are an important objective, all objectives should be balanced appropriately.

While the general description of the utility rate setting process discussed in this section of the report is simplified and condensed, it does address the underlying fundamentals. One of the key principles for a comprehensive rate study is found in economic theory, which suggests the price of a commodity must roughly equal its cost or value if equity among customers is to be maintained – i.e. cost-based. For example, capacity-related costs are usually incurred by a water utility to meet peak use requirements. Consequently, the customers causing peak demands should properly pay for the demand-related facilities in proportion to their contribution to maximum demands. Through refinement of costing and pricing techniques, consumers of a product are given a more accurate price point of what the commodity costs to produce and deliver.

The above fundamentals have considerable foundation in economic literature. They also serve as primary guidelines for rate design by most utility regulators and administrative agencies. This "price-equals-cost" theory provides the basis for much of the subsequent analysis and comment. This theory is particularly important, as the proposed rate, structure has been modified to encourage conservation, while maintaining this economic principle.

Rate Setting Principles Summary

This section of the report provides a brief introduction to the general principles, techniques, and economic theory used to set utility rates. These principles, techniques, and economic theory were the starting point for this rate study and the groundwork used to meet the City's key objectives in analyzing and adjusting their utility rates.

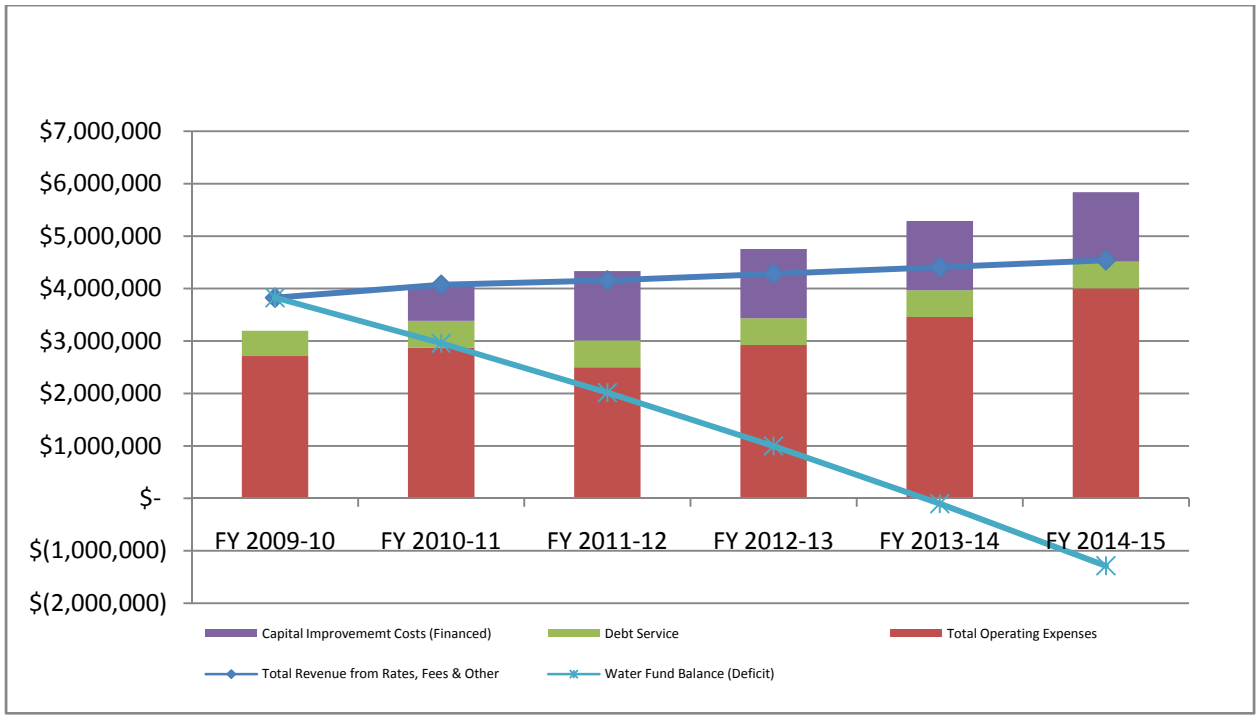
This utility rate study was performed to allocate the costs of providing service to users in order to ensure that rates are equitable and not unduly discriminatory. The total cost of serving each customer class is determined by distributing each of the utility cost components among the user classes based upon the respective service requirements of each customer class. Therefore, a true cost of service rate study enables a water utility to adopt rates based on the true costs to each user class. The purposes of this water utility cost of service study include:

- Proportional allocation of the costs of service to users.
- Derivation of unit costs to support the development of water rates.

Water Rate Analysis

The City is facing several challenges to continuing its high-quality operations. Utility revenues are not keeping pace with increasing operational and capital costs. In addition, customer account growth has slowed to a 1.0% rate and utility infrastructure is aging and must be replaced soon. Considering the above variables, Figure 3-1 projects the adequacy of existing rate revenue to support ongoing operations and maintenance.

Figure 3-1: Revenue and Expenditure Projections – Existing Rates



As the above figure indicates, revenue increases are necessary to operate and maintain the water system. This will be evident as details of the process, data, and methodology utilized in the rate study are presented in this section of the report. Summary figures, outlining much of the analysis are included in this section of the report as well.

Customer Statistics

During the Fiscal Year 2010, the City provided water service to an estimated 4,717 customers, distributing roughly 720 million gallons of potable water. Figure 3-2 shows the City's projected water usage and number of accounts by customer class.

Figure 3-2: Accounts and Consumption

		Projected Annual Consumption (Thousand Gallons)				
Customer Class	Accounts	FY 2010-11	FY 2011-12	FY 2012-13	FY 2013-14	FY 2014-15
Single Family Residential	3,583	218,681	225,241	231,999	238,959	246,127
Single Family Residential Irrigation	223	19,725	20,317	20,926	21,554	22,201
Condos	291	184,892	190,439	196,152	202,036	208,098
Commercial	595	239,094	246,267	253,655	261,264	269,102
Commercial Irrigation	65	48,716	50,177	51,683	53,233	54,830
Laundromats	7	8,745	9,007	9,278	9,556	9,843
Total	4,764	719,853	741,449	763,692	786,603	810,201
		Percent of Total				
Single Family Residential	75.2%	30.4%	30.4%	30.4%	30.4%	30.4%
Single Family Residential Irrigation	4.7%	2.7%	2.7%	2.7%	2.7%	2.7%
Condos	6.1%	25.7%	25.7%	25.7%	25.7%	25.7%
Commercial	12.5%	33.2%	33.2%	33.2%	33.2%	33.2%
Commercial Irrigation	1.4%	6.8%	6.8%	6.8%	6.8%	6.8%
Laundromats	0.1%	1.2%	1.2%	1.2%	1.2%	1.2%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Note:
Assumes a a consumption growth rate of 1%. in fiscal year 2010/11
Assumes a a consumption growth rate of 2%. in fiscal year 2011/12
Assumes a a consumption growth rate of 3%. in fiscal year 2012/13 and thereafter.

Source: City of Dania Beach; Willdan Financial Services.

A projection of customers, usage, and production requirements is necessary in the evaluation of the revenue requirements. This projection is critical for the determination of revenues from rates, escalation of production-related costs, and design of the rates.

Given the current economic climate and review of potential growth, Willdan in conjunction with City staff determined to use a conservative growth rate equal to 1.0% in Fiscal Year 2010/11, a 2% growth rate in Fiscal Year 2011/12 and 3% growth rate thereafter.

Revenue Requirements Analysis

Revenue from Existing Rates

The first step in developing the revenue requirements is to develop a projection of revenues from existing rates. The City expects to receive approximately $3.86 million in water sales in Fiscal Year 2011. By 2015, assuming the growth discussed above, water sales are projected to increase roughly 5% to $4.54 million. In addition to water sales, the City has a projected average of non-operating revenues approximately equal to forty thousand dollars, consisting of interest income.

Projections of Operation and Maintenance Expenses

To project Operating and Maintenance (O&M) expenses over the five-year planning horizon, two escalation factors were developed. The operations cost escalator, set at 3.0%, is applied to basic expenditures that the Department incurs: labor, benefits, materials, utilities, etc. The personnel cost escalator is also set at 5.0%.

Debt Service

Debt service is the Department's annual principal and interest obligations when projects are financed via long-term debt. The City currently has five water obligations listed below. The current annual debt service payments total $511 thousand. Figure 3-3 provides a summary of the City's water related debt service.

Figure 3-3: Existing Debt Service

DANIA BEACH ANNUAL DEBT SERVICE (ADS)

State Revolving Fund Loan Awards

Fund	Project Name	Loan Award Amount	Interest Rate	Semiannual Payment	Annual Debt Service
401 - Water	WATER TANK HSV	3,717,025	2.640%	130,156	260,312
	WATER MAIN LOOPING DB BLVD	706,992	2.750%	23,970	47,940
	WATER MAIN LOOPING	2,096,405	2.750%	70,441	140,882
	WATER MAIN US 1/MALALEUCA	480,000	2.750%	16,066	32,132
	NANOFILTRATION PLANT	457,500	2.710%	14,891	29,782
				Total DS	**511,048**

Sources: City of Dania Beach; Willdan Financial Services.

Capital Improvement Projects

The Department's Capital Improvement Program (CIP) needs for the water utility are summarized in Figure 3-4. Individually, each project was identified by City staff as growth-related, existing needs (O&M) or a percentage of both to determine the appropriate funding mechanism (monthly rates or connection fee). The capital projects are required to meet the utilities projected growth and to maintain the existing quality of the system.

Figure 3-4: Water Capital Projects

CIP Project No.	PROJECT	FY 2011-2012	FY 2012-2013	FY 2013-2014	FY 2014-2015	Total
1	Water Main US1/Malaleuca	$ 2,799,873	$ -	$ -	$ -	$ 2,799,873
2	Water Membrane Plant Upgrade (Nano)	9,147,209	-	-	-	9,147,209
3	Well G & I Construction	-	-	-	-	-
4	Refurbish Existing Water Treatment Plant	777,743	-	-	-	777,743
5	AMR Meter Installation	2,073,980	-	-	-	2,073,980
6	Water Main Projects	2,385,077	-	-	-	2,385,077
	Total	$ 17,183,882	$ -	$ -	$ -	$ 17,183,882

Notes:

Construction cost estimates were escalated annually by a factor of 3.7%, based on the average annual increase between 2004 and 2009 in the Producer Price Indices for steel and plastic construction materials.

Source:City of Dania Beach; Bureau of Labor Statistics; Willdan Financial Services.

Summary of Revenue Requirements Analysis

The above components comprise the foundation of the revenue requirement analysis. During the discussions with the City, City staff made recommendations to assure the accuracy of financial and growth variables used in developing the revenue requirement analysis. Particular emphasis was placed on attempting to minimize rates, yet still encompass adequate funds to support the operational activities and capital projects throughout the study period.

The revenue requirements analysis Figure 3-5, presented below, provides a basis for evaluating the timing and level of water revenue increases required to meet the projected required revenue for the study period. The percentages shown in the figure show the recommended revenue adjustments.

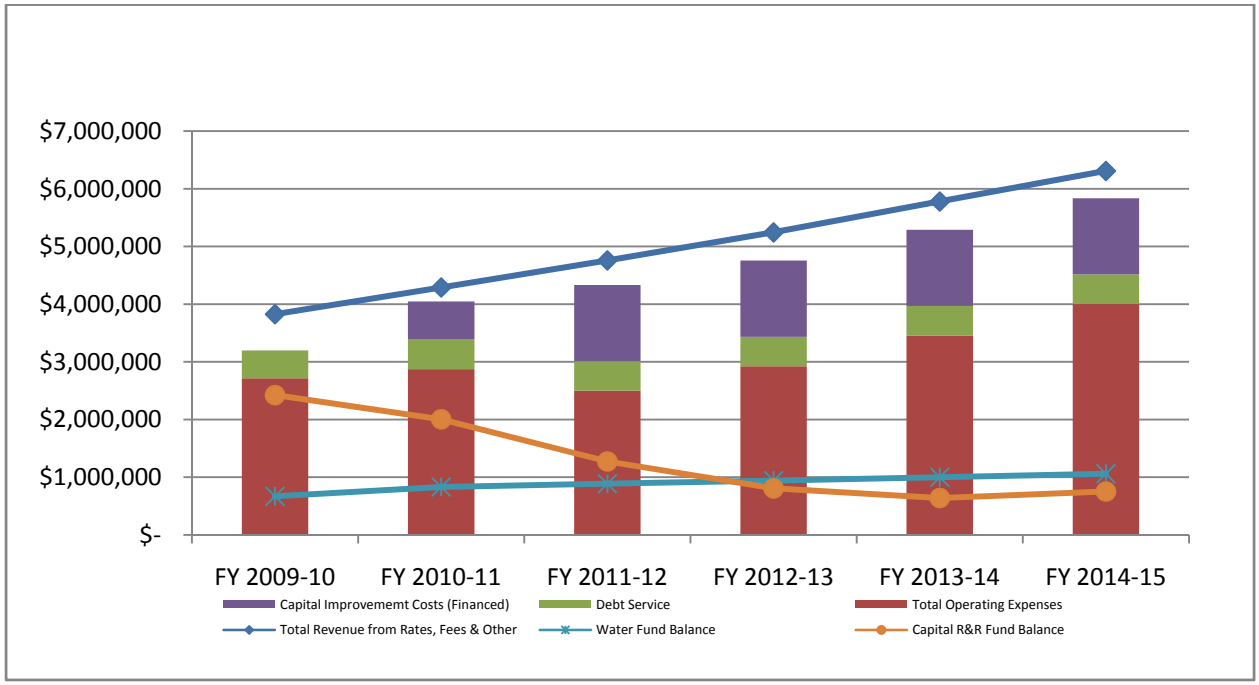
Figure 3-5: Revenue Requirements

	Description	Base Year FY 2009-10	FY 2010-11	FY 2011-12	FY 2012-13	FY 2013-14	FY 2014-15
1	**Projected Customer Growth Rate**	1.00%	1.00%	2.00%	3.00%	3.00%	3.00%
2	**Estimated Existing Operating Revenue**	$ 3,825,753	4,074,620	4,156,112	4,280,796	4,409,220	4,541,496
	Revenue After Previous FY Increase	NA	**-**	**4,447,040**	**4,901,083**	**5,401,484**	**5,952,975**
3	Additional Revenue Required						
4	*Year* *Months Effective*						
5	FY 2010-11 9	-	213,918	311,293	343,076	378,104	357,179
6	Total Operating Revenues **(Required Revenue)**	**3,825,753**	**4,288,538**	**4,758,333**	**5,244,159**	**5,779,588**	**6,310,154**
	Revenue Increase	0.00%	7.00%	7.00%	7.00%	7.00%	6.00%
7	**Operating Expenses**						
8	Total Water Accounting and Billing	171,919	239,226	258,197	273,849	290,557	308,402
9	Total Administration	617,117	905,897	864,587	936,423	1,011,087	1,088,769
10	Total Water Distribution	605,494	695,397	827,012	874,564	925,114	978,873
10	Total Water Plant	1,320,552	1,533,376	1,650,436	1,737,723	1,829,851	1,927,109
11	Use of Net Assets		(500,000)	(1,100,000)	(900,000)	(600,000)	(300,000)
12	**Total Operating Expenses**	**2,715,082**	**2,873,896**	**2,500,232**	**2,922,559**	**3,456,609**	**4,003,154**
13	Net Operating Income	1,110,671	1,414,642	2,258,101	2,321,600	2,322,978	2,307,000
14	Debt Service						
15	Existing Debt Service	481,266	511,048	511,048	511,048	511,048	511,048
16	Proposed Bonds (CIP Financing)	-	661,000	1,322,000	1,322,000	1,322,000	1,322,000
17	**Total Debt Service**	**481,266**	**1,172,048**	**1,833,048**	**1,833,048**	**1,833,048**	**1,833,048**
18	Coverage Ratio (Does not include Interest Earnings)	231%	121%	123%	127%	127%	126%
19	**Non-Operating Revenue**						
20	Investment Earnings	-	36,975	46,416	42,555	32,431	26,259
21	Operating Transfer In	-	-	-	-	-	-
22	**Total Non-Operating Revenue**	**-**	**36,975**	**46,416**	**42,555**	**32,431**	**26,259**
23	**Capital Projects Funded by Rates**						
24	CIP PAYGO Projects	-	-	198,300	198,300	198,300	198,300
25	**Total Capital Projects Funded by Rates**	**-**	**-**	**198,300**	**198,300**	**198,300**	**198,300**
26	**Net Income (Loss)**	629,405	242,594	226,753	290,252	291,630	275,652
27	**Water Enterprise Fund**						
28	Beginning Operating Fund Balance	2,465,000	669,472	831,920	887,729	942,549	1,000,260
29	**Subtotal**	**3,094,405**	**912,066**	**1,058,672**	**1,177,980**	**1,234,179**	**1,275,912**
30	Fund Balance Days of O&M	90	90	90	90	90	90
31	Desired Fund Balance	669,472	831,920	887,729	942,549	1,000,260	1,061,052
32	Excess (Deficit) O&M / Excess to CIP Fund	-	-	-	-	-	-
	Ending Operating Fund Balance	**$ 669,472**	**$ 831,920**	**$ 887,729**	**$ 942,549**	**$ 1,000,260**	**$ 1,061,052**
33	**Capital Repair and Replacement Fund**						
	Beginning Capital R&R Fund Balance	-	2,424,933	2,005,079	1,274,323	808,054	640,274
	Deposit	-	-	198,300	198,300	198,300	198,300
	Use of Net Assets (Transfer to Operating Fund)		(500,000)	(1,100,000)	(900,000)	(600,000)	(300,000)
	Capital Projects - Repair & Maintenance Costs	-					
	Excess from O&M Fund	2,424,933	80,146	170,944	235,431	233,919	214,860
34	**Ending Capital R&R Fund Balance**	**$ 2,424,933**	**$ 2,005,079**	**$ 1,274,323**	**$ 808,054**	**$ 640,274**	**$ 753,434**
			$ 2,836,999	$ 2,162,051	$ 1,750,603	$ 1,640,533	$ 1,814,485

Sources: City of Dania Beach; Willdan Financial Services.

Based upon the revenue requirement analysis, the City will need to adjust the rates to increase revenue by 7% in the fiscal years 2010/2011 through 2013/2014, following smaller revenue increases in subsequent years. This approach will result in approximately a 34% revenue increase over the next five years. Figure 3-6 expands upon the earlier figure (Figure 3-1), to illustrate the positive impact of the revenue increase on the utility's financial condition.

Figure 3-6: Revenue and Expenditure Projections – Proposed Rates



Cost of Service Analysis

The cost of service analysis is a systematic process by which revenue requirements are used to generate a classification of fair and equitable costs in proportion to the service received for each user class.

Cost Allocation by Function

The cost of service allocation conducted in this study is established on the base-extra capacity method endorsed by the AWWA. Under the base-extra capacity method, revenue requirements are allocated to the different user classes proportionate to their use on the water system. Allocations are based on average day (base) usage, maximum day (peak) usage, meters and services, billing and collection, and fire protection. Use of this methodology results in an AWWA-accepted cost distribution among customer classes and a means of calculating and designing rates to proportionately recover those costs.

Figure 3-7 classifies the major functions of the water system and allocates those related costs to the demand factors average day (base), maximum day (peak) usage, meters and services, and customer accounts.

Figure 3-7: Classification of Water Expenses by Function

Description	Total Revenue Requirement	Base	Extra Capacity Max Day	Customer Costs Customer Account	Meters & Services	Basis of Classification
Water Distribution						
Total Water Distribution	$ 860,192	$ 286,731	$ 286,731	$ -	$ 286,731	33% Base/Max/Meters
Total Water Distribution	**$ 860,192**	**$ 286,731**	**$ 286,731**	**$ -**	**$ 286,731**	
Water Plant						
Total Water Plant	$ 1,735,699	$ 1,349,853	$ 385,846	$ -	$ -	Avg/Max Day
Total Water Plant	**$ 1,735,699**	**$ 1,349,853**	**$ 385,846**	**$ -**	**$ -**	
Water Accounting and Billing						
Total Water Accounting and Billing	$ 274,046	$ -	$ -	$ 274,046	$ -	100% Customer Billing
Total Water Accounting and Billing	**$ 274,046**	**$ -**	**$ -**	**$ 274,046**	**$ -**	
Total O & M ($)	$ 2,869,937	$ 1,636,584	$ 672,576	$ 274,046	$ 286,731	
Total O & M (%)	100.00%	57.03%	23.44%	9.55%	9.99%	
Administration						
Total Administration	$ 961,353	$ 548,212	$ 225,295	$ 91,798	$ 96,047	25% across
Total General and Administrative	$ 961,353	$ 548,212	$ 225,295	$ 91,798	$ 96,047	
DEBT SERVICE/CAPITAL EXPENDITURES						
Total Debt Service	1,700,848	566,949	566,949	-	566,949	33% Base/Max/Meters
Total Capital Projects Funded by Rates	158,640	52,880	52,880	-	52,880	33% Base/Max/Meters
Total Debt Service	**$ 1,859,488**	**$ 619,829**	**$ 619,829**	**$ -**	**$ 619,829**	
TOTAL FUNCTIONALIZED COSTS	**$ 5,690,778**	**$ 2,804,626**	**$ 1,517,701**	**$ 365,845**	**$ 1,002,607**	
FUNCTIONALIZATION FACTOR	**100.00%**	**49.28%**	**26.67%**	**6.43%**	**17.62%**	

Sources: City of Dania Beach; Willdan Financial Services

The resulting allocation factors that appear at the bottom of Figure 3-8 are utilized to allocate system operating and capital costs to each customer class based on the each class' demand on the system.

Rate Design Balance

There is some flexibility in the design of the rate structure to meet the City's rate setting objectives while being consistent with cost of service principles and conservation objectives. There are positives and negatives associated with the decrease in fixed revenue. Typically, a larger percentage of fixed rate revenue results in greater revenue stability as a greater percentage of total revenues are not influenced by fluctuations in consumption due to the weather, household density, and liberal or conservative water use. At the same time, the decrease in fixed revenue will improve equitability concerning cost recovery and the impact of conservation measures while reducing revenue stability, as users have greater control over their consumption and ultimately their bill. The fixed portion of the proposed water rates generates an estimated 24% of total rate revenue.

Rate Design Analysis

The final step of the rate study is the design of the water rates to collect the desired level of revenue determined in the revenue requirement analysis, while encouraging the efficient use of water. During this analysis, consideration is given to both the level of rates and the structure of the rates. This section reviews the proposed water rate design for the City.

Criteria and Considerations

In determining the appropriate rate level and structure, Willdan, in conjunction with City staff, analyzed various generated financial scenarios concerning the proposed adjustments and the implications attributed to those decisions.

A simplified list of some of the design considerations that were reviewed is listed:

- Consideration of the customer's ability to pay
- Clear and understandable rates
- Ease of administration
- Revenue stability (month to month and year to year)
- Efficient allocation of resources
- Capital Improvement Financing (improving the existing system)
- Fair and equitable (cost-based) rates

Every consideration has merit and plays an important role in a comprehensive rate study. When developing the City's proposed rates all of the aforementioned criteria were taken into consideration. Determining the appropriate balance is crucial, as some of the criteria sometime conflict with one another, i.e. the customers ability to pay and cost-based. In designing rates, there will always be a balance between the various objectives; however, we attempt to ensure the proposed rates meet all of the leading objectives of the City.

Overview of Existing Rate Structure

The City's Existing water rate structure, shown in Figure 3-8 currently employs a fixed charge plus a variable consumption charge as outlined in Figure 3-8.

Figure 3-8: Existing Rate Structure for all Customer Classes

Description	Fiscal Year Ending September 30, 2010	2011	2012	2013
Effective Date	Jan. 1, 2010	Jan. 1, 2011	Oct. 1, 2011	Oct. 1, 2012
Residential/ Condominiums:				
Water Base Rate per ERU				
Water Meter Size (inches)				
5/8"	$11.81	$12.50	$13.60	$14.55
1"	$11.81	24.08	26.20	28.03
1 1/2"	$11.81	43.39	47.20	50.51
2"	$11.81	66.56	72.41	77.48
3"	$11.81	128.35	139.62	149.39
4"	$11.81	197.86	215.23	230.30
6"	$11.81	390.95	425.27	455.04
Water Consumption Rate per 1,000 gallons (per ERU)				
All Meters				
0 to 5,000 Gallons	$2.97	$3.54	$3.82	$4.09
5,001 to 14,000 Gallons	4.50	5.67	6.11	6.54
over 14,000 Gallons	5.61	7.09	7.64	8.17
Commercial/ Sprinklers/ Laundromats:				
Water Base Rate per ERU				
Water Meter Size (inches)				
5/8"	$11.81	$12.50	$13.60	$14.55
1"	29.52	24.08	26.20	28.03
1 1/2"	59.03	43.39	47.20	50.51
2"	94.47	66.56	72.41	77.48
3"	188.97	128.35	139.62	149.39
4"	295.26	197.86	215.23	230.30
6"	590.49	390.95	425.27	455.04
Water Consumption Rate per 1,000 gallons (per ERU)				
Water Meter Size (inches)				
5/8" Meter				
0 to 5,000 Gallons	$2.97	$3.66	$3.94	$4.22
5,001 to 14,000 Gallons	4.50	5.85	6.30	6.74
over 14,000 Gallons	5.61	7.31	7.88	8.43
1" Meter				
0 to 12,000 Gallons	$2.97	$3.66	$3.94	$4.22
12,001 to 35,000 Gallons	4.50	5.85	6.30	6.74
over 35,000 Gallons	5.61	7.31	7.88	8.43
1.5" Meter				
0 to 25,000 Gallons	$2.97	$3.66	$3.94	$4.22
25,001 to 70,000 Gallons	4.50	5.85	6.30	6.74
over 70,000 Gallons	5.61	7.31	7.88	8.43
2" Meter				
0 to 40,000 Gallons	$2.97	$3.66	$3.94	$4.22
40,001 to 112,000 Gallons	4.50	5.85	6.30	6.74
over 112,000 Gallons	5.61	7.31	7.88	8.43
3" Meter				
0 to 80,000 Gallons	$2.97	$3.66	$3.94	$4.22
80,001 to 224,000 Gallons	4.50	5.85	6.30	6.74
over 224,000 Gallons	5.61	7.31	7.88	8.43
4" Meter				
0 to 125,000 Gallons	$2.97	$3.66	$3.94	$4.22
125,001 to 350,000 Gallons	4.50	5.85	6.30	6.74
over 350,000 Gallons	5.61	7.31	7.88	8.43
6" Meter				
0 to 250,000 Gallons	$2.97	$3.66	$3.94	$4.22
250,001 to 700,000 Gallons	4.50	5.85	6.30	6.74
over 700,000 Gallons	5.61	7.31	7.88	8.43

Summary of Water Rate Study

Throughout the process of the water rate study, multiple scenarios were considered. The proposed rate structure will be easier for the City to administer and for the customer to understand than the existing rate structure. Figure 3-9 below, outlines the variable consumption charges designed in this study, which represent 75.9% (Figure 3-7) of the required revenue as shown in Figure 3-5. The consumption charge Is determined by taking the total variable costs divided by the total water consumption. Figure 3-10 recaps the proposed monthly fixed base charge rates, which represent 24.1% (Figure 3-7) of the required revenue as shown in Figure 3-5. The monthly meter charge is calculated by taking the total fixed costs divided by the total equivalent meters. The monthly meter charge for each meter size is calculated by multiplying the monthly meter charge by the corresponding AWWA equivalent meter factor.

Figure 3-9: Proposed Water Rate Consumption Charges (All Customer Classes)

Description	FY 2010-2011	FY 2011-2012	FY 2012-2013	FY 2013-2014	FY 2014-2015
Single-Family Residential					
Block 1 Rate (0-5 thousand gallons)	$ 3.54	$ 3.82	$ 4.09	$ 4.37	$ 4.63
Block 2 Rate (6-14 thousand gallons)	5.67	6.11	6.54	6.99	7.41
Block 3 Rate (Over 14 thousand gallons)	7.09	7.64	8.17	8.74	9.27
Multi-Family Residential					
Block 1 Rate (per thousand gallons)	3.54	3.82	4.09	4.37	4.63
Block 2 Rate (per thousand gallons)	5.67	6.11	6.54	6.99	7.41
Block 3 Rate (per thousand gallons)	7.09	7.64	8.17	8.74	9.27
Commercial					
Block 1 Rate (per thousand gallons)	3.66	3.94	4.22	4.51	4.78
Block 2 Rate (per thousand gallons)	5.85	6.30	6.74	7.22	7.65
Block 3 Rate (per thousand gallons)	7.31	7.88	8.43	9.02	9.56
Irrigation					
Block 1 Rate (per thousand gallons)	3.66	3.94	4.22	4.51	4.78
Block 2 Rate (per thousand gallons)	5.85	6.30	6.74	7.22	7.65
Block 3 Rate (per thousand gallons)	7.31	7.88	8.43	9.02	9.56
Laundromats					
Block 1 Rate (per thousand gallons)	3.66	3.94	4.22	4.51	4.78
Block 2 Rate (per thousand gallons)	5.85	6.30	6.74	7.22	7.65
Block 3 Rate (per thousand gallons)	7.31	7.88	8.43	9.02	9.56

Sources: City of Dania Beach; Willdan Financial Services.

Figure 3-10: Monthly Fixed Water Charge Rates

		FY 2010-11	FY 2011-12	FY 2012-13	FY 2013-14	FY 2014-15
CUSTOMER COSTS						
Total Customer Costs		$ 275,698	$ 305,900	$ 337,133	$ 371,554	$ 405,663
Number of Accts		4,812	4,908	5,055	5,207	5,363
Monthly Customer Cost Charge per Account		$ 4.77	$ 5.19	$ 5.56	$ 5.95	$ 6.30
METER AND SERVICES COSTS						
Total Meter and Services Costs		$ 755,559	$ 838,328	$ 923,921	$ 1,018,254	$ 1,111,729
Number of Equivalent Meters		8,152	8,315	8,565	8,822	9,086
Monthly Meter Charge per 5/8" Meter		$ 7.72	$ 8.40	$ 8.99	$ 9.62	$ 10.20
Meter Size	AWWA Equivalent Meter Factor					
5/8"	1.00	$ 7.72	$ 8.40	$ 8.99	$ 9.62	$ 10.20
1"	2.50	19.31	21.00	22.47	24.05	25.49
1 1/2"	5.00	38.62	42.01	44.95	48.09	50.98
2"	8.00	61.79	67.21	71.92	76.95	81.57
3"	16.00	123.58	134.43	143.84	153.90	163.14
4"	25.00	193.09	210.04	224.74	240.47	254.90
6"	50.00	386.18	420.08	449.49	480.95	509.81
TOTAL COMBINED MONTHLY FIXED CHARGE						
Meter Size	AWWA Equivalent Meter Factor					
5/8"	1.00	$ 12.50	$ 13.60	$ 14.55	$ 15.57	$ 16.50
1"	2.50	24.08	26.20	28.03	29.99	31.79
1 1/2"	5.00	43.39	47.20	50.51	54.04	57.28
2"	8.00	66.56	72.41	77.48	82.90	87.87
3"	16.00	128.35	139.62	149.39	159.85	169.44
4"	25.00	197.86	215.23	230.30	246.42	261.21
6"	50.00	390.95	425.27	455.04	486.90	516.11

Sources: City of Dania Beach; Willdan Financial Services.

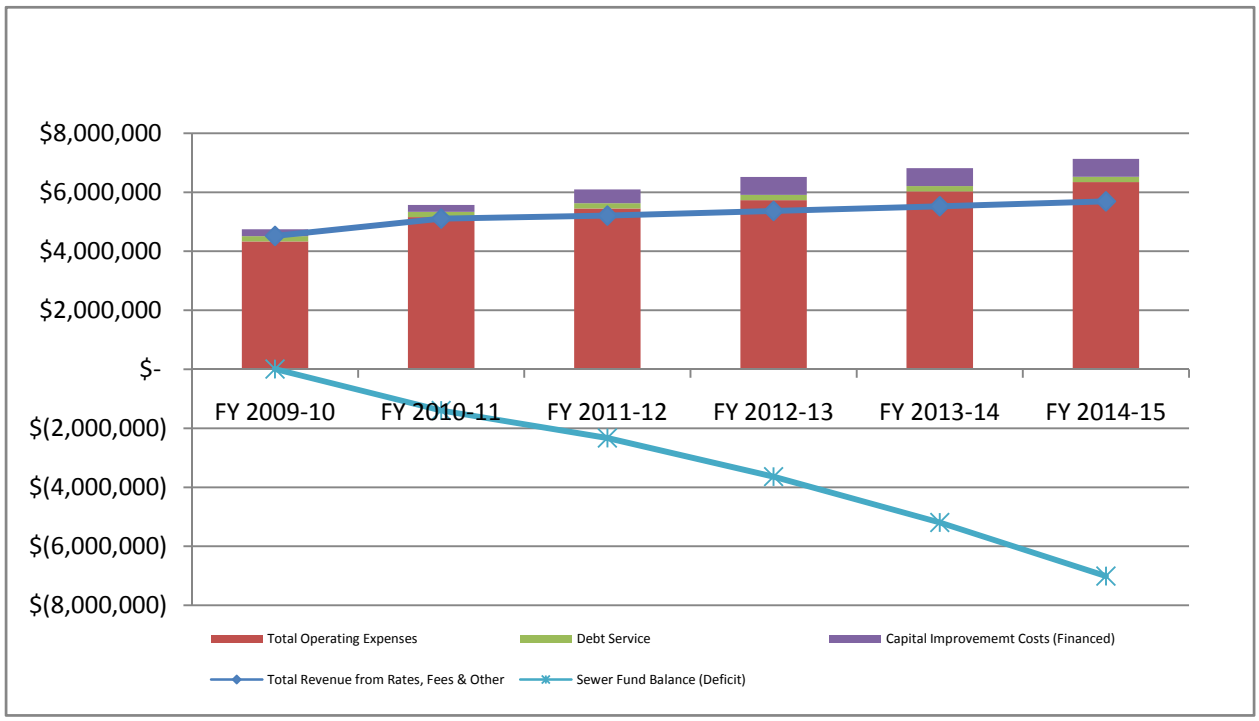
Impact of Revenue Increase

In Fiscal Year 2011, the proposed 7% increase in required revenue does not directly correlate to a 7% increase in rates.

Wastewater Rate Analysis

Overall, the wastewater utility is financially sound. **Figure 4-1**, below, projects the adequacy of existing rate revenue.

Figure 4-1: Revenue and Expenditure Projections – Existing Rates



As the above figure indicates, rate revenue (blue line) is above the bars (cost). Ideally, with cost-based rates, the blue line would set directly on top of the cost bars. However, due to the utility's rate funded capital projects, this goal may not always be achievable. The aqua colored line, the utility's operating fund balance, increases or decreases by the distance between the blue line and the top of the bars.

Details of the process, data, and methodology utilized in the rate study are presented in this section of the report. Summary figures, outlining much of the analysis are included in this section of the report as well, while technical figures, which provide a greater level of detail and breadth, are provided in the Technical Appendix.

Customer Statistics

During the Fiscal Year 2009, the City provided wastewater service to an estimated 4,432 accounts, discharging over 650 million gallons of wastewater. A projection of accounts, discharge, and loading strengths is necessary in the evaluation of the revenue requirements. This projection is critical for the determination of revenues from rates, escalation of treatment-related costs, and design of the rates. Given the current economic climate and review of potential growth, City staff used a conservative growth rate of 1% in fiscal year 2010/11, 2% growth rate in fiscal year 2011/12 and 3% growth rate thereafter. In terms of accounts, the City is projected to see 182 new accounts annually over the next five years. Figure 4-2 shows the City's projected discharge and number of accounts by customer class.

Figure 4-2: Accounts and Consumption

		Projected Annual Discharge (Thousand Gallons)					
Customer Class	Accounts	FY 2009-10	FY 2010-11	FY 2011-12	FY 2012-13	FY 2013-14	FY 2014-15
Single Family Residential	3,583	218,681	218,681	220,868	223,076	225,307	227,560
Condos (Multi-Family)	291	184,892	184,892	186,741	188,608	190,494	192,399
Commercial	595	239,094	239,094	241,485	243,900	246,339	248,802
Laundromats	7	8,745	8,745	8,832	8,921	9,010	9,100
	4,476	651,412	651,412	657,926	664,505	671,150	677,862
		Percent of Total					
Single Family Residential	80.1%	33.6%	33.6%	33.6%	33.6%	33.6%	33.6%
Condos (Multi-Family)	6.5%	28.4%	28.4%	28.4%	28.4%	28.4%	28.4%
Commercial	13.3%	36.7%	36.7%	36.7%	36.7%	36.7%	36.7%
Laundromats	0.2%	1.3%	1.3%	1.3%	1.3%	1.3%	1.3%
0	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Note:
Assumes a a consumption growth rate of in fiscal year 2010/11
Assumes a a consumption growth rate of in fiscal year 2011/12
Assumes a a consumption growth rate of in fiscal year 2012/13 and thereafter.

Source: City of Dania Beach; Willdan Financial Services.

Revenue Requirements Analysis

Revenue from Existing Rates

The first step in developing the revenue requirements is to develop a projection of revenues from existing rates. The City expects to receive approximately $4.52 million in wastewater related charges in Fiscal Year 2010/11. By Fiscal Year 2014/15, assuming the growth discussed above, wastewater charges are projected to increase roughly 25.9% to $5.69 million.

Projections of Operation, Maintenance, and Debt Service Expenses

To project Operating and Maintenance (O&M) expenses over the ten-year planning horizon, three escalation factors were developed. The operations cost escalator, set at 3%, is applied to basic expenditures that the Department incurs: materials, utilities, etc. A personnel cost escalator of 3% accounts for labor and benefit expenditures. The transfers and contract services escalator is set at 2%. Additionally, the City, as part of its financial policies, has established a reserve policy to maintain 25% (90 days) of its annual operating and maintenance expenses.

Debt Service

Debt service is the Department's annual principal and interest obligations when projects are financed via long-term debt. The City currently has four wastewater obligations listed below. The current annual debt service payments total $179 thousand. Figure 4-3 provides a summary of the City's wastewater related debt service.

Figure 4-3: Existing Debt Service

DANIA BEACH ANNUAL DEBT SERVICE (ADS)

State Revolving Fund Loan Awards

Fund	Project Name	Loan Award Amount	Interest Rate	Semiannual Payment	Annual Debt Service
402 - Sewer	LIFT STATION REHAB PHASE I	1,823,750	1.060%	59,031	118,062
	LIFT STATION REHAB	117,780	1.195%	4,026	8,052
	INFLOW & INFILTRATION SYSTEM	442,522	0.955%	13,935	27,870
	FORCE MAIN IMPROVEMENTS	405,362	1.355%	12,755	25,510
				Total DS	**179,494**

Sources: City of Dania Beach; Willdan Financial Services.

Capital Improvement Projects

The Department's Capital Improvement Program (CIP) needs for the wastewater utility are summarized in Figure 4-4. Individually, each project was identified by City staff as growth-related, existing needs (O&M) or a percentage of both to determine the appropriate funding mechanism (monthly rates or connection fee). The capital projects are required to meet the utilities projected growth and to maintain the existing quality of the system.

Figure 4-4: Wastewater Capital Improvement Costs

CIP Project No.	PROJECT	FY 2011-2012	FY 2012-2013	FY 2013-2014	FY 2014-2015	Total
1	Lift Station Rehabilitation	$ 3,206,305	$ -	$ -	$ -	$ 3,206,305
2	Sewer Infiltration/Inflow	339,753	-	-	-	339,753
3	Sewer Infiltration/Inflow Ph 2	122,235	-	-	-	122,235
4	Sanitary Sewer Infiltration/Inflow Program (City System) - Anticipated Debt	311,097	317,228	336,210	875,948	1,840,483
5	Sanitary Sewer Infiltration/Inflow Program (Private Property) - Anticipated Debt	51,850	56,993	65,012	170,564	344,419
6	Dania Cut Off Canal Sewermain Replacement Portion - Anticipated Debt	241,204	-	-	-	241,204
7	Vac-Con Truck - Anticipated Debt Proceeds	316,595	-	-	-	316,595
8	Lift Station Rehabilitation Phase II - Anticpated Debt Proceeds	1,451,786	-	-	-	1,451,786
	Total	$ 6,040,825	$ 374,221	$ 401,222	$ 1,046,512	$ 7,862,780

Notes:

Construction cost estimates were escalated annually by a factor of 3.7%, based on the average annual increase between 2004 and 2009 in the Producer Price Indices for steel and plastic construction materials.

Source: City of Dania Beach; Bureau of Labor Statistics; Willdan Financial Services.

Summary of Revenue Requirements Analysis

The preceding components comprise the foundation of the revenue requirement analysis. Given the current economic climate, Willdan facilitated discussions with City staff to assure the accuracy of financial and growth variables in developing the revenue requirement analysis. Particular emphasis was placed on attempting to minimize rates, yet still generating adequate funds to support the operational activities and capital projects throughout the study period.

The revenue requirements analysis Figure 4-5, presented in the following figure, provides a basis for evaluating the timing and level of wastewater revenue adjustments needed to meet the projected required revenue for the study period. The percentages shown at the bottom of the figure identify the recommended revenue adjustments.

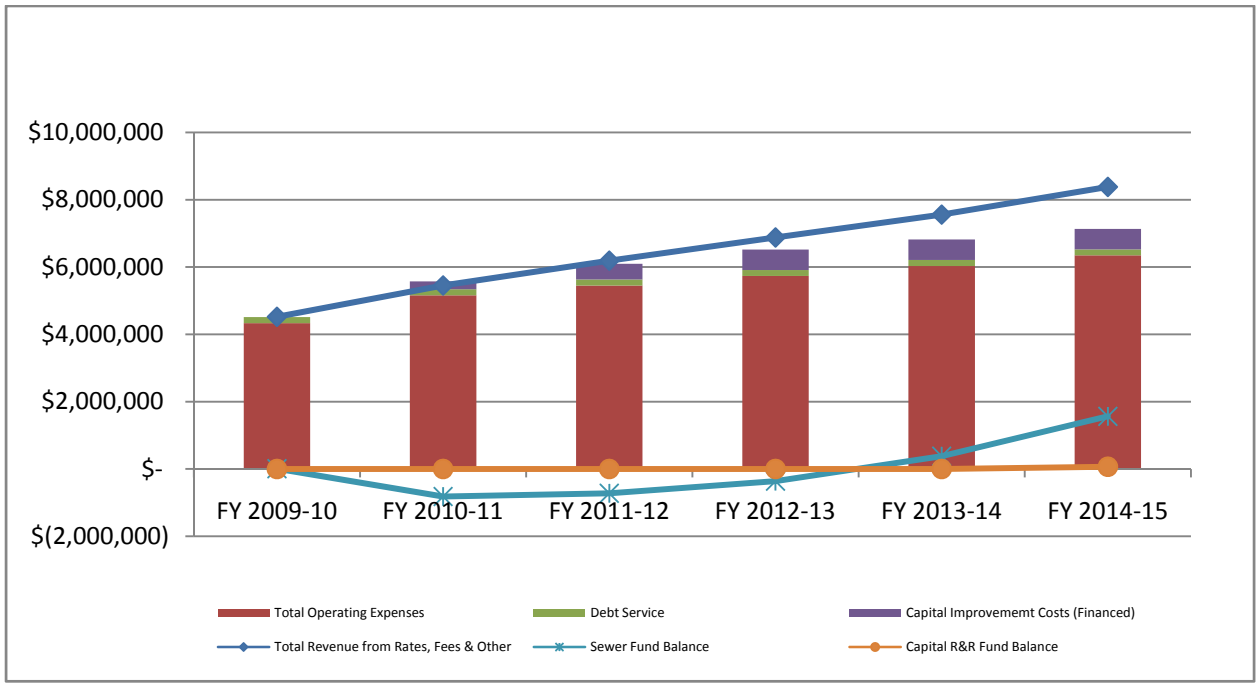
Figure 4-5: Summary of Wastewater Revenue Requirements

	Description	FY 2010-11	FY 2011-12	FY 2012-13	FY 2013-14	FY 2014-15
1	**Projected Customer Growth Rate**	1.00%	2.00%	3.00%	3.00%	3.00%
2	**Estimated Existing Operating Revenue**	5,108,434	5,210,603	5,366,921	5,527,928	5,693,766
	Revenue After Previous FY Increase	NA	**5,679,557**	**6,551,937**	**7,198,395**	**7,908,636**
3	Additional Revenue Required					
4	*Year* *Months Effective*					
5	FY 2010-11 9	344,819	511,160	327,597	359,920	474,518
6	Total Operating Revenues **(Required Revenue)**	**5,453,253**	**6,190,717**	**6,879,534**	**7,558,314**	**8,383,154**
	Revenue Increase	9.00%	9.00%	5.00%	5.00%	6.00%
7	**Operating Expenses**					
8	Total Sewer Accounting and Billing	87,854	93,978	99,830	106,090	112,790
9	Total Administration	543,778	576,399	608,696	642,957	679,312
10	Total Sewer Collection	4,528,124	4,779,998	5,025,112	5,283,093	5,554,646
11	**Total Operating Expenses**	**5,159,756**	**5,450,374**	**5,733,638**	**6,032,140**	**6,346,748**
12	Net Operating Income	293,497	740,343	1,145,896	1,526,175	2,036,406
13	Debt Service					
14	Current Bonds	179,494	179,494	179,494	179,494	179,494
15	Proposed Bonds (CIP Financing)	232,500	465,000	606,000	606,000	606,000
16	**Total Debt Service**	**411,994**	**644,494**	**785,494**	**785,494**	**785,494**
17	Coverage Ratio (Does not include Interest Earnings)	71%	115%	146%	194%	259%
18	**Non-Operating Revenue**					
19	Investment Earnings	-	-	-	-	-
20	Operating Transfer In	-	-	-	-	-
21	**Total Non-Operating Revenue**	**-**	**-**	**-**	**-**	**-**
22	**Capital Projects Funded by Rates**					
23	CIP PAYGO Projects	-	-	-	-	-
24	**Total Capital Projects Funded by Rates**	**-**	**-**	**-**	**-**	**-**
25	**Net Income (Loss)**	(118,497)	95,849	360,402	740,681	1,250,912
26	**Sewer Enterprise Fund**					
27	Beginning Operating Fund Balance	(698,844)	(817,341)	(721,492)	(361,090)	379,590
28	**Subtotal**	**(817,341)**	**(721,492)**	**(361,090)**	**379,590**	**1,630,503**
29	Fund Balance Days of O&M	90	90	90	90	90
30	Desired Fund Balance	1,272,269	1,343,928	1,413,774	1,487,377	1,564,952
31	Excess (Deficit) O&M / Excess to R&R Fund	(2,089,609)	(2,065,420)	(1,774,864)	(1,107,786)	65,551
32	**Ending Operating Fund Balance**	**$ (817,341)**	**$ (721,492)**	**$ (361,090)**	**$ 379,590**	**$ 1,564,952**
33	**Capital Repair and Replacement Fund**					
34	Beginning Capital R&R Fund Balance	-	-	-	-	-
34	Deposit	-	-			
35	Capital Projects - Repair & Maintenance Costs		-			
35	Excess from O&M Fund	-	-	-	-	65,551
36	**Ending Capital R&R Fund Balance**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 65,551**

Sources: City of Dania Beach; Willdan Financial Services.

Based upon the revenue requirement analysis, the City will need to adjust their rates to increase revenue by 8% in Fiscal Years 2010/11 and 2011/12, following smaller revenue increases in subsequent years.. **Figure 4-6** expands upon the earlier figure (**Figure E-4**), to illustrate the impact of the proposed revenue increase on the utility's financial condition.

Figure 4-6: Revenue and Expenditure Projections – Proposed Rates



Cost of Service Analysis

This section of the report discusses the allocation of operating and capital costs to the Flow, Suspended Solids (SS) and Base, the determination of unit rates, and the calculation of user class cost responsibility.

Cost Allocation by Function

The cost of service allocation conducted in this study is established on the flow and strength characteristics method, which is endorsed by the Water Environmental Federation (WEF). Under this method, revenue requirements are allocated to the different user classes proportionate to their use of the wastewater system. Allocations are based on flow volume, SS, and customer accounts. Use of this methodology results in a generally accepted cost distribution among customer classes and a means of calculating and designing rates to proportionately recover those costs.

Cost Allocation Procedure

The cost of service study for the City of Dania Beach is performed in three basic steps.

1. The first step is called functionalization, which categorizes cost data in terms of functions performed by a wastewater utility system. The functions identified in this study include operating costs, capital projects to be funded by rates, debt service, and reserve requirements.
2. The second step classifies operating and non-operating expenses of the utility to the cost components of flow and strength of wastewater effluent. The cost components are defined as follows:
    - Flow Costs: Volume or flow related costs vary with the discharge of wastewater by users over a specified period of time, typically a year
    - Strength Costs: Strength costs vary with the quality of wastewater discharged as measured by the suspended solids (SS) content of the discharged sewage
3. The final step in this analysis allocates costs of service to each customer class. This step is accomplished through the development of volume and strength related allocation factors for each customer class.

For compliance with State guidelines, a wastewater utility is required to utilize a cost allocation approach that fairly allocates costs among customer classes. This is accomplished by allocating costs into the treatment parameters of flow and strength. These costs are to be allocated in proportion to the percentage that each cost parameter represents.

When divided by the wastewater loadings of each user class, unit costs of service are obtained. All costs incurred by a wastewater utility system can be allocated to one or more cost parameters. The allocation of each cost item between flow, base, and SS is based on industry standards of treatment parameter data.

Figure 4-6 and Figure 4-7 present the classification of wastewater expenses and loading calculations used to determine the allocation factors (shown in **Figure 4-8**). The allocation factors are computed by multiplying the functionalization factors (23.17% for Base, 53.65% for Flow, and 23.17% for SS, shown at the bottom of **Figure 4-5**) by the loading percentages of each customer class. For example, the Residential Class has a Flow Allocation Factor of 31.9%, which is the product of the Residential Flow Loading Factor of 59.5% and the Flow Functionalization Factor of 53.65%. This means that the flow generated by the Residential Class contributes to 31.9% of the total revenue requirements. When coupled with their Base and SS allocation factors (20.1% and 12.8%, respectively), 64.7% of the total revenue requirements can be allocated to the Residential Class based on their flow and strength characteristics. The required revenue allocations for each customer class are shown below in **Figure 4-8**.

Figure 4-7: Classification of Sewer Expenses by Function

Description	Classification Base	Flow	SS	Total	FYE 2010 to 2015 Average Base	Flow	SS	Total
Operating Expenses								
Regular	10%	80%	10%	100.0%	$ 3,580	$ 28,639	$ 3,580	$ 35,799
Part-time	10%	80%	10%	100.0%	795.46	6,363.71	795.46	7,955
FICA Taxes	10%	80%	10%	100.0%	271.29	2,170.34	271.29	2,713
Medicare Taxes	10%	80%	10%	100.0%	63.45	507.59	63.45	634
Retirement Contributions	10%	80%	10%	100.0%	615.41	4,923.29	615.41	6,154
Life & Health Insurance	10%	80%	10%	100.0%	2,706.84	21,654.68	2,706.84	27,068
Workers' Compensation	10%	80%	10%	100.0%	16.27	130.15	16.27	163
Contractual Service	10%	80%	10%	100.0%	522.17	4,177.37	522.17	5,222
Telephone	25%	50%	25%	100.0%	293.53	587.05	293.53	1,174
Postage	25%	50%	25%	100.0%	3,774.15	7,548.30	3,774.15	15,097
Equipment Maintenance	33%	33%	33%	100.0%	379.83	379.83	379.83	1,140
Printing & Binding	25%	50%	25%	100.0%	67.98	135.95	67.98	272
Office Supplies	25%	50%	25%	100.0%	54.38	108.76	54.38	218
Regular	10%	80%	10%	100.0%	6,992.49	55,939.96	6,992.49	69,925
Overtime	10%	80%	10%	100.0%	6.27	50.17	6.27	63
Accrued Leave Buyback	10%	80%	10%	100.0%	83.93	671.46	83.93	839
FICA Taxes	10%	80%	10%	100.0%	465.84	3,726.71	465.84	4,658
Medicare Taxes	10%	80%	10%	100.0%	109.05	872.42	109.05	1,091
Retirement Contributions	10%	80%	10%	100.0%	1,760.75	14,086.00	1,760.75	17,608
Life & Health Insurance	10%	80%	10%	100.0%	7,309.89	58,479.10	7,309.89	73,099
Workers' Compensation	10%	80%	10%	100.0%	27.45	219.56	27.45	274
Professional Service	10%	80%	10%	100.0%	138.14	1,105.13	138.14	1,381
Consultant Engineers	10%	80%	10%	100.0%	2,552.35	20,418.77	2,552.35	25,523
Accounting & Auditing	10%	80%	10%	100.0%	475.40	3,803.19	475.40	4,754
Contractual Service	10%	80%	10%	100.0%	219.82	1,758.56	219.82	2,198
Expense Account	10%	80%	10%	100.0%	97.88	783.08	97.88	979
Telephone	10%	80%	10%	100.0%	311.23	2,489.84	311.23	3,112
Water	10%	80%	10%	100.0%	6.67	53.33	6.67	67
Electricity	10%	80%	10%	100.0%	483.55	3,868.40	483.55	4,836
Equipment Rentals	10%	80%	10%	100.0%	41.66	333.24	41.66	417
Trailer Rentals	10%	80%	10%	100.0%	22.50	180.00	22.50	225
Insurance Coverage	10%	80%	10%	100.0%	3,975.02	31,800.16	3,975.02	39,750
Permits & License fees	10%	80%	10%	100.0%	33.72	269.73	33.72	337
Office Supplies	25%	50%	25%	100.0%	135.95	271.90	135.95	544
Buildings	33%	33%	33%	100.0%	-	-	-	-
Improv. Other Than Bldg	33%	33%	33%	100.0%	-	-	-	-
Transfers to General Fund	10%	80%	10%	100.0%	27,418.31	219,346.48	27,418.31	274,183
Reserve for Debt	10%	80%	10%	100.0%	357.78	2,862.27	357.78	3,578
Regular	10%	80%	10%	100.0%	30,168.39	241,347.16	30,168.39	301,684
Overtime	10%	80%	10%	100.0%	769.66	6,157.26	769.66	7,697
Accrued Leave Buyback	10%	80%	10%	100.0%	866.90	6,935.19	866.90	8,669
FICA Taxes	10%	80%	10%	100.0%	2,272.74	18,181.93	2,272.74	22,727
Medicare Taxes	10%	80%	10%	100.0%	531.60	4,252.83	531.60	5,316
Retirement Contributions	10%	80%	10%	100.0%	15,518.90	124,151.19	15,518.90	155,189
Life & Health Insurance	10%	80%	10%	100.0%	12,933.13	103,465.05	12,933.13	129,331
Workers' Compensation	10%	80%	10%	100.0%	1,117.42	8,939.32	1,117.42	11,174
Consultant Engineers	25%	50%	25%	100.0%	40,572.70	81,145.39	40,572.70	162,291
Contractual Service	25%	50%	25%	100.0%	866,638.41	1,733,276.81	866,638.41	3,466,554
Training & Per Diem	25%	50%	25%	100.0%	271.90	543.80	271.90	1,088
Telephone	25%	50%	25%	100.0%	472.95	945.90	472.95	1,892
Water	25%	50%	25%	100.0%	974.68	1,949.36	974.68	3,899
Electricity	25%	50%	25%	100.0%	19,967.50	39,935.00	19,967.50	79,870
Misc. Rentals	25%	50%	25%	100.0%	1,049.44	2,098.89	1,049.44	4,198
Equipment Maintenance	25%	50%	25%	100.0%	2,488.78	4,977.56	2,488.78	9,955
Vehicles Maintenance	25%	50%	25%	100.0%	708.92	1,417.84	708.92	2,836
Grounds Maintenance	33%	33%	33%	100.0%	822.33	822.33	822.33	2,467
Utilities Maintenance	33%	33%	33%	100.0%	2,426.63	2,426.63	2,426.63	7,280
Permits & License fees	25%	50%	25%	100.0%	1,359.51	2,719.01	1,359.51	5,438
Gasoline	25%	50%	25%	100.0%	3,148.81	6,297.61	3,148.81	12,595
Misc. Supplies	25%	50%	25%	100.0%	2,279.38	4,558.75	2,279.38	9,118
Uniforms	25%	50%	25%	100.0%	244.71	489.42	244.71	979
Improv. Other Than Bldg	33%	33%	33%	100.0%	84,722.22	84,722.22	84,722.22	254,167
Renewal & Replacement	25%	50%	25%	100.0%	3,635.71	7,271.42	3,635.71	14,543
Total Operating Expenses					$ 1,162,130	$ 2,989,744	$ 1,162,130	$ 5,314,003
Non-Operating Expenses								
Total Debt Service	33%	33%	33%	100.0%	59,831	59,831	59,831	179,494
CIP Projects	33%	33%	33%	100.0%	167,700	167,700	167,700	503,100
Total Non-Operating Expenses					$ 227,531	$ 227,531	$ 227,531	$ 682,594
Total Expenses					**$ 1,389,661**	**$ 3,217,275**	**$ 1,389,661**	**$ 5,996,597**
Classification Factor					**23.17%**	**53.65%**	**23.17%**	**100.00%**

Sources: City of Dania Beach, Willdan Financial Services

Figure 4-8: Loading and Unit Rate Calculations

Customer Class	Number of Accounts	Account Factor	Projected Discharges to the Sewer System (TG)	Flow Factor	Concentration SS (mg/l)	Calculated Loading SS (lb/yr)	SS Factor
Single Family/ Multi-Family Residential	3,874	86.6%	317,076	59.5%	200	395,604	55.0%
Commercial/Laundromats	602	13.4%	215,952	40.5%	240	323,323	45.0%
Total	4,476	100.0%	533,028	100.0%		718,927	100.0%

Sources: City of Dania Beach; Willdan Financial Services.

Figure 4-9: Flow and Allocation Factors

Customer Class	Factors Base Factor	Flow Factor	SS Factor
	1	**2**	**3**
Single Family/Multi-Family Residential	86.6%	59.5%	55.0%
Commercial/Laundromats	13.4%	40.5%	45.0%

	Base Factor	Flow Factor	SS Factor
Functionalization Factors	23.2%	53.7%	23.2%

Customer Class	Allocation Factors Base Factor	Flow Factor	SS Factor
	1	**2**	
Single Family/Multi-Family Residential	20.1%	31.9%	12.8%
Commercial/Laundromats	3.1%	21.7%	10.4%

Sources: City of Dania Beach; Willdan Financial Services.

Figure 4-10: Allocation of Revenue Requirements

	1 Base Factor	**2** Flow Factor	**3** SS Factor	**4** Total
Single Family/Multi-Family Residential	1,093,802	1,740,413	695,402	3,529,617
Commercial/Laundromats	169,944	1,185,349	568,344	1,923,637
Total	$ 1,263,746	$ 2,925,762	$ 1,263,746	$ 5,453,253

Sources: City of Dania Beach; Willdan Financial Services.

Rate Design Analysis

The final step of the rate study is the design of the wastewater rates to collect the desired level of revenue determined in the revenue requirement analysis. During this analysis, consideration is given to the levels of the rates. This section reviews the proposed wastewater rate design for the City.

Criteria and Considerations

In determining the appropriate rate level and structure, Willdan, in conjunction with City staff, analyzed various generated financial scenarios concerning the proposed adjustments and the implications attributed to those decisions.

Listed below is a simplified list of the design considerations that were reviewed:

- Consideration of the customer's ability to pay
- Clear and understandable rates
- Easily administered
- Outdoor water usage
- Revenue stability (month to month and year to year)
- Efficient allocation of resources
- Fair and equitable (cost-based) rates

When developing the City's proposed rates all of the aforementioned criteria were taken into consideration. Determining the appropriate balance is crucial, as certain criteria can conflict with one another, i.e. the customers ability to pay and cost-based rates or charges. In designing rates, there will always be concessions between the various objectives; however, the proposed rates meet all leading objectives of the City.

Overview of Existing Rate Structure

The City's existing wastewater rate structure is a uniform rate, per account, based on the amount of metered water less irrigation deduction. **Figure 4-11** shows the City's existing rate structure and rates.

Figure 4-11: Existing Sewer Discharge Rates by Customer Class

Description	2010	Fiscal Year Ending September 30, 2011	2012	2013
Effective Date	Jan. 1, 2010	Jan. 1, 2011	Oct. 1, 2011	Oct. 1, 2012
WASTEWATER RATES				
Residential/ Condominiums:				
Wastewater Base Rate per ERU				
Water Meter Size (inches)				
5/8"	$17.34	$17.40	$19.56	$21.52
1"	$17.34	43.50	48.90	53.80
1 1/2"	$17.34	87.00	97.80	107.60
2"	$17.34	139.20	156.48	172.16
3"	$17.34	278.40	312.96	344.32
4"	$17.34	435.00	489.00	538.00
6"	$17.34	870.00	978.00	1,076.00
Water Consumption Rate per 1,000 gallons (per ERU)				
All Usage	$5.50	$6.04	$6.78	$7.46
Commercial/ Sprinklers/ Laundromats:				
Wastewater Base Rate per ERU				
Water Meter Size (inches)				
5/8"	$17.34	$17.40	$19.56	$21.52
1"	43.38	43.50	48.90	53.80
1 1/2"	86.74	87.00	97.80	107.60
2"	138.80	139.20	156.48	172.16
3"	277.59	278.40	312.96	344.32
4"	433.73	435.00	489.00	538.00
6"	867.45	870.00	978.00	1,076.00
Water Consumption Rate per 1,000 gallons (per ERU)				
All Usage	$5.50	$7.08	$7.95	$8.75

Proposed Rate Adjustments

Figure 4-12 recaps the proposed variable rates by customer class as designed in this study.

Figure 4-12: Proposed Monthly Sewer Discharge Rates by Customer Class

		FY 2010/11	FY 2011/12	FY 2012/13	FY 2013/14	FY 2014/15
All Classes						
Base Rate Allocation		1,263,746	1,434,647	1,594,274	1,751,576	1,942,726
Accounts		6,051	6,112	6,173	6,235	6,297
Annual Base Charge		208.83	234.73	258.26	280.94	308.51
Monthly Meter Charge per 5/8" Meter		**17.40**	**19.56**	**21.52**	**23.41**	**25.71**
Meter Size	AWWA Equivalent Meter Factor					
5/8"	1.00	$ 17.40	$ 19.56	$ 21.52	$ 23.41	$ 25.71
1"	2.50	43.50	48.90	53.80	58.53	64.28
1 1/2"	5.00	87.00	97.80	107.60	117.05	128.55
2"	8.00	139.20	156.48	172.16	187.28	205.68
3"	16.00	278.40	312.96	344.32	374.56	411.36
4"	25.00	435.00	489.00	538.00	585.25	642.75
6"	50.00	870.00	978.00	1,076.00	1,170.50	1,285.50

Sources: City of Dania Beach; Willdan Financial Services.

Single Family/Multi-Family Residential					
Variable Allocation	2,435,815	2,765,219	3,072,894	3,376,087	3,744,520
Project Discharge (in tg)	403,573	407,609	411,685	415,802	419,960
Variable Rate (per tg)	**6.04**	**6.78**	**7.46**	**8.12**	**8.92**
Commercial/Laundromats					
Variable Allocation	1,753,693	1,990,851	2,212,365	2,430,652	2,695,909
Project Discharge (in tg)	247,839	250,317	252,821	255,349	257,902
Variable Rate (per tg)	**7.08**	**7.95**	**8.75**	**9.52**	**10.45**

Sources: City of Dania Beach; Willdan Financial Services.

Impact of Revenue Reduction

In Fiscal Year 2011, the proposed 9% increase in required revenue does not directly correlate to a 9% increase in rates. The cost of service analysis redistributes the required revenue proportionate to each customer class' demand on the system. Thus, the proposed rate adjustments may vary between customer classes.