NORTH MIAMI
FLORIDA
776 N.E. 125 Street, North Miami, Florida 33161

Council Report

To: The Honorable Mayor and City Council

From: Aleem A Ghany, PE, Public Works Director

Date: April 10, 2012

AN ORDINANCE OF THE MAYOR AND CITY COUNCIL OF THE CITY OF NORTH MIAMI, FLORIDA, AMENDING CHAPTER 19 OF THE CITY OF NORTH MIAMI CODE OF ORDINANCES, ENTITLED "UTILITIES", UNDER ARTICLE VIII, ENTITLED "ANNUAL UTILITY RATE INDEX ADJUSTMENT", SPECIFICALLY AT SECTION 19-248, ENTITLED "RATE INDEX ADJUSTMENT" TO REPLACE THE USE OF THE CONSUMER PRICE INDEX (CPI) WITH A CONSERVATION BASED RATE STRUCTURE PLAN, AS ADOPED BY RESOLUTION OF THE MAYOR AND CITY COUNCIL, IN COMPLIANCE WITH STATE AND LOCAL REGULATORY REQUIREMENTS; PROVIDING FOR CONFLICTS, REPEAL, SEVERABILITY, CODIFICATION, AND AN EFFECTIVE

RECOMMENDATION

Staff recommends that Council adopt the proposed rate analysis allowing the inclusion of regulatory mandates compliance. Approving this Ordinance will assist the City's Public Works Department to comply with the requirements set forth in the City's Consumptive Use Permit issued by the South Florida Water Management District and EPA's sewer system infrastructure analysis and rehabilitation handbook (October 1991, EPA 625691030) designed to identify and reduce sewer infiltration and inflow to a level that meets the standard set forth in section 24-42.2(1)(d). The Black and Veatch study has taken all of the above regulatory requirements into consideration in the analysis. Miami-Dade County Code Chapter 24-42.2 requires all publicly and privately owned or operated sanitary sewer collection and transmission systems to complete a Sanitary Sewer Evaluation Survey (SSES) every ten years. As part of the Second and Final Consent Decree entered into by Miami-Dade County and the EPA, MD-WASD is required to complete a County-wide collection and transmission system hydraulic model, capable of evaluating the system modifications, upgrades and expansions, as well as assessing the impact of I/I rehabilitation programs and operational and maintenance procedures designed to optimize collection and transmission capacities, in addition to requiring the

County to implement the hydraulic model, the Decree also requires the Volume Sewer Customers (VSC) that discharges to MD-WASD for treatment and disposal to prepare their own models for the same purposes. DERM later clarified the modeling requirements in a County Code, Section 24.-42.2(1)(c). The Code requires the implementation of a County-wide rain dependent peak flow management study capable of characterizing I/I flows, predicting peak flows at each City pump station and assessing each station's ability to manage peak flows with one pump out-of-service. DERM further indicated that the analysis is to be conducted using the same 2-year design storm specified for the peak flow submittal.

BACKGROUND

Water and Wastewater utilities across the country are facing serious challenges with the increase of cost to maintain aging infrastructure; increase in population causing a need for more consumption, and stringent regulatory requirements imposed on utilities. The City of North Miami is faced with the same challenges. The goal of utilities and their common missions are to be successful and efficient service providers. The regulatory requirements imposed on the City and insufficient revenues make it critical for the City to implement a new strategic approach in the promoting of effective utility management while dealing with the day to day challenges.

To remain competitive and able to continue providing water and sewer services, the rate analysis completed by the City's consultant Black and Veatch need to be adopted with the inclusion of the regulatory mandates in Ordinance 1193 authorizing City administration to take the necessary action to comply with all regulatory agencies. The study proves to be conclusive that a new strategy has to adopted for the City to remain in business of providing water and sewer services. If the course of action recommended is not taken into consideration, Utility will be operating in the red and unable to meet its regulatory requirements.

Attachments

(1) Ordinance
(2) Final Revenue Requirements Cost of Service, Rate Design for Water and Sewer Service

ORDINANCE NO. _____

AN ORDINANCE OF THE MAYOR AND CITY COUNCIL OF THE CITY OF NORTH MIAMI, FLORIDA, AMENDING CHAPTER 19 OF THE CITY OF NORTH MIAMI CODE OF ORDINANCES, ENTITLED "UTILITIES," UNDER ARTICLE VIII, ENTITLED "ANNUAL UTILITY RATE INDEX ADJUSTMENT," SPECIFICALLY AT SECTION 19-248, ENTITLED "RATE INDEX ADJUSTMENT" TO REPLACE THE USE OF THE CONSUMER PRICE INDEX (CPI) WITH A CONSERVATION BASED RATE STRUCTURE PLAN, AS ADOPTED BY RESOLUTION OF THE MAYOR AND CITY COUNCIL, IN COMPLIANCE WITH STATE AND LOCAL REGULATORY REQUIREMENTS; PROVIDING FOR CONFLICTS, REPEAL, SEVERABILITY, CODIFICATION, AND AN EFFECTIVE DATE.

WHEREAS, the City of North Miami ("City"), as with most local governments across the country providing water and sewer utility services ("Services"), is facing serious operational challenges with the maintenance of an aging infrastructure coupled with insufficient revenues, increased water and sewer demands, and the ever-increasing regulatory requirements imposed upon the City in the provision of Services; and

WHEREAS, on August 23, 2010, the South Florida Water Management District stipulated in the City's Consumptive Use Permit Number 13-00059-W, that the City is to implement a tiered rate structure with a water conservation provision; and

WHEREAS, Section 19-248 of the City Code of Ordinances, currently limits all rate adjustments to the CPI and does not allow the tiered rate structure promulgated by the South Florida Water Management District; and

WHEREAS, a comprehensive water and sewer rate study was conducted by Black & Veatch Corporation ("Consultant"), which included a financial plan, cost of service analysis, and a conservation-based utility rate structure ("Rate Plan"); and

WHEREAS, to avoid a finding of non-compliance by the South Florida Water Management District and to generate necessary funds for present and future needs, it is necessary to implement the Rate Plan to the City's existing rate structure; and

WHEREAS, City administration respectfully recommends the adoption of the proposed amendments to the Ordinance, in order to remain compliant with regulatory agencies and to continue to provide the highest quality of Services to all residents and consumers; and

WHEREAS, the Mayor and City Council find, that the proposed amendment to the Ordinance, is in the best interest of the City.

NOW THEREFORE, BE IT ORDAINED BY THE MAYOR AND CITY COUNCIL OF THE CITY OF NORTH MIAMI, FLORIDA, THAT:

Section 1. The Mayor and City Council of the City of North Miami, Florida, hereby amend Chapter 19 of the City of North Miami Code of Ordinances, entitled "Utilities", under Article VIII, entitled "Annual Utility Rate Index Adjustment," specifically at Section 19-248, entitled "Rate Index Adjustment" to replace the use of the Consumer Price Index (CPI) with a conservation based Rate Structure Plan, as adopted by Resolution of the Mayor and City Council, in compliance with State and local regulatory requirements, as follows:

CHAPTER 19. UTILITIES

* * * * *

ARTICLE VIII. ANNUAL UTILITY RATE INDEX ADJUSTMENT

* * * * *

Sec. 19-248. Rate ~~Index~~ and Cost of Service Adjustments.

~~Commencing on October 1, 2006 and effective as the first billing date on or after October 1 of each year thereafter, all water and sewer, stormwater, and solid waste utility rates, fees and charges may be adjusted, without hearing or further action by the city council, upon the review and recommendation of the city manager and in accordance with the consumer price index, as published by the United States Bureau of Labor and Statistics and as prescribed in F.S. § 367.081(4)(a).~~ The city council may from time to time, adjust water and sewer, stormwater, and solid waste utility, rates, fees and charges, by a resolution adopting a rate structure analysis plan in compliance with state and county regulations, without a hearing or further action by the city council, as prescribed in Section 367.081, Florida Statutes.

****

Section 2. **Repeal.** All ordinances or parts of ordinances in conflict herewith are repealed.

Section 3. **Conflicts.** All ordinances or parts of ordinances in conflict or inconsistent

with the provisions of this Ordinance are hereby repealed.

Section 4. **Severability.** The provisions of this Ordinance are declared to be severable, and if any section, sentence, clause or phrase of this Ordinance shall for any reason be held to be invalid or unconstitutional, such decision shall not affect the validity of the remaining sections, sentences, clauses, and phrases of this Ordinance, but they shall remain in effect, it being the legislative intent that this Ordinance shall stand notwithstanding the invalidity of any part.

Section 5. **Codification.** The provisions of this Ordinance may become and be made a part of the Code of Ordinances of the City of North Miami, Florida. The sections of the Ordinance may be renumbered or re-lettered to accomplish such, and the word "ordinance" may be changed to "section," "article" or any other appropriate word.

Section 6. **Effective Date.** This Ordinance shall become effective immediately upon adoption on second reading.

PASSED AND ADOPTED by a 3-2 vote of the Mayor and City Council of the City of North Miami, Florida, on first reading this 10 day of April, 2012.

PASSED AND ADOPTED by a _____ vote of the Mayor and City Council of the City of North Miami, Florida, on second reading this _____ day of _____, 2012.

_____
ANDRE D. PIERRE, ESQ
MAYOR

ATTEST:

_____
MICHAEL A. ETIENNE, ESQ.
CITY CLERK

APPROVED AS TO FORM AND
LEGAL SUFFICIENCY:

_____
REGINE M. MONESTIME
CITY ATTORNEY

SPONSORED BY: CITY ADMINISTRATION

Moved by: _____

Seconded by: _____

Vote:

Mayor Andre D. Pierre, Esq.	_____ (Yes)	_____ (No)
Vice Mayor Jean R. Marcellus	_____ (Yes)	_____ (No)
Councilperson Michael R. Blynn, Esq.	_____ (Yes)	_____ (No)
Councilperson Scott Galvin	_____ (Yes)	_____ (No)
Councilperson Marie Erlande Steril	_____ (Yes)	_____ (No)

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REVENUE REQUIREMENTS, COST OF SERVICE, AND RATE DESIGN FOR WATER AND SEWER SERVICE

B&V PROJECT NO. 168783

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PREPARED FOR

City of North Miami, Florida

MARCH 2012

BLACK & VEATCH
Building a world of difference.

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1 Executive Summary

A financing plan has been developed based on an analysis of the rates utilized to furnish water and sewer services to customers connected to the City of North Miami's (the "City") water and sewer utilities, herein referred to as the "Utility System". The financing plan compares the adequacy of projected revenues under existing rates in meeting the revenue requirement of the Utility System, and identifies any adjustments which may be necessary to the existing revenue levels during the study period. The plan consist of revising the existing water rate structure to promote water conservation, addressing specific customer affordability issues, implementing annual rate increases over the forecast period of fiscal years 2012 through 2016, and crafting a Utility System financing plan that provides the City with the ability to appropriately fund operating and capital requirements over the forecast period. The proposed financing plan will require annual Utility System overall revenue increases of 4.0, 9.0, 7.5, 6.0 and 6.0 percent for the fiscal years ("FY") 2012, 2013, 2014, 2015 and 2016, respectively. In FY 2012, the revenue increase will be implemented over six months, so the effective rate increase for FY 2012 will be 8.0 percent. For the analyses that is defined and presented herein, FY 2012 is established as the "Test Year" for allocating costs to customer classes and for designing the initial rate schedules

The total cost of service, or revenue requirement, for the combined water and sewer Utility System for FY 2012 is projected to be $23,953,975. The first proposed rate increase resulting from this study is recommended to become effective April1, 2012. As such, the projected 4.0% overall annualized FY 2012 revenue increase will be implemented over the six months of FY 2012 which will aggregate to an effective 8.0 percent rate increase. The allocated cost of service by customer class for the water and sewer utilities, net of the revenue requirements met from other operating revenues which total $1,688,600, are summarized in **Tables 14 and 30**, respectively. Also shown in these tables are the projected revenues under existing rates and the overall existing revenue relationship to cost of service and the percentage revenue adjustments in existing revenues by customer class indicated to meet allocated cost of service.

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The proposed rate schedules have been designed to appropriately recover Utility System cost, address customer affordability issues for the typical Utility System customer, and promote the efficient use of water resources. Directional, strategic, and policy guidance around the development of the proposed financing plan was obtained from City staff. As a result of the evaluations and analyses, the following summary of findings and recommendations is offered for consideration by the City.

1.1 REVENUE UNDER EXISTING RATES

- The City of North Miami currently provides treated water and sewer transmission services to approximately 18,993 customers as of the end of FY 2011. The City does not anticipate customer growth over FY 2011 and 2012, so it is projected that the City will serve approximately 19,000 customers at the end of FY 2011 and no additions in customers have been forecasted for FY 2012. In FY 2013 and 2014, it is anticipated that the City's customer base will experience customer growth of about 0.25% respectively and 0.50% for the remainder of the forecast period. At the end of the FY 2016, it is projected that the total number of combined water and sewer transmission services customers will grow to 19,274 which aggregates to 281 additions in customers over the forecast period.

The City currently bills customers on a monthly or quarterly basis. In addition, the City bills customers classified as, residential, mobile homes, and apartment, on a Living Units basis which is designated by the City at the time service is initiated. In essence, the City may provide water and sewer service to a residential property/customer and this property may be recorded as having multiple/more than one (1) Living Units.

At the end of FY 2011, the City served approximately 21,351 apartment living units, 6 mobile home living units, and approximately 16,675 in the residential customer class. These units serve as the basis for the current application of the City's availability charges across the residential, mobile home, and apartment customer classes. The living units described herein are projected to increase in accordance with the customer growth rates discussed herein which will produce at total living unit increase in the amount of about 21,673, 6, and 16,964 for the apartment, mobile home, and residential customer classes, respectively, by FY 2016.

Revenue is primarily derived from charges for treated water and sewer services. Additional revenue is derived from miscellaneous services and fees that the City may offer or charge for services that are not directly related to the production of water or transmission of sanitary sewer. Combined operating revenue from rates for water and sewer service, under existing rates, is projected to increase from $23,027,700 in FY 2012 to $23,375,100 in FY 2016. Other revenues for the combined systems are projected to increase from $1,688,600 to $1,705,600 over the same period. The increase in water and sewer sales revenue can be attributed to the projected increase in the number of customers over the forecast period. The forecast of revenues projected herein assumes that existing rates will be maintained throughout the forecast period.

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1.2 REVENUE REQUIREMENTS

Costs of service to be recovered from water and sewer service charges include operating and maintenance expenses, debt service obligations, capital projects funded from Utility System revenues, cash reserve funding, and rate stabilization funding.

Operating and maintenance expenses include the costs of labor, materials, power, chemicals, and other expenses associated with the utility's operations. Operating and maintenance expenses for the water utility are projected to increase from $8,100,800 in FY 2012 to $9,630,900 in FY 2016. The operating and maintenance expenses for the sewer utility are projected to increase from $11,254,200 in FY 2012 to $13,559,200 in FY 2016. The increases for both systems come principally from inflation, cost of materials, and the cost of fuel.

Annual debt, including principal and interest payments, for the Utility System is approximately $543,000 for the Test Year. In the fourth quarter of FY 2012, the City intends to issue $22,500,000 in revenue bonds which results in additional annual debt service of $423,800 in FY 2013 and $1,695,300 annually over the life of the debt service obligation. In addition, the City intends to issue $4,430,000 in FY 2015 revenue bonds in the third quarter of FY 2015 which results in additional debt service of $166,900 in FY 2015 and $333,800 annually over the life of the debt service obligation. As such, the highest annual service payment amount in one year over the forecast period is $1,950,100 in FY 2016 and the lowest amount is $543,000 in 2012.

As a part of the final recommendations to be furnished herein, the Black & Veatch team proposes the development of a Renewal and Replacement ("R&R") Fund which should escrow and maintain, at a minimum, the equivalent of approximately 6.0% of net plant investment in order to have suffi-

cient funds to make adequate normal annual renewal and replacements to the Utility System each year. At the end of FY 2012, the fund's ending cash balance is anticipated to be $1,084,000 and this number will grow to $2,770,600 by the end of FY 2016, as shown in Table 38 of this report.

- Over the forecast period, the City will make routine transfers to the General Fund and the Pension Fund in the amounts of $1,559,600 and $167,000 respectively to begin in FY 2012. The General Fund and Pension Fund transfers will amount to $1,575,300 and $200,200 by FY 2016 respectively.
- The City will make specific contributions to fund Reserves for Employee Benefits in the amount of $279,400 in FY 2012 and this amount will grow to $366,300 in FY 2016.
- As a part of implementing water rates that provide for the efficient use of water resources and provide for enhanced revenue stability, Black & Veatch recommends the implementation of a Rate Stabilization Fund. As such, the Utility System will have an average annual Rate Stabilization Fund obligation of approximately $644,000 over the next seven fiscal years to establish a targeted balance in the fund of $3,500,000 by FY 2018.

1.3 COST OF SERVICE ALLOCATIONS

As a basis of evaluating the equity of existing rates and designing proposed rates, the Utility System's net costs of service is allocated to classes of customers in accordance with the respective water and sewer service requirements. The resulting costs of service allocated to five (9) customer categorizations as summarized below:

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LINE	DESCRIPTION	ADJUSTED COST OF SERVICE	REVENUE UNDER EXISTING RATES	PERCENT INCREASE (DECREASE)
1	Apartments	$10,882,542	$10,625,504	2.42%
2	Mobile Homes	174,504	160,436	8.77%
3	Residential	8,037,841	7,153,492	12.36%
4	Churches	78,867	100,296	(21.37%)
5	Commercial	3,381,598	3,691,492	(8.39%)
6	Educational	726,203	705,722	2.90%
7	Hotels/Motels	133,299	218,755	(39.06%)
8	Public Authority	117,094	97,047	20.66%
9	Sprinkler	421,988	274,938	53.8%
	Total	**$23,953,936**	**$23,027,683**	**4.02%**

1.4 PROPOSED WATER AND SEWER RATE ADJUSTMENTS

Schedules of proposed rates for FY 2012 that recognize cost of service principles, policy considerations, and customer affordability described in this report are shown in **Table 16 A and B** for water service and **Table 32** for sewer service.

Analyses of projected revenues and revenue requirements for the Utility System was conducted to determine the adequacy of existing rates. The illustration below summarizes the projected overall annual revenue increases required over the next five years to meet future revenue requirements, to

maintain and improve Utility System infrastructure, to promote the efficient use of water resources, to maintain adequate debt service coverage ratios, and maintain adequate cash reserves to improve the financial condition of the Utility System.

INDICATED NEEDED REVENUE INCREASE			
Year	Water	Sewer	Combined
2012	1.6%	15.0%	4.0%.
2013	2.0%	16.1%	9.0%
2014	3.0%	11.5%	7.5%
2015	4.4%	7.3%	6.0%
2016	6.0%	6.0%	6.0%

It is recommended that the City give consideration to adopting the schedule of proposed water and sewer rates for FY 2012, as shown in **Section 1.5**, to be effective on April 1, 2012. In addition, FY 2012 revenue increase of 4.0 percent aggregates to an effective rate increase of 8.0 percent because the increase will be implemented over the last six months of FY 2012.

1.5 PROPOSED WATER AND SEWER RATES

Listed below are rate schedules that summarize the proposed FY 2012 water and sewer rates to be implemented on April 1, 2012. As a part of the proposed water and sewer rate plan, Black & Veatch recommends reducing the nine (9) existing customer designations to six (6). As listed below, the residential, apartments, mobile home, and sprinkler classes will remain the same, but the new commercial class is a combination of the old commercial, churches, and the hotel/motels classes and the new City class is a combination of the educational and the public authority classes. In addition, by City policy, a multiplier of 1.25 is applied to the rates for all outside city customers. The City has implemented a policy where by all customers designated as outside the city customers are assessed water and sewer rates that contain a multiplier of 1.25 as compared to inside the city customers. As such, Black & Veatch will maintain the integrity of this policy throughout the entirety of this study.

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Proposed FY 2012 Water System Rates Inside City Customers Monthly Base Charge

METER SIZE (1)	CUSTOMER CLASSES					SPRINKLER
	Residential (2) (per living unit)	Apartments (2) (per living unit)	Mobile Homes (2)	Commercial	City	
3/4" Meter	$11.40	$11.40	$11.40	$11.40	$11.40	$11.40
1" Meter	$11.40	$11.40	$11.40	$22.06	$22.06	$22.06
1.5" Meter	$11.40	$11.40	$11.40	$54.10	$54.10	$54.10
2" Meter	$11.40	$11.40	$11.40	$134.21	$134.21	$134.21
2 (2)" Meter	$11.40	$11.40	$11.40	$134.21	$134.21	$134.21
3" Meter	$11.40	$11.40	$11.40	$240.96	$240.96	$240.96
4" Meter	$11.40	$11.40	$11.40	$481.17	$481.17	$481.17
6" Meter	$11.40	$11.40	$11.40	$908.35	$908.35	$908.35
8" Meter	$11.40	$11.40	$11.40	$1,602.36	$1,602.36	$1,602.36

Note:

1. The proposed meter based charges presented above retain no minimum allowance in water usage.
2. The residential, apartments, and mobile home customer classes are assessed the 3/4" meter based fixed charge on a per living unit basis. The monthly charge for other customers is assessed on a per customer basis.

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Proposed FY 2012 Water System Rates Inside City Customers Volumetric Rates

CUSTOMER CLASSES	USAGE BLOCKS				
	Units	Block 1 (Per 1,000 Gals.)	Block 2 (Per 1,000 Gals.)	Block 3 (Per 1,000 Gals.)	Block 4 (Per 1,000 Gals.)
Residential	$	$1.73	$2.42	$3.11	$3.46
Usage Blocks	***Gallons***	***0 – 5,000***	***5,001–12,000***	***12,001-20,000***	***Above 20,000***
Apartment	$	$1.62	$1.70	$1.78	$1.94
Usage Blocks	***Gallons***	***0 – 2,000***	***2,001–4,000***	***4,001-7,000***	***Above 7,000***
Mobile Homes	$	$1.66	$2.40		
Usage Blocks	***Gallons***	***0 - 295,000***	***Above 295,000***		
Commercial	$	$1.57	$2.09	$2.36	$3.14
Usage Blocks	***Gallons***	***0 – 15,000***	***15,001–75,000***	***75,001 – 315,000***	***Above 315,000***
Sprinkler	$	$3.18			
Usage Blocks	***Gallons***	***All Usage***			
City	$	$1.55	$2.33	$2.79	$3.16
Usage Blocks	***Gallons***	***0 – 60,000***	***60,001–405,000***	***405,001 – 780,000***	***Above 780,000***

Note:

1. The proposed volumetric rates do not include a minimum allowance, so all water usage is charged based on the defined rate per customer class per usage block as shown above.

Proposed FY 2012 Sewer Customer Monthly Base Charge and Volumetric Rates

CUSTOMER CLASS	INSIDE CITY
Base Charge	
All Residential (per living unit)	$12.15
All Apartment (per living unit)	$12.15
All Mobile Home	$12.15
3/4" Meter	$12.15
1" Meter	$23.50
1.5" Meter	$57.64
2" Meter	$142.99
2 (2)" Meter	$142.99
3" Meter	$256.73
4" Meter	$512.66
6" Meter	$967.81
8" Meter	$1,707.24
Volumetric Rate (Per 1,000 Gals.)	
All Usage	$3.18

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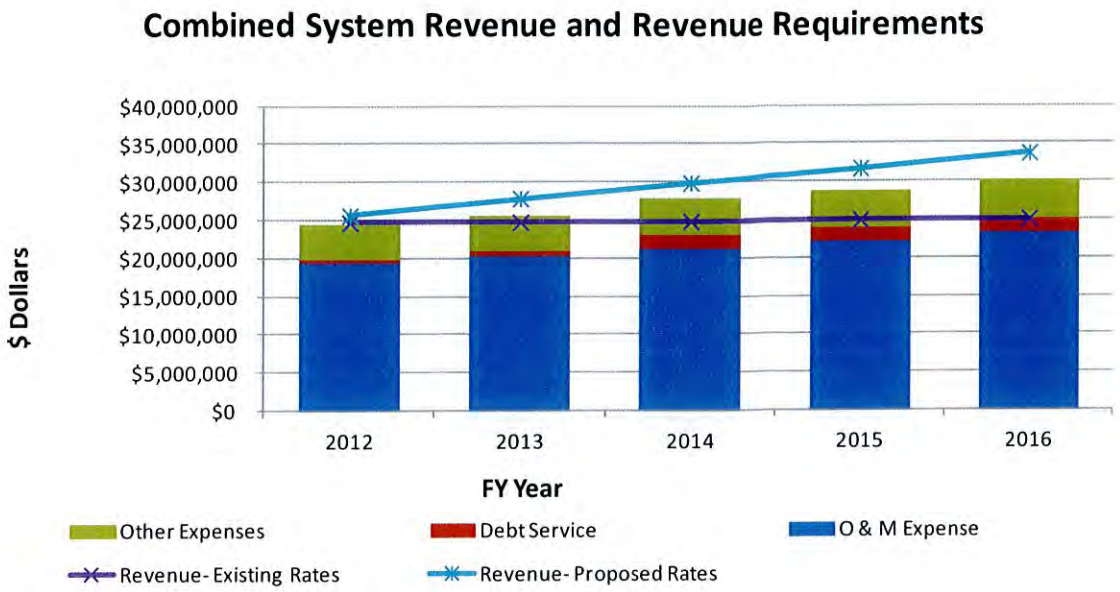
Note:

1. The monthly base charges for the residential, apartments, and mobile home customer classes are assessed per living unit.
2. The monthly base charges for the commercial, city, and sprinkler customer classes are assessed on a per customer basis.
3. The volumetric rate is applied to all water usage at a billing factor of 85.0%.

1.6 COMBINED UTILITIES SYSTEM OPERATING RESULTS

The illustration below summarizes the key components of the financial results for the Utility System. Revenues generated under existing rates by the Utility System are not sufficient to fund the Utility System's obligations. The proposed rate plan meets all the forecasted Utility System revenue requirements, fulfills the bond coverage requirement, and maintains appropriate cash balances of the Utility System. Section 9 of this report provides a detailed summary of the Utility System's financial forecast.



1.7 RECOMMENDATIONS

Listed below are the general recommendations associated with the analysis performed herein:

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1. The City should prepare the documents necessary to obtain approval of the proposed financial plan and water and sewer rates;
2. The City should implement a policy associated with the development of a Renewal and Replacement Fund to be implemented on April 1, 2012;
3. The City should implement a policy associated with the development of a Rate Stabilization Fund to be implemented concurrently with the adoption of the proposed water and sewer rates;
4. The City should complete all planning studies and update the Water and Sewer System Capital Improvement Plan;
5. Municipalities in South Florida operating under the guidelines and mandates of the South Florida Water Management District ("SFWMD") have experienced significant drought conditions which has significantly reduced household outdoor water usage. In order to help comply with specific requirements established by the SFWMD, Black & Veatch proposes that the City increase the existing sewer billing factor as a percentage of water from 31.0% for residential customers and 36.0% for non-residential customers to 85.0% in FY 2012 and 90.0% in FY 2013 and beyond for all customers. Moreover, these percentages will better reflect the amount of water usage that is not returned to the City's sewer system based on the emerging and current customer water usage patterns.
6. The City should develop public information program that will educate and inform existing customers and other stakeholders about the implementation of the proposed financial plan and water and sewer rates; and
7. The City should perform preliminary due diligence associated with the compatibility of the existing billing system and filing notification necessary to implement the proposed water and sewer rates.

2 Introduction

2.1 OUTLINE OF REPORT

This report has been organized into nine sections that summarize the approach utilized as well as findings, conclusions, and recommendations together with supporting data and documentation. Following are brief discussions of the different sections in this report.

Section 1 – Executive Summary: This section provides an abbreviated discussion relative to the findings of analyses dealing with the projection of revenues under existing rates, projected revenue requirements, and results of cost of service analyses. Additionally, the proposed rates for water and sewer service and the combined systems financial results are provided herein.

Section 2 – Introduction: To clearly illustrate the requirements of the analyses presented herein a summary of the scope of services, the approach utilized, and other salient details appropriate for consideration is presented.

Section 3 – Water System Revenue and Revenue Requirements: This section provides data, documentation, and accompanying analyses conducted in order to quantify future revenue and revenue requirement needs of the City's water system. Specific discussions include observations and assumptions relative to customer growth, consumption, existing rates, and other sources of income. In addition, this section serves to develop the annual cash requirements of the City's water system over the forecast period. Finally, this section summarizes the projected financial forecast results.

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Section 4 – Water System Cost of Service Allocations: Using the anticipated cash revenue requirements for FY 2012 as provided in the City's Annual Budget, the test year cost of service is developed to quantify the relative proportion of costs attributable to each customer class. Specific discussions include cost of service to be allocated, customer classifications, functional allocation of plant investment, operating expense, depreciation expense, and distribution of these costs to individual customer classes.

Section 5 – Water System Rate Design: Based on the results of the preceding analyses, as well as the goals and objectives of the study performed herein as outlined by the City, this section details the proposed user rates anticipated to become effective on October 1, 2011.

Section 6 – Sewer System Revenue and Revenue Requirements: This section provides data, documentation, and accompanying analyses conducted to quantify future revenue and revenue requirement needs of the City's sewer system. Specific discussions include observations and assumptions relative to customer growth, consumption, existing rates, and other sources of income. In addition, this section serves to develop the annual cash requirements of the City's sewer system for the five year forecast period. Finally, this section summarizes the projected financial forecast results.

Section 7 – Sewer System Cost of Service Allocations: Using the anticipated cash requirements for FY 2012 as provided in the City's Annual Budget, the test year cost of service is developed to quantify the relative proportion of costs attributable to each customer class. Specific discussions include cost of service to be allocated, customer classifications, functional allocation of plant investment, operating expense, depreciation expense, and distribution of these costs to individual customer classes.

Section 8 – Sewer System Rate Design: Based on the results of the preceding analyses, as well as the goals and objectives of the study performed herein as outlined by the City, this section details the proposed user rates anticipated to become effective on October 1, 2011.

Section 9 – Utility System Summary of Results: This summary will comprehensively show the projected financial forecast results while illustrating the results of the proposed rate design. Recommendations for the overall system will be made regarding the need for the City to consistently meet debt service coverage requirements, establish policies that allow the City to maintain adequate cash reserves, and developing a sound stakeholder communications plan upon attaining City Council approval of the proposed plan.

2.2 GENERAL

The City of North Miami (the "City") was incorporated on February 15, 1926 and is a political subdivision in the State of Florida. The City operates under a council-manager form of government and provides general government, public safety, public works, economic and community development, library, public safety, public works, and cultural services to approximately 60,000 residents. In addition, the City operates a water utility, sewer utility, stormwater utility, and provides solid waste services as enterprise activities. The water and sewer systems are operated as a combined utility for administrative and financial accounting purposes. As a result, all revenues are combined in the same fund from which all water and sewer operating expenses, capital expenditures, and debt service requirements are paid. However, water and sewer rates are based upon separate rate schedules. To address the particular needs of both systems and to assess the ability of current rate structures to meet operating and capital needs, the following report has been prepared. This report includes the results of an analysis for both the water and sewer system of total revenue requirements, customer class cost of service, and rate design. The financial forecast presented herein is projected over a five year period ending September 30, 2016 and considers proposed rate adjustments and establishes specific cash funds. It should be noted that all subsequent references to a given year in this report are representative of the fiscal year ending September 30 of each year unless otherwise stated.

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2.3 PURPOSE

This report was prepared to examine the financial situation of the water and sewer utilities. In detail, the purpose of this report is: (1) to project and examine the future operating and capital financing requirements of the utilities and the ability of existing rates to recover the requirements; (2) to develop rates that will recover these revenue requirements, develop rates that promote the efficient usage of the City's water resources, address the equitability of the existing rates among the existing customer classes, and address issues around the affordability of existing rates for specific customers; and (3) to assess and provide recommendations regarding the overall financial health of the City's Utility System.

2.4 SCOPE

This report presents the results of a comprehensive study of projected revenue requirements, costs of service, and proposed rates for water and sewer service. Revenue and revenue requirements are projected over the forecast period, recognizing the anticipated growth in the number of customers and water consumption patterns throughout the City. The comprehensive study was authorized by the City to assess the Utility System's ability to meet current and future anticipated Utility System obligations, to develop a financing plan that will allow the Utility System to implement future antic-

ipated capital projects, to develop proposed rates that allows the City to promote the efficient use of water resources, and to assess the overall financial health of the Utility System.

The South Florida Water Management District has prompted the City to implement a water conservation program as a part of the City's application to renew the existing Water Use Permit. As a part of the program, the City outlined its plan to implement water rates, by April 1, 2012, that promotes the efficient use of water resources.

This report was prepared for the City and is based on information not within the control of Black & Veatch. Black & Veatch has not been requested to make an independent analysis, to verify the information provided to us, or to render an independent judgment of the validity of the information provided by others. As such, Black & Veatch cannot, and does not, guarantee the accuracy thereof to the extent that such information, data, or opinions were based on information provided by others.

In conducting our analyses and in forming an opinion of the projection of future financial operations summarized herein, Black & Veatch has made certain assumptions with respect to conditions, events, and circumstances that may occur in the future. The methodology utilized by Black & Veatch in performing the aforementioned analyses follows generally accepted practices for such projections. Such assumptions and methodologies are summarized in this report and are believed to be appropriate for the purpose for which they are used. While Black & Veatch believes that the assumptions are reasonable and the projection methodology valid, actual results may differ materially from those projected, as influenced by the conditions, events, and circumstances that actually occur.

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2.5 GENERAL DESCRIPTION OF THE WATER AND SEWER SYSTEMS

The City's water system served about 18,539 customers as of September 30, 2010, while the sewer system served about 11,686 customers at that date. The Utility System serves the City's population of about 78,000 people. The Utility System accounts for the provision of potable water to residents and the collection and transmission of sanitary sewer flows to a wastewater treatment plant owned and operated by Miami-Dade County. The City operates and manages the water treatment facility, water distribution system, and the sewage collection and transmission system. While Miami-Dade County processes the corresponding sewer flows, the City does operate sanitary sewer transportation pipelines and sewer pump stations, but Miami-Dade County treats all the collected wastewater produced by the City.

2.6 GENERAL ASSUMPTIONS

General assumptions used in the analyses of revenues and revenue requirements are summarized on the following pages. Any substantial differences between the assumptions and the actual occurrences may affect the indicated revenue increases and proposed changes presented in this report.

General Assumptions

Revenue

- Revenue projections are based on an annual customer growth rate of 0.0% in FY 2012, 0.25% in FY 2013 and FY 2014, and 0.50% throughout the remainder of the forecast period as provided by the City.

- Projected water and sewer volumes of use are based on historical billed water and sewer volume per customer residing in specific customer classes. Use per customer is expected to remain stable at current levels during the study period.
- Other operating and non-operating revenue projected based on the aforementioned customer growth rate for applicable fees and earnings.

Operating and Maintenance Expenses

- Projected expenses associated with the operation of the water and sewer systems are adjusted for growth based on the escalation factors in **Table 1**.

Table 1 Escalation Factors

FACTOR	FORECAST PERIOD 2012-2016
Labor Escalation	6.000%
General Inflation	4.250%
Customer Growth (1)	0.250%
Materials & Supplies	3.750%
Electric/Fuel Factor	10.00%
Benefits Factor	7.000%

Note:

1. For the Test Year FY 2012, the forecast of customer growth is 0.0%, thereafter, annual growth rates of 0.25%. 0.25%, 0.50%, and 0.50% are utilized for the Fiscal Years FY 2013, FY 2014, FY 2015, and FY 2016, respectively.

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Major Capital Improvements

- Includes all improvements identified in the fiscal year 2012 through fiscal year 2016 capital improvement plan.

Capital Improvement Financing

- Revenue Bonds are issued with 30-year terms, an average interest rate of 6.25 percent, and equal annual principal and interest payments.
- Bond issuance costs are estimated to be 1 percent of the issue amount.
- The water and sewer system improvements will be financed primarily through funds from operations and debt.
- The City intends to issue $22.5 million in Revenue Bonds in the fourth quarter of FY 2012 of which $21.2 million will fund water project and $1.3 million will fund sewer projects. In addition, $7.5 million in Revenue Bonds will be issued in the third quarter of FY 2015 of which will fund water related capital projects.

Operating Cash Flow

- At beginning FY 2012, the Utility System is projected to have $12,300 in unrestricted fund balances as provided by the City.

- The results under the proposed rate plan include the utilization of Renewal and Replacement Funds in the amounts of $800,000 $2,000,000, $1,455,500, $1,900,000, and $1,330,000 in the FY 2012 through FY 2016 respectively to fund specific capital related renewal and replacement projects.
- Throughout the entirety of the forecast period defined herein, the City's targets a minimum Utility System cash balance of 90-120 days.

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3 Water System Revenue and Revenue Requirements

3.1 WATER REVENUE

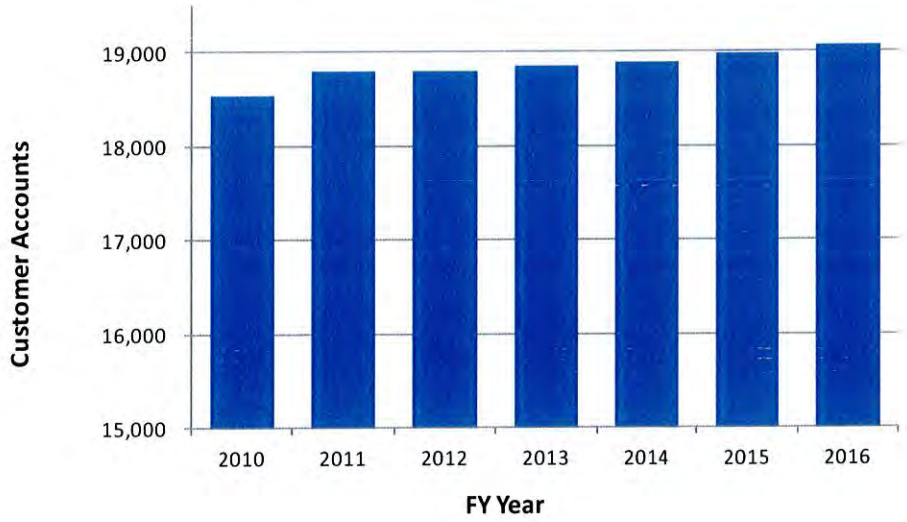
3.1.1 General

The City's water system derives revenue primarily from charges for treated water service. Other sources of income includes fees for billing, service charges, metering fees, connection fees, delinquent fees, and other miscellaneous revenue.

3.1.2 Customers and Growth

Analysis of the customer base indicates no immediate growth in new customer connections to the water system. As a result, the forecast of customer growth is held at FY 2011 levels in FY 2012, a slight increase of 0.25% is forecasted annually in both FY 2013 and FY 2014, and an increase of 0.50% is projected for both FY 2015 and FY 2016. **Figure 1** summarizes historical and projected customer accounts. Treated water service is currently provided to 15,818 residential customers, 700 apartment customers, 5 mobile home customers, 1,712 commercial customers, 113 city customers, and 448 sprinkler customers. The total number of water customers served by the City is anticipated to grow from 18,796 in FY 2012 to 19,075 in FY 2016.

Figure 1 Historical and Projected Customer Account



In addition, the City bills customer classified as, residential, mobile homes, and apartment, on a living units basis which is designated by the City at the time service is initiated. As a part of the Utility Service Initiation, customers served in the residential, mobile home, and apartment customer are designated on the basis of a living unit. Residential properties or lots in and around the utility service area of North Miami, in some cases, have multiple residents living on one property, so in response to determining the magnitude of water service, the level of water capacity to be available to this property, and the total amounts of residences on the property, the City designates the total amount of living units on the property. The living unit designation is intended to summarize the total actual amount of

residences on a property and serve as the equivalent basis to provide service to a typically customer using a 3/4" water meter.

At the end of FY 2011, the City served approximately 33,078 water living units. These units serve as the basis for the current application of the City's monthly base charges across the residential, mobile home, and apartment customer classes. During FY 2012, it is anticipated that there will be no additions in living units, so the projected increase in living units over the forecast period will be in accordance with the customer growth rates discussed herein. As such, the total living unit increase is expected to be 16,690, 5, and 16,964 for the apartment, mobile home, and residential customer classes, respectively, for a total living unit count of 33,577 by FY 2016.

3.1.3 Water Sales

The sale of treated water is projected to increase slightly over the forecast period. Over the past three (3) fiscal years, water utilities operating in the South Florida region of the United States have experienced significant drought conditions that have prompted the SFWMD to issue specific water use mandates to promote the efficient use of water resources by the end user and preserve the regions existing water resources. As issues pertaining to water restrictions and conservation continue to be extremely important, average customer usage is projected to remain fairly stable. As a result, the increase in customers over the forecast period is projected to influence the amount of water sales over the forecast period. **Figure 2** summarizes the historical and projected volume of water sales over the forecast period. The volume of water sales is projected to increase from 2,857,736 (thousand gallons) in 2012 to 2,897,768 (thousand gallons) in 2016.

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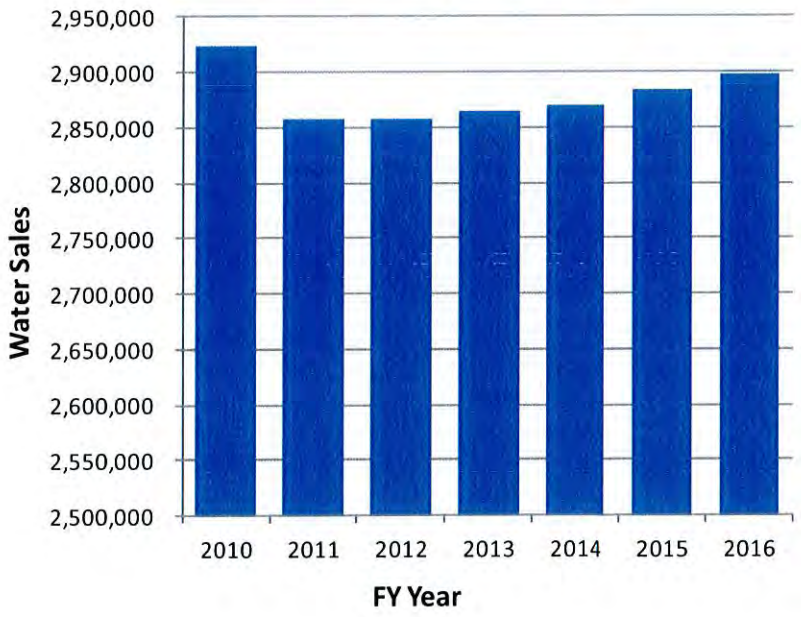
Figure 2 Historical and Projected Water Sales



3.1.4 Water Revenue

Projection of water sales revenue under existing rates is based on estimates of the number of water bills rendered, the average consumption per bill, and the historical distribution of the percentage of

consumption sold in each customer class for retail customers. In addition to a volumetric charge that is based on water consumption, the City renders an availability charge for water service and a capital improvement fee to fund water related capital improvement projects. The combination of these three charges generates the water system's user rate revenues. As discussed previously, historical data for the various classes of customers served under each of the water system's rate schedules provide the principal basis for estimates of future revenues. Water sales revenue derived from customer volumetric and base charges under existing rates are projected to grow from $11,953,400 in FY 2012 to $12,133,800 in FY 2016.

3.1.5 Other Revenue

In addition to water sales revenue, other revenue sources must be considered in this analysis. Other revenue sources include other operating revenue, non-operating revenue, and interest income. Other operating revenue includes charges for services, penalty charges, and other miscellaneous revenue. It is projected that other revenue for the water system will increase from $899,400 in 2012 to $908,400 in 2016. The following table summarizes the total revenue produced by the water system over the forecast period. **Table 2** presents a summary of water system revenues under existing rates, including both water sales revenue and revenue from other sources.

Table 2 Water System Projected Revenue under Existing Rates

FISCAL YEAR	REVENUE
2012	$12,852,800
2013	$12,882,700
2014	$12,915,000
2015	$12,977,300
2016	$13,042,200

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3.2 WATER REVENUE REQUIREMENTS

3.2.1 General

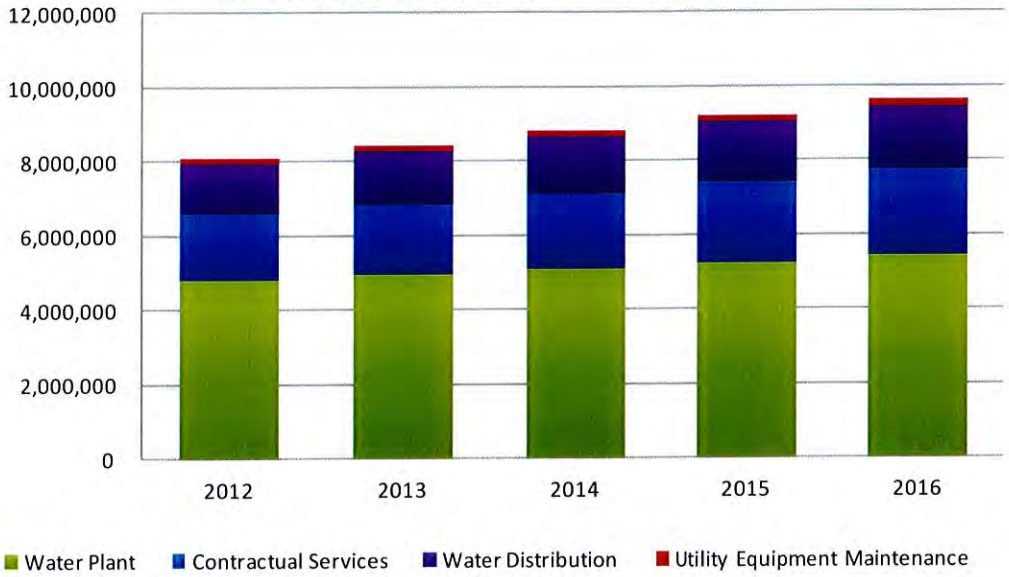
The revenue required to adequately provide for the continued operation of the water system must be sufficient to meet the cash requirements for the water system's operation. Such revenue requirements include: (1) operating and maintenance expenses; (2) debt service requirements, consisting of principal, interest, and any reserve fund payments on revenue bonds (3) and other expenditures and transfers. In addition, annual revenues need to be adequate to meet the debt service coverage requirements established by the bond ordinance applicable to existing and future revenue bond issues. Projections of cash requirements to meet these system expenditures for the forecast period are developed in this section.

3.2.2 Operating and Maintenance Expenses

Operating and maintenance expenses include the annual expenses associated with supply; treatment; storage and distribution; meter and services; billing, collection and accounting; and administrative and general services. These expenses include the annual salaries and wages of personnel, costs for material and supplies, fuel and electric power costs, and other costs such as employee benefits, insurance, and contract services. **Figure 3** summarizes the operating and maintenance expenses for the

water system over the forecast period. Projections of future operating and maintenance expenses are based on budget information provided by the City for FY 2012 and an analysis of current and anticipated operating conditions and trends. In recent years, operating and maintenance expenses have increased primarily due to the combined effects of inflation and rising fuel and energy prices. Included in these projections are the aforementioned factors as well as other pertinent factors. Total operating and maintenance expenses for the water system are projected to increase from $8,100,800 in 2012 to $9,630,900 in 2016.

Figure 3 Projected Operating and Maintenance Expense



3.2.3 Debt Service

Debt service costs are attributed to the water utility's share of the existing general debt service obligations. Estimated debt service on the water utility's share of debt is projected using information on bond obligations provided by the City for the forecast period. **Table 3** summarizes the debt service obligations on outstanding and proposed debt for the forecast period.

Table 3 Debt Service Obligations on Outstanding Debt

YEAR	DEBT SERVICE OBLIGATIONS
2012	$370,400
2013	$491,200
2014	$1,355,400
2015	$1,350,200
2016	$1,440,600

3.2.4 Other Expenditures & Transfers

Other expenditures and transfers include costs that are incurred by the water utility after the fulfillment of operating and maintenance and debt service obligations from revenues under existing rates.

These costs are typically funded by cash from operations and any other unrestricted sources of funds available to the City. The City has specific funding requirements that have been mandated by the City's General and Pension Fund. As such, the City intends to transfer $951,400 and $99,700 to the General and Pension Fund respectively in FY 2012 and these totals will amount to $960,900 and $119,500 respectively by the end of FY 2016.

As a part of implementing water rates that promotes the efficient use of water resources and provides for a more stable source of revenues, Black & Veatch recommends the implementation of a rate stabilization fund. The purpose of the fund is to create a revenue stabilization mechanism, or fund balance, to be used in the event of unforeseen events that would require an immediate increase in Utility System rates as a resolution to these effects on the Utility System. As such, the City will escrow about $644,000 annually from water and sewer operating revenues for seven (7) consecutive years that will start in FY 2012 and end in FY 2018. The goal of the fund is to maintain a targeted fund balance of $3.5 million that can be used by the City to stabilize Utility System rates as needed. The water system will contribute on average $329,100 annually to the rate stabilization fund over the forecast period defined herein.

Finally, Black & Veatch recommends the establishment of a Renewal and Replacement Fund to assist the City in funding normal annual system improvements. In implementing the establishment of this fund, the City should escrow and maintain, at a minimum, the equivalent of 6% of the value of its net plant investment in water and sewer facilities in order to provide for adequate annual renewals and replacements of the Utility System infrastructure. At the end of FY 2013, the fund's ending cash balance is anticipated to be $1,084,000 and this number will grow to $2,770,600 by the end of FY 2016. Based on the Renewal and Replacement Fund totals provided over the forecast period, the water system is anticipated to contribute $678,200 in FY 2012 and this total will grow to $801,100 in FY 2016.

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Table 4 shows the annual expenditures and transfer totals for the water system.

Table 4 Projected Other Expenditures and Transfers

YEAR	OTHER EXPENDITURES AND TRANSFERS
2012	$2,058,400
2013	$2,091,800
2014	$2,129,700
2015	$2,169,200
2016	$2,213,700

3.2.5 Major Capital Improvement

A summary of the proposed water utility capital improvements over the forecast period is shown in **Table 5.** The estimated cost of these improvements is $31.8 million over the forecast period.

The proposed water capital improvement projects shown in **Table 5** were identified based on future needs and current regulatory mandates. Additional projects may also be required to meet current

regulatory regulations. The nature and magnitude of these potential projects is not known but should they be required, additional financing beyond that indicated herein will be required.

The cost of the scheduled major capital improvements are expected to be financed from existing fund balances and annual operating revenues available for cash financing of capital improvements, as shown in **Table 5**.

Table 5 Water System CIP and CIP Financing

LINE	DESCRIPTION	2012	2013	2014	2015	2016 (1)	TOTAL
Capital Improvement Program:							
1	Water Meter Replacement	$600,000					$600,000
2	Upgrade to Water Plant	$4,493,000	$5,500,000	$13,750,000	$6,000,000		$29,743,000
3	Water Line Replacement	$300,000	$300,000	$300,000	$300,000	$300,000	$1,500,000
4	Total CIP	$5,393,000	$5,800,000	$14,050,000	$6,300,000	$300,000	$31,843,000
Sources & Uses of Funds:							
5	Revenue Bond	$5,393,000	$4,728,000	$11,079,000	$4,430,000		$25,630,000
6	Renewal. & Replacement		$670,800	$599,400	$1,010,500	$300,000	$2,580,700
7	Cash from Operations		$401,200	$2,371,600	$859,500		$3,632,300
8	Total Financing	$5,393,000	$5,800,000	$14,050,000	$6,300,000	$300,000	$31,843,000

Note:

1. The FY 2012 through FY 2016 Capital Improvement Plan ("CIP") was provided by the City.

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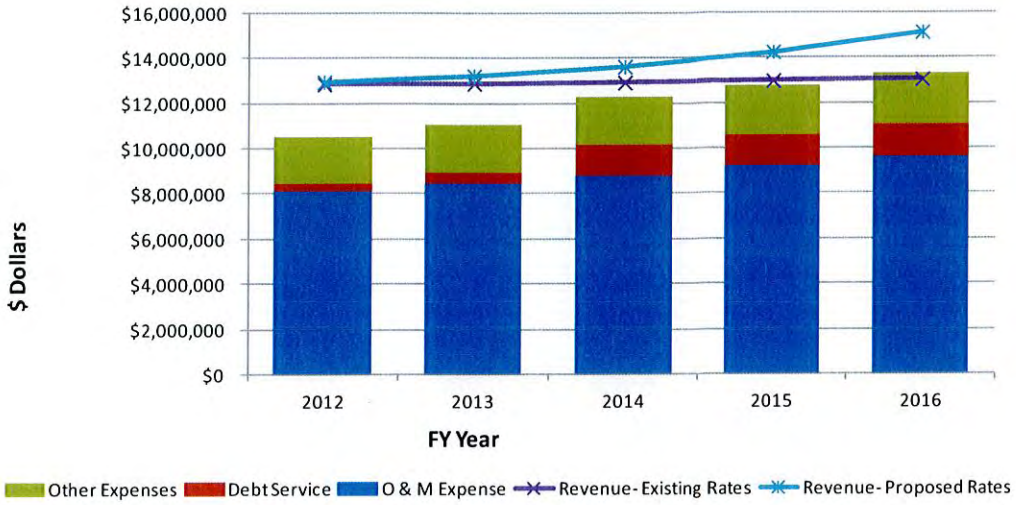
A detailed sources and uses is presented in **Table 37** that outlines a coordinated financing plan based on the City's existing cash reserves and the forecasted revenues to be generated from the proposed rate presented herein.

3.3 WATER SYSTEM SUMMARY OF REVENUE AND REQUIREMENT

Total revenue requirements, including operating and maintenance expenses, debt service obligations, and other expenditures and transfers for the water system are projected to grow from $10.5 million in FY 2012 to $13.3 million in FY 2016, as shown in **Figure 4**. Based on the projected revenues under existing rates and the projected revenue requirements, it is indicated that the revenues under existing rates will not be adequate to meet the projected requirements without some rate adjustment.

Figure 4 Comparison of Revenues and Revenue Requirements



Tables 6 and **7** respectively, summarize the projected operating results for the water utility under both the existing and proposed rates.

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Table 6 Projected Operating Results under Existing Rates

Description	For the Fiscal Year Ended: 2012	2013	2014	2015	2016
WATER SYSTEM					
REVENUES					
Operating Revenues:					
Existing Water System	$ 11,953,400	$ 11,983,300	$ 12,013,300	$ 12,073,400	$ 12,133,800
Percent Rate Increase	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*
Implementation Period	*6 months*	*12 months*	*12 months*	*12 months*	*12 months*
Actual Rate Increase	0	0	0	0	0
Revenue Under Proposed Rates	$ 11,953,400	$ 11,983,300	$ 12,013,300	$ 12,073,400	$ 12,133,800
Total Other Revenues	$ 899,400	$ 899,400	$ 901,700	$ 903,900	$ 908,400
Total Water Revenues	$ 12,852,800	$ 12,882,700	$ 12,915,000	$ 12,977,300	$ 13,042,200
OPERATING EXPENDITURES					
O&M Expenses:					
Contractual Services	$ 1,786,000	$ 1,899,900	$ 2,022,700	$ 2,155,400	$ 2,298,700
Utility Equipment Maintenance	146,100	154,200	162,800	171,800	181,400
Water Plant	4,785,700	4,931,500	5,086,800	5,258,200	5,440,500
W&S Special Projects	0	0	0	0	0
Water Distribution	1,383,000	1,458,300	1,537,800	1,621,700	1,710,300
Sewer Collection and Disposal	0	0	0	0	0
Sewer Projects	0	0	0	0	0
Total O&M Expenses	$ 8,100,800	$ 8,443,900	$ 8,810,100	$ 9,207,100	$ 9,630,900
Net Revenues	$ 4,752,000	$ 4,438,800	$ 4,104,900	$ 3,770,200	$ 3,411,300
Total Debt Service	$ 370,400	$ 491,200	$ 1,355,400	$ 1,350,200	$ 1,440,600
Income Available for Other Exp.	$ 4,381,600	$ 3,947,600	$ 2,749,500	$ 2,420,000	$ 1,970,700
Debt Service Coverage					
Achieved	12.83	9.04	3.03	2.79	2.37
Target	1.20	1.20	1.20	1.20	1.20
Other Expenditures & Transfers:					
Renewal and Replacement Fund	$ 678,200	$ 707,100	$ 737,100	$ 768,400	$ 801,100
Transfer to General Fund	951,400	951,400	953,800	956,100	960,900
Transfer to Pension Fund	99,700	104,200	108,900	114,100	119,500
Reserve for Employee Benefits	0	0	0	0	0
Rate Stabilization Fund	329,100	329,100	329,900	330,600	332,200
Total Other Exp. & Transfers	$ 2,058,400	$ 2,091,800	$ 2,129,700	$ 2,169,200	$ 2,213,700
Total Revenue Requirements	**$ 10,529,600**	**$ 11,026,900**	**$ 12,295,200**	**$ 12,726,500**	**$ 13,285,200**
Operating Surplus/Deficit	**$ 2,323,200**	**$ 1,855,800**	**$ 619,800**	**$ 250,800**	**$ (243,000)**
Fund Balance:					
Beginning Fund Balance	$ 6,300	$ 2,329,500	$ 3,784,100	$ 2,032,300	$ 1,423,600
Operating Surplus	2,323,200	1,855,800	619,800	250,800	(243,000)
Cash Funding of Capital Projects	0	(401,200)	(2,371,600)	(859,500)	0
Ending Fund Balance	**$ 2,329,500**	**$ 3,784,100**	**$ 2,032,300**	**$ 1,423,600**	**$ 1,180,600**
Days Fund Balance on Hand	**104**	**161**	**83**	**56**	**44**

As shown in **Table 6** the projected water system financial results under existing rates indicates that existing water rates and charges will produce sufficient revenues to meet the financial obligations of the water utility over the forecast period. In addition, while the associated debt service coverage ratio falls from 12.83 in FY 2012 to 2.37 in FY 2016, it still remains above the required 1.20 debt service coverage ratio as established in the Utility System's Bond Resolution. At the beginning of FY

2012, the water system begins the fiscal year with about $6,300 in cash, but by the end of the forecast period cash is increased to a balance of $2.3 million.

While no direct rate increases in existing revenue levels of the water system is indicated, the cost of service study and proposed rate sections of this report still needs to be conducted. This is to identify the adequacy of the cost of service recovery by customer class under the existing rate structure, to develop a revised rate structure that complies with the directive of the South Florida Water Management District to implement rates that reflect conservation objectives. In addition, the utility should develop an overall comprehensive financial plan for the entire combined utility system that allows the utility system to meet specific operating benchmarks such as 120 days worth of operating fund balance over the forecast period. It is this latter driver of maintaining 120 days worth of operating fund balance that drives the projected water utility revenue increases in this study, combined with the projected financial operations and related revenue increases for the sewer utility.

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Table 7 Projected Operating Results under Proposed Rates

Description	For the Fiscal Year Ended: 2012	2013	2014	2015	2016
WATER SYSTEM					
REVENUES					
Operating Revenues:					
Existing Water System	$ 11,953,400	$ 12,079,100	$ 12,351,500	$ 12,785,600	$ 13,414,900
Percent Rate Increase	*1.60%*	*2.00%*	*3.00%*	*4.40%*	*6.00%*
Implementation Period	*6 months*	*12 months*	*12 months*	*12 months*	*12 months*
Actual Rate Increase	95,600	241,600	370,500	562,600	804,900
Revenue Under Proposed Rates	$ 12,049,000	$ 12,320,700	$ 12,722,000	$ 13,348,200	$ 14,219,800
Total Other Revenues	$ 899,400	$ 899,400	$ 901,700	$ 903,900	$ 908,400
Total Water Revenues	$ 12,948,400	$ 13,220,100	$ 13,623,700	$ 14,252,100	$ 15,128,200
OPERATING EXPENDITURES					
O&M Expenses:					
Contractual Services	$ 1,786,000	$ 1,899,900	$ 2,022,700	$ 2,155,400	$ 2,298,700
Utility Equipment Maintenance	146,100	154,200	162,800	171,800	181,400
Water Plant	4,785,700	4,931,500	5,086,800	5,258,200	5,440,500
W&S Special Projects	0	0	0	0	0
Water Distribution	1,383,000	1,458,300	1,537,800	1,621,700	1,710,300
Sewer Collection and Disposal	0	0	0	0	0
Sewer Projects	0	0	0	0	0
Total O&M Expenses	$ 8,100,800	$ 8,443,900	$ 8,810,100	$ 9,207,100	$ 9,630,900
Net Revenues	$ 4,847,600	$ 4,776,200	$ 4,813,600	$ 5,045,000	$ 5,497,300
Total Debt Service	$ 370,400	$ 491,200	$ 1,355,400	$ 1,350,200	$ 1,440,600
Income Available for Other Exp.	$ 4,477,200	$ 4,285,000	$ 3,458,200	$ 3,694,800	$ 4,056,700
Debt Service Coverage					
Achieved	13.09	9.72	3.55	3.74	3.82
Target	1.20	1.20	1.20	1.20	1.20
Other Expenditures & Transfers:					
Renewal and Replacement Fund	$ 678,200	$ 707,100	$ 737,100	$ 768,400	$ 801,100
Transfer to General Fund	951,400	951,400	953,800	956,100	960,900
Transfer to Pension Fund	99,700	104,200	108,900	114,100	119,500
Reserve for Employee Benefits	0	0	0	0	0
Rate Stabilization Fund	329,100	329,100	329,900	330,600	332,200
Total Other Exp. & Transfers	$ 2,058,400	$ 2,091,800	$ 2,129,700	$ 2,169,200	$ 2,213,700
Total Revenue Requirements	**$ 10,529,600**	**$ 11,026,900**	**$ 12,295,200**	**$ 12,726,500**	**$ 13,285,200**
Operating Surplus/Deficit	**$ 2,418,800**	**$ 2,193,200**	**$ 1,328,500**	**$ 1,525,600**	**$ 1,843,000**
Fund Balance:					
Beginning Fund Balance	$ 6,300	$ 2,425,100	$ 4,217,100	$ 3,174,000	$ 3,840,100
Operating Surplus	2,418,800	2,193,200	1,328,500	1,525,600	1,843,000
Cash Funding of Capital Projects	0	(401,200)	(2,371,600)	(859,500)	0
Ending Fund Balance	**$ 2,425,100**	**$ 4,217,100**	**$ 3,174,000**	**$ 3,840,100**	**$ 5,683,100**
Days Fund Balance on Hand	**108**	**180**	**130**	**150**	**212**

While Table 6 illustrates that there is no need for a water rate increase under existing rates, the 90-120 days worth of operating fund balance target is not maintained on a combined system basis, so the driving force behind the consecutive water system rate increases of 1.60%, 2.00%, 3.00%, 4.40%, and 6.00% for FY 2012 through FY 2016 is the need to meet the operating fund balance target and maintain the financial health of the utility on a combined systems basis as shown in Table 36.

4 Water System Cost of Service Allocations

4.1 GENERAL

In performing the cost of service analysis described herein, revenue requirements are allocated to the various customer classifications according to the cost of service rendered. Allocations of revenue requirements to customer classes should take into account the quantity of water used relative peak capacity requirements placed on the system, the number and size of services to customers, proprietary interest in the system investment, and other relevant factors.

4.2 COST OF SERVICE TO BE ALLOCATED

In analyzing the costs of service for allocation to customer classes, the projected annual revenue requirements for FY 2012 have been selected as test year requirements representative of the study period examined herein. In determining costs of service to be met from charges for water service, income received from other sources is deducted from total revenue requirements. For the test year net cost of service of $12,049,000 which represents the total revenue requirements $12,948,400 minus other revenues and transfers received of $899,400. Other revenues received are deducted from the operating expense in the calculation of costs of service.

The net cost of service is apportioned among customer classes in this report on a utility basis; that is, in terms of operating expenses, depreciation expense, and return on net plant investment, or rate base. For a municipal utility, the total of depreciation expense and return is equal to the capital cost related portion of the total cost of service.

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Depreciation is the loss, not restored by current maintenance, which occurs in the utility plant in service due to decay, inadequacy and obsolescence. Depreciation accounting is usually based on an annual percentage allowance of plant investment adequate to return the investment during the useful life of the facility. The annual allowance varies with the expected service lives of the classes of property. The annual depreciation allowance normally is not accrued as a cash reserve, but is reinvested in replacements and additions to plant facilities. As the end of the useful life of the property is reached, the equivalent in dollars will typically have been reinvested as replaced or added utility plant. Based on the information provided, the test year depreciation expense has been determined to be $541,179.

Return is the balance of annual costs of service after operating expenses and depreciation, which amounts to $782,211. Return provides for payment of the interest portion of debt service and capital improvement costs beyond that provided by the depreciation expense.

The total net cost of service expressed on a utility basis is summarized below.

Operating Expense	$ 10,725,610
Depreciation Expense	541,179
Return	782,211
Total Cost of Service	$12,049,000

Table 8 presents a detailed cost of service on both the "cash basis" and the utility basis.

Table 8 Summary of Cash Basis and Utility Basis Cost of Service

Line	Description	Operating Expense	Capital Cost	Total
				Fiscal Year 2012
	Revenue Requirements:			
1	O&M Expense	$ 8,100,800		$ 8,100,800
2	Debt Service Requirements		370,400	370,400
3	Renewal and Replacement Fund		678,200	678,200
4	Transfer to General Fund	951,400		951,400
5	Transfer to Pension Fund	99,700		99,700
6	Reserve for Employee Benefits	0		0
7	Rate Stabilization Fund	296,190	32,910	329,100
8	Operating Surplus Generated	2,176,920	241,880	2,418,800
9	**Total**	**$11,625,010**	**$ 1,323,390**	**$ 12,948,400**
	Other Income Sources:			
10	Other Operating Revenue	$ 899,400		$ 899,400
11	**Total**	**$ 899,400**	**$ 0**	**$ 899,400**
12	**Net Cost of Service**	**$10,725,610**	**$ 1,323,390**	**$ 12,049,000**
	Restatement of Net Costs (Utility Basis):			
13	O&M Expense	$10,725,610		$ 10,725,610
	Capital Costs:			
14	Depreciation		541,179	541,179
15	Return		782,211	782,211
16	**Total**	**$10,725,610**	**$ 1,323,390**	**$ 12,049,000**

4.3 FUNCTIONAL COST COMPONENTS

The various cost elements of water service are assigned to functional costs components as the first step in the subsequent distribution of the costs of service to customer classes. The principal functional costs components consist of base costs, extra capacity costs, and customer costs.

Base costs include treatment chemicals, and operating and capital costs of the water system associated with service to customers to the extent required for a constant, or average annual rate of use.

Extra capacity costs represent those operating costs incurred in meeting demands in excess of average, and capital related costs for additional plant and system capacity beyond that required for the average rate of use. Total extra capacity costs are subdivided into costs associated with maximum day and maximum hour demands.

Customer costs are defined as costs which tend to vary in proportion to the number of customers connected to the system. These include meter reading, billing, collection and accounting costs, and maintenance and capital charges associated with meters and services.

The separation of costs of service into these principal categories provides the means of further allocating such costs to the various customer classes based on the respective base, extra capacity, and customer service requirements of each customer class.

4.4 ALLOCATION TO COST COMPONENTS

The water system is comprised of various facilities, each designed and operated to fulfill a given function. To provide adequate service to its customers at all times, the system must be capable of meeting not only volume requirements, but also the maximum rates of demand placed on the system. Because all customers do not exert maximum demand at the same time, capacities of the various system components are required to meet the maximum coincidental demand of all classes of customers. Each water service facility within the system has an underlying average demand, or uniform rate of usage, exerted by the customers for whom the base cost component applies. For those facilities designed solely to meet average day demand, costs are allocated 100 percent to the base cost component. Extra capacity requirements associated with coincidental demands in excess of average use are further related to maximum daily and maximum hourly demands.

Analysis of historical system maximum day and maximum hour demands to average day demands results in appropriate ratios for the allocation of capital costs and operating expenses to base and extra capacity cost components. A maximum day to average day ratio of 1.5 is used based on the historical Winson Water Treatment Plant historical Monthly Operating Reports for FY 2007 through FY 2016. This ratio indicates that 66.7 percent of the capacity of facilities designed and generated to meet maximum day demand is required for average or base use. Accordingly, the remaining 33.3 percent is required for maximum day extra capacity requirements.

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The costs associated with facilities required to meet maximum hour demand are allocable to base, maximum day extra capacity, and maximum hour extra capacity. A ratio of maximum hour to annual average day water use of 2.5 is used based on the demand ratios as provided by the City. This ratio indicates that 40.0 percent of the capacity of facilities designed and operated for maximum hour demand is needed for average or base use, while 20.0 percent is utilized for maximum day extra capacity uses, and the remaining 40.0 percent is required to meet maximum hour extra capacity demand in excess of maximum day needs.

4.5 ALLOCATION OF NET PLANT INVESTMENT

The net plant investment in water system facilities is allocated to appropriate cost functions as a basis for further distribution to the various customer classes. The resulting distribution is the basis for assigning the return portion of the test year cost of service to respective classes.

The estimated test year FY 2012 plant investment in water facilities consists of net plant in service as of September 30, 2010, construction in progress, and proposed capital improvements expected to be in service. Total plant investment is estimated to be $11,775,578 as indicated by line 7 in **Table 9.**

Table 9 Allocation of Net Plant Investment

Line	Description	Total	Base	Extra Capacity Max Day	Extra Capacity Max Hour	Equivalent Meters	Customer Bills
1	Source of Supply	$ 125,953	125,953				
2	Pumping Plant	54,347	36,249	18,098			
3	Water Treatment Plant	808,900	539,536	269,364			
4	Transmission Plant	5,906,904	2,289,280	1,144,640	2,289,280	183,705	
5	Distribution Plant	4,370,187	1,748,075	874,037	1,748,075		
6	General Plant	509,287	190,663	92,781	162,431	7,391	56,022
7	Total	$ 11,775,578	$ 4,929,756	$ 2,398,920	$ 4,199,786	$ 191,096	$ 56,022

Allocated investment for this figure is used as the basis for assigning the return portion of test year cost of service to respective customer classes.

4.6 ALLOCATION OF OPERATING & MAINTENANCE AND DEPRECIATION EXPENSES

Depreciation expense is based on system investment including capitalized interest and current utility depreciation rates, and is projected to total $541,179 for the test year. The allocation of depreciation expense to functional cost components is summarized in **Table 10.**

Table 10 Allocation of Operations & Maintenance and Depreciation Expense

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Line	Description	Total	Base	Extra Capacity Max Day	Extra Capacity Max Hour	Equivalent Meters	Customer Bills
	O&M Expense Summary:						
1	O&M Expense	$ 11,625,010	$ 7,113,518	$ 1,395,296	$ 2,442,961	$ 111,106	$ 562,129
2	Percent Allocation	100.0%	61.2%	12.0%	21.0%	1.0%	4.8%
3	Less Other Income	$ 899,400	$ 550,343	$ 107,928	$ 188,964	$ 8,634	$ 43,531
4	**O&M Expense After Other Inc.**	$ 10,725,610	$ 6,563,175	$ 1,287,368	$ 2,253,997	$ 102,472	$ 518,598
5	**Perecent Allocation After Other Inc.**	100.0%	61.2%	12.0%	21.0%	1.0%	4.8%
6	**Depreciation Expense:**						
7	Source of Supply	$ 17,371	17,371				
8	Pumping Plant	6,302	4,204	2,098			
9	Water Treatment Plant	87,365	58,272	29,092			
10	Transmission Plant	192,788	74,717	37,358	74,717	5,996	
11	Distribution Plant	226,511	90,604	45,302	90,604		
12	General Plant	10,843	4,539	2,209	3,868	176	52
13	**Total Depreciation Expense**	$ 541,179	$ 249,706	$ 116,059	$ 169,189	$ 6,172	$ 52
14	**Depreciation - Percent Allocation**	100.0%	46.1%	21.5%	31.3%	1.1%	0.0%

The various items of depreciation expense are allocated to functional categories in the same manner as in the allocation of net plant investment.

Additionally, the allocation of total operating and maintenance expense, $10,725,610 is demonstrated in **Table 10** Lines 1 through 4. Similar to the allocation of depreciation expense, the various components of operating expense are allocated to cost functions in the same manner as that which was relied upon for the allocation of net plant investment. The net operating and maintenance expense of

$10,725,610 is derived after subtracting water revenue from other source of $899,400 from the beginning operating and maintenance expense of $11,625,010.

4.7 DISTRIBUTION OF COSTS TO CUSTOMER CLASSES

As a basis for determining the cost of water service to each customer class, the elements of cost of service previously allocated to functional cost components are distributed among the customer classes in proportion to their respective service requirements. Estimates of these service requirements, or units of service, reflect the average number of customer equivalencies, annual water sales, and estimated peak water demands placed on the system by each customer class. Analysis of resulting costs of service to each class and comparison of allocated costs with revenues under existing rates provide a basis for future water rate adjustments.

4.7.1 Units of Service

The cost of service responsibility for base costs varies with the volume of water requirements and may be distributed to customer classes on that basis. Extra capacity costs are those costs associated with meeting peak rates of water use, and are distributed to customer classes on the basis of their respective system capacity requirements in excess of average requirement rates. Customer costs, which consist of meter related costs and billing and collection costs, are allocated on the basis of the number of equivalent meters and monthly bills, respectively.

The estimated test year units of service requirements for the various customer classifications are shown in **Table 11** on the following page. Estimates of test year annual water requirements, shown in Column 1, are based on the projections of total water sales previously developed in this report. Average daily use of all water sales is presented in Column 2. Columns 3 through 8 show the estimated maximum day and maximum hour capacity factors for each customer class, the resulting demands, and extra capacity requirements, respectively. Estimates of peak requirements are based upon an analysis of available historic experience for the City, supplemented by the results of detailed analyses of typical customer peak demand characteristics in other comparable cities. Due to the peak demand diversity among the classes, the sum of the individual peak requirements for each class, which are not coincidental to the system, exceeds the experienced coincidental peak of the system.

Customer related metering services and billing are presented in column 9 and 10 and these costs are allocated on the basis of the number of equivalent 3/4 inch meters serving each customer class. The number of equivalent meters in each customer class is estimated by relating typical costs for meters and services larger than 3/4 inch in size to the typical costs of a 3/4 inch meter and its related service line. Customer billing and accounting costs are distributed to classes on the basis of number of bills for each customer class.

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Table 11 Units of Service

Line	Customer Class	Annual Use	Average Daily Use	Maximum Day Requirements Capacity Factor	Total Capacity	Extra Capacity	Maximum Hour Requirements Capacity Factor	Total Capacity	Extra Capacity	Equivalent Meters	Bills
	Column Numbers	(1)	(2)	(3)	(4)	5	6	7	8	9	10
		K Gals.	K Gals. (1) / 365	%	K Gals. (2) x (3)	K Gals. (4) - (2)	%	K Gals. (2) x (6)	K Gals. (7) - (4)	Meters	Bills
	Inside Monthly:										
1	Apartments	737,084	2,020	180%	3,636	1,616	270%	5,454	1,818	329	141,656
2	Mobile Homes	0	0	180%	0	0	270%	0	0	0	0
3	Residential	2,979	9	225%	20	11	350%	32	12	43	711
4	Churches	2,505	7	170%	12	5	250%	18	6	33	108
5	Commercial	214,824	589	170%	1,001	412	250%	1,473	472	927	2,863
6	Educational	95,288	262	170%	445	183	250%	655	210	398	730
7	Hotels/Motels	7,705	22	180%	40	18	270%	59	19	21	72
8	Public Authority	28,342	78	170%	133	55	250%	195	62	96	228
9	Sprinkler	6,915	19	250%	48	29	400%	76	28	119	373
10	**Total Inside Monthly**	1,095,641	3,006		5,335	2,329		7,962	2,627	1,966	146,741
	Inside Quarterly:										
11	Apartments	35,220	97	180%	175	78	270%	262	87	148	2,954
12	Mobile Homes	0	0	180%	0	0	270%	0	0	0	0
13	Residential	638,924	1,751	225%	3,940	2,189	350%	6,129	2,189	9,400	37,087
14	Churches	3,719	11	170%	19	8	250%	28	9	45	122
15	Commercial	65,311	179	170%	304	125	250%	448	144	1,203	4,192
16	Educational	66	1	170%	2	1	250%	3	1	1	4
17	Hotels/Motels	617	2	180%	4	2	270%	5	1	3	8
18	Public Authority	83	1	170%	2	1	250%	3	1	4	16
19	Sprinkler	78,779	216	250%	540	324	400%	864	324	878	1,672
20	**Total Inside Quarterly**	822,718	2,258		4,986	2,728		7,742	2,756	11,682	46,055
	Outside Monthly:										
21	Apartments	245,608	673	180%	1,211	538	270%	1,817	606	103	101,196
22	Mobile Homes	14,745	41	180%	74	33	270%	111	37	5	72
23	Residential	1,394	4	225%	9	5	350%	14	5	8	611
24	Churches	2,511	7	170%	12	5	250%	18	6	53	109
25	Commercial	119,408	328	170%	558	230	250%	820	262	522	1,375
26	Educational	13,393	37	170%	63	26	250%	93	30	134	268
27	Hotels/Motels	3,998	11	180%	20	9	270%	30	10	7	48
28	Public Authority	93	1	170%	2	1	250%	3	1	4	12
29	Sprinkler	3,251	9	250%	23	14	400%	36	13	14	48
30	**Total Outside Monthly**	404,401	1,111		1,972	861		2,942	970	850	103,739
	Outside Quarterly:										
31	Apartments	27,283	75	180%	135	60	270%	203	68	131	2,415
32	Mobile Homes	0	0	180%	0	0	270%	0	0	0	0
33	Residential	513,409	1,407	225%	3,166	1,759	350%	4,925	1,759	6,608	28,328
34	Churches	2,529	7	170%	12	5	250%	18	6	25	76
35	Commercial	30,906	85	170%	145	60	250%	213	68	304	1,014
36	Educational	231	1	170%	2	1	250%	3	1	2	4
37	Hotels/Motels	180	1	180%	2	1	270%	3	1	2	4
38	Public Authority	396	2	170%	3	1	250%	5	2	7	20
39	Sprinkler	73	1	250%	3	2	400%	4	1	2	4
40	**Total Outside Quarterly**	575,007	1,579		3,468	1,889		5,374	1,906	7,081	31,865
41	**Total System**	2,897,768	7,954		15,761	7,807		24,020	8,259	21,579	328,400
					Daily			**Hourly**			
42	Total noncoincidental demand				15,761			24,020			
43	Total coincidential demand				11,931			19,885			
44	Ratio non to coincidental demand (Diversity Factor)				1.32			1.21			

4.7.2 Customer Class Costs of Service

Unit net costs of service are developed by dividing the total cost allocated to each functional costs component by the total applicable units of service. The customer class responsibility for service is

obtained by applying unit costs of service to the number of units for which the customer class is responsible.

The City's water system has been built with provision for service of customers within the City. The system rate of return on net plant investment applicable for calculating the unit cost is determined to be **6.64%. Table 12** summarizes the various components that make up the unit cost of service. Unit costs of service for each component are determined simply by dividing the allocated cost or investment by the total units of service. The total unit cost of service for the City's customers is shown on line 10 and the associated net cost of service by cost function is shown on Line 11 below.

Table 12 Development of Test Year Unit Cost of Service

Line	Description	Total	Base	Extra Capacity Max Day	Extra Capacity Max Hour	Equivalent Meters	Customer Bills
			Gals	Gals	Gals	Meters	Bills
	Number of Units:						
1	City of North Miami		2,897,768	7,807	8,259	21,579	328,400
	Costs of Service:						
	Net Operating Expense						
2	Total - $	10,725,610	6,563,162	1,287,345	2,253,955	102,510	518,638
3	Unit Cost - $/unit		2.2649	164.8963	272.9089	4.7505	1.5793
	Depreciation Expense						
4	Total - $	541,179	249,707	116,059	169,189	6,172	52
5	Unit Cost - $/unit		0.0862	14.8660	20.4854	0.2860	0.0002
	Net Plant Investment						
6	Total - $	11,775,578	4,929,755	2,398,920	4,199,786	191,096	56,022
7	Unit Cost - $/unit		1.7012	307.2780	508.5102	8.8556	0.1706
	Return on Investment						
8	Total - $	782,211	327,467	159,352	278,977	12,694	3,721
9	Unit Cost - $/unit		0.1130	20.4114	33.7786	0.5882	0.0113
	Total Unit Cost of Service						
10	City of North Miami - $/unit		2.4641	200.1737	327.1729	5.6247	1.5908
	Total Cost of Service						
11	City of North Miami - $	12,049,001	7,140,337	1,562,756	2,702,121	121,376	522,412
12	**System Rate of Return**	6.64%					

The cost of service allocated to customer classes is summarized in **Table 13.** Total cost of service for each class is based on unit costs of service from **Table 12** and units of service from **Table 11.**

Table 13 Customer Class Unit Cost of Service

Line	Description	Total	Base	Extra Capacity Max Day	Extra Capacity Max Hour	Equivalent Meters	Customer Bills
		$	$	$	$	$	$
1	Unit cost of service ($/unit)		2.4641	200.1737	327.1729	5.6247	1.5908
	Apartments:						
1	Units of Service		1,045,195	2,292	2,579	711	248,221
2	Allocated cost of service	4,276,888	2,575,447	458,798	843,779	3,999	394,865
	Mobile Homes:						
3	Units of Service		14,745	33	37	5	72
4	Allocated cost of service	55,187	36,333	6,606	12,105	28	115
	Residential:						
5	Units of Service		1,156,706	3,964	3,965	16,059	66,737
6	Allocated Cost of Service	5,137,440	2,850,219	793,489	1,297,241	90,327	106,164
	Churches:						
7	Units of Service		11,264	23	27	156	415
8	Allocated Cost of Service	42,730	27,755	4,604	8,834	877	660
	Commercial:						
9	Units of Service		430,448	827	946	2,956	9,444
10	Allocated Cost of Service	1,567,359	1,060,659	165,544	309,506	16,627	15,023
	Educational:						
11	Units of Service		108,978	211	242	535	1,006
12	Allocated Cost of Service	394,552	268,530	42,237	79,176	3,009	1,600
	Hotels/Motels:						
13	Units of Service		12,500	30	31	33	132
14	Allocated Cost of Service	47,344	30,801	6,005	10,142	186	210
	Public Authority:						
15	Units of Service		28,914	58	66	111	276
16	Allocated Cost of Service	105,512	71,246	11,610	21,593	624	439
	Sprinkler:						
17	Units of Service		89,018	369	366	1,013	2,097
18	Allocated Cost of Service	421,990	219,347	73,864	119,745	5,698	3,336
19	**Total Allocated Cost of Service**	**12,049,002**	**7,140,337**	**1,562,757**	**2,702,121**	**121,375**	**522,412**

Table 14 presents a test year comparison of net cost of service results with revenues under existing rates for each customer class served by the City. As demonstrated **in Table 14**, the under existing rates the water system under recovers the annual test year cost of service by $95,643 in FY 2012.

Table 14 Comparison of Customer Class Cost of Service and Revenues under Existing Rates

Line	Customer Class	Cost of Service	Existing Revenue	Difference Amount	Difference Percent	Percent Increase
		$	$	$	%	
	Water System:					
1	Apartments	$ 4,276,886	$ 5,047,774	$ (770,888)	118.02%	-15.27%
2	Mobile Homes	55,187	21,591	33,596	39.12%	155.60%
3	Residential	5,137,439	4,543,251	594,188	88.43%	13.08%
4	Churches	42,732	56,332	(13,600)	131.83%	-24.14%
5	Commercial	1,567,359	1,513,845	53,514	96.59%	3.53%
6	Educational	394,550	356,475	38,075	90.35%	10.68%
7	Hotels/Motels	47,343	55,236	(7,893)	116.67%	-14.29%
8	Public Authority	105,512	83,911	21,601	79.53%	25.74%
9	Sprinkler	421,988	274,938	147,050	65.15%	53.48%
10	**Total Water System**	**$ 12,048,996**	**$ 11,953,353**	**$ 95,643**	**99.21%**	**0.80%**

FINAL

5 Water System Rate Design

5.1 GENERAL

The revenue requirement and cost of service studies described in the preceding sections of this report provide a basis for the review and update of a schedule of water rates that reasonably recovers allocated costs of service. It should be recognized that these studies are the results of engineering estimates, based on historical data and, to some extent, upon judgment and experience. Detailed results should not be used as literal and exact answers, but instead as guides to the necessity for and nature of rate adjustments. Judgment must enter into the final choice of rates, and factors such as public reaction to the extent of changes and adjustments, previous rate levels, contractual agreements, and past local practice should be recognized in making rate adjustments. Rates should be reasonably simple in application and subject to as few misinterpretations as possible. Considerations with regards to the rate adjustments were made based on discussions with City staff and include the indicated desire of the City representatives to: (1) to project and examine the future operating and capital financing requirements of the utilities and the ability of existing rates to recover the requirements; (2) to develop rates that will recover these revenue requirements, promote the efficient usage of water resources in the City, address the equitability of the existing rate amongst the existing customers classes, and address issues around the affordability of existing rates for specific customers; and (3) to assess and provide recommendations regarding the financial capabilities of the City's Utility System. In attempting to meet these policy criterias, schedules of proposed rates for water service were developed as presented and described in the following paragraphs.

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5.2 EXISTING WATER RATES

The existing schedule of rates for water service includes an monthly base charge, which varies by meter size and is paid by all customers, a capital improvement fee, which is a fixed monthly charge paid by all customers, and a uniform block volumetric rate. The monthly base charge includes a minimum volumetric allowance of 5,000 gallons. The capital improvement fee is an annual estimate of specific capital improvement project divided by all units of customers served and the volume charge is applied per 1,000 gallons of billable consumption over the minimum allowance of 5,000 gallons. **Tables 15 and 16** compare existing rates to proposed rates after adjustments.

Table 15 Existing Water Rates (All Classes)

DESCRIPTION	2011
Monthly Base Charge (1) (Min. Allowance of 5,000 gallons)	**Rate**
Residential (Living Units):	$11.37
Commercial:	
3/4" Meter	$11.37
1" Meter	$21.98
1.5" Meter	$53.92
2" Meter	$133.77
2 (2)" Meter	$133.77
3" Meter	$240.18
4" Meter	$479.60
6" Meter	$905.40
8" Meter	$1,597.15
Capital Improvement Fee (1)	
Residential	$7.67
Commercial	$7.67
Volumetric Rate (2)	
Residential	$1.12
Commercial	$2.01

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Note:

1. The monthly base charge and the capital improvement fee are fixed monthly fees that are applied to all customers/living units served by the City.
2. The volumetric rate is assessed to the water usage of customers on a per 1,000 gallon basis over and above the minimum allowance of 5,000 gallons.

5.3 PROPOSED WATER RATES

The cost of service studies described in the preceding section of this report provides the basis for the design of water rates schedules to cover the allocated cost for service for the water system. As previously indicated, water sales revenues shown for the test year 2012 and debt service coverage requirements are anticipated to be recovered under five projected annual rate adjustments assumed to be implemented by the City on April 1, 2012. In addition, as a part of the proposed water rate plan, Black & Veatch recommends reducing the nine (9) customer designations to six (6). As listed below, the residential, apartments, mobile home, and sprinkler classes will remain the same, but the new commercial class is a combination of the old commercial, churches, and the hotel/motels classes and the new City class is a combination of the educational and the public authority classes. As a part of the analysis performed herein, the Black & Veatch team reviewed the water usage characteristics for customers across all customer classes served by the City and is proposing the merger of the customer classes described above.

As a part of the due diligence performed during the course of the study described herein, the Black & Veatch team performed specific analysis on the effectiveness of the existing water rate components. As such, the Black & Veatch team has made specific recommendations about the actual water rate components to be assessed to customers.

The proposed water rates will consist of two components: 1) a monthly base charge, that varies by meter size and; 2) an increasing block volumetric rate that is assessed per 1,000 gallons of usage. The proposed volumetric rates will be assessed in an increasing block format to promote the efficient use of water resources.

Finally, the City has maintained a policy to apply a multiplier of 1.25 to the rates of all outside city customers. As such, Black & Veatch will maintain this policy in the assessment of the water rates that are charged to outside the city customers.

Table 16A & B summarizes the proposed FY 2012 rates.

Table 16 Proposed FY 2012 Water System Rates

A. Monthly Base Charge (Inside City)

	CUSTOMER CLASSES					
Meter Size	Residential (1)	Apartments (1)	Mobile Homes (1)	Commercial (2)	City (2)	Sprinkler (2)
3/4" Meter	$11.40	$11.40	$11.40	$11.40	$11.40	$11.40
1" Meter	$11.40	$11.40	$11.40	$22.06	$22.06	$22.06
1.5" Meter	$11.40	$11.40	$11.40	$54.09	$54.09	$54.09
2" Meter	$11.40	$11.40	$11.40	$134.21	$134.21	$134.21
2 (2)" Meter	$11.40	$11.40	$11.40	$134.21	$134.21	$134.21
3" Meter	$11.40	$11.40	$11.40	$240.96	$240.96	$240.96
4" Meter	$11.40	$11.40	$11.40	$481.17	$481.17	$481.17
6" Meter	$11.40	$11.40	$11.40	$908.35	$908.35	$908.35
8" Meter	$11.40	$11.40	$11.40	$1,602.36	$1,602.36	$1,602.36

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Note:

1. The monthly base charges for the residential, apartments, and mobile home customer classes are assessed per living unit.
2. The monthly base charges for the commercial, city, and sprinkler customer classes are assessed on a per customer basis.

B. Volumetric Rates (Inside City)

CUSTOMER CLASSES	USAGE BLOCKS				
	Units	Block 1	Block 2	Block 3	Block 4
Residential	$	$1.73	$2.42	$3.11	$3.46
Usage Blocks	***Gallons***	***0 – 5,000***	***5,001–12,000***	***12,001-20,000***	***Above 20,000***
Apartment	$	$1.62	$1.70	$1.78	$1.94
Usage Blocks	***Gallons***	***0 – 2,000***	***2,001–4,000***	***4,001-7,000***	***Above 7,000***
Mobile Homes	$	$1.66	$2.40		
Usage Blocks	***Gallons***	***0 - 295,000***	***Above 295,000***		
Commercial	$	$1.57	$2.09	$2.36	$3.14
Usage Blocks	***Gallons***	***0 – 15,000***	***15,001–75,000***	***75,001 – 315,000***	***Above 315,000***
Sprinkler	$			$3.18	
Usage Blocks	***Gallons***			***All Usage***	
City	$	$1.55	$2.33	$2.79	$3.16
Usage Blocks	***Gallons***	***0 – 60,000***	***60,001–405,000***	***405,001 – 780,000***	***Above 780,000***

Note:

2. The proposed volumetric rates do not include a minimum allowance, so all water usage is charged based on the defined rate per customer class per usage block as shown above in Table 16B.

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The SFWMD has implemented certain mandates upon which the City has to abide as part of the Consumptive Use Permit between SFWMD and the City. As a part of the City's Consumptive Use Permit, the City is in the process of implementing a conservation plan which requires the City to implement water rates that promote the efficient use of water resources. The initial basis upon which the City will promote conservation amongst customers served by the Utility System is to implement an inclining block rate structure to the primary customer classes, residential, apartment, mobile homes, commercial, and city, served by the Utility System.

During the process of simulating the impact of the proposed water rates on the typical customers served by the Utility System, Black & Veatch worked with the City to understand the impact of the proposed rates on all customers served by the Utility System and address specific affordability concerns amongst specific customer groups served by the City. More specifically, the residential and apartment customer classes serve the largest group of customers and a high proportion of these customers are on a fixed income budget, so Black & Veatch and the City simulated an optimum weighting between considering a customer's ability to pay the proposed bill based on their existing bill and setting rates that recover revenues based on the cost of service rendered therein. This exercise was replicated for all customer groups, so that the Black & Veatch team and City representatives understood the impact to all the customer groups served by the City.

The proposed adjustments detailed in **Tables 16 A & B** allows the water utility to meet annual water system revenue requirements, meet debt service coverage requirements, and maintain appropriate cash balances in case of an emergency or an unforeseen event.

5.4 WATER SERVICE REVENUE UNDER PROPOSED RATES

A comparison of the estimated test year revenue under the proposed rates with allocated costs of service for each of the customer classes is shown in **Table 17.**

Table 17 Comparison of Customer Class Cost of Service and Revenues under Proposed Rates

Line	Customer Class	Cost of Service	Proposed Revenue	Revenue Recovery Amount	Revenue Recovery Percent
		$	$	$	%
	Water System:				
1	Apartments	$ 4,276,886	$ 4,316,677	$ 39,791	100.93%
2	Mobile Homes	55,187	27,454	(27,733)	49.75%
3	Residential	5,137,439	5,120,642	(16,797)	99.67%
4	Commercial	1,657,434	1,671,628	14,194	100.86%
5	City	500,062	489,013	(11,049)	97.79%
6	Sprinkler	421,988	423,627	1,639	100.39%
7	**Total Water System**	**$12,048,996**	**$ 12,049,040**	**$ 44**	**100.00%**

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6 Sewer System Revenue and Revenue Requirements

6.1 SEWER REVENUE

6.1.1 General

The City's sewer system generates revenue primarily from charges for sewer service. Other sources of revenue includes fees for billing, service charges, metering fees, connection fees, delinquent fees, and other miscellaneous charges.

6.1.2 Customers and Growth

Customer growth in the sewer system is expected to parallel the forecast of growth as determined for the water system. As such, the forecast of customer growth assumes 0.0% growth for FY 2011 and the test year FY 2012, 0.25% growth annually for FY 2013 and FY 2014, and 0.50% for the remainder of the forecast period. The City maintains customers that are designated as water only, sewer only, and water/sewer customers. The number of sewer customer accounts is projected to grow from about 11,957 to 12,134 from FY 2012 to FY 2016.

In addition, the City bills customers classified as, residential, mobile homes, and apartment, on a living units basis which is designated by the City at the time service is initiated. As a part of the Utility Service Initiation, customers served in the residential, mobile home, and apartment customer classes are designated on the basis of a living unit. Residential properties or lots in and around the utility service area of North Miami, in some cases, have multiple residents living on one property, so in response to determining the magnitude of sewer service required, the level of sewer treatment capacity that needs to be available to this property, and the total amounts of residences on the property, the City designates the total amount of living units on the property. The living unit designation is intended to summarize the total actual amount of residences on a property and serve as the equivalent basis to provide service to a typically customer using a 3/4" water meter.

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At the end of FY 2010, the City served approximately 30,556 sewer living units. These units serve as the basis for the current application of the City's monthly base charges across the residential, mobile home, and apartment customer classes. During FY 2012, it is anticipated that there will be no additions in living units, so the projected increase in living units over the forecast period will be in accordance with the customer growth rates discussed herein. As such, the total living unit increase is expected to be 20,779, 3, and 10,231 for the apartment, mobile home, and residential customer classes, respectively, for a total living unit count of 31,016 by FY 2016. The sewer system serves approximately 4,900 monthly outside the city apartment living units which has increased the total sewer living unit count for the apartment customer class as compared to the mobile home and residential customer classes.

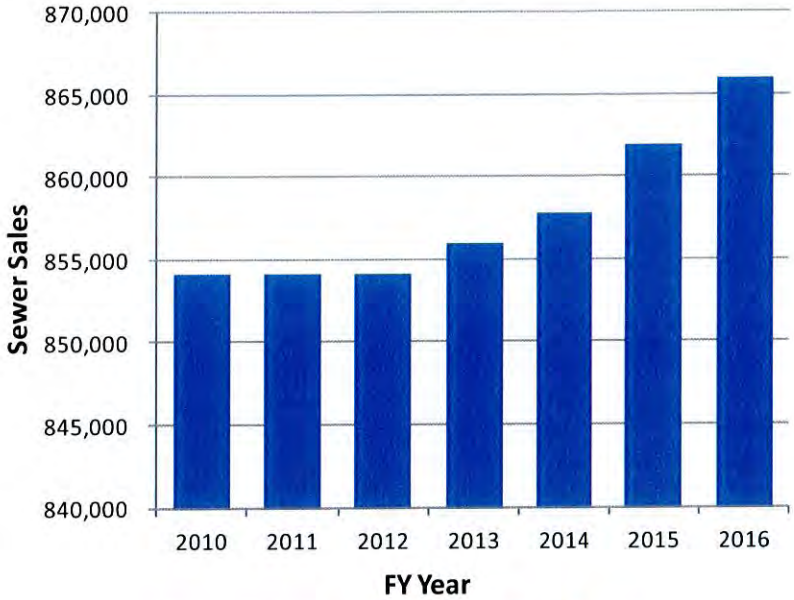
6.1.3 Sewer Sales

Billable sewer usage is projected to increase slightly over the forecast period. The increase is directly related to the low growth in the Utility System customers over the forecast period. Currently, customers receiving sewer service from the City are billed at 31.0% for all residential customer groups such as apartment, residential, and mobile homes and 36.0% for all other customer classes such as commercial, educational, hotels/motels, churches, and public authority of total water usage. As a result, the total billed sewer volumes which includes water usage after the implementation of the

sewer billing factors less sprinkler usage is anticipated to be 854,100 thousand gallons by the end of FY 2012 and this total will grow to 865,596 thousand gallons by the end of FY 2016.

Figure 5 summarizes the historical and projected sewer volumes over the forecast period.

Figure 5 Annual Historical & Projected Sewer Sales



6.1.4 Sewer Revenue

The sewer system derives revenue from an availability charge, a capital improvement fee, a sewer treatment fee and a volumetric rate. The historical sewer volume distribution for all customer classes served by the City and the application of the sewer system rate schedules provide the principal basis for estimating of future revenue. Sewer sales revenue derived from availability charges, capital improvement fees, sewer treatment fees, and volumetric rates under existing rates is projected to grow from $11,074,300 in FY 2012 to $11,241,300 in FY 2016.

6.1.5 Other Revenue

In addition to sewer sales revenue, other revenue must be considered in the analyses. Other revenue includes other operating revenue, non-operating revenue, and interest income. It is projected that other revenue for the sewer system will increase from $789,200 in FY 2012 to $797,100 in FY 2016. **Table 18** summarizes the total revenue produced by the sewer system over the forecast period, including both sewer sales revenue and miscellaneous other operating revenue.

Table 18 Sewer Utility Projected Revenue under Existing Rates

YEAR	REVENUE
2012	$11,863,500
2013	$11,891,200
2014	$11,921,000
2015	$11,978,600
2016	$12,038,400

6.2 SEWER REVENUE REQUIREMENTS

6.2.1 General

The revenue required to adequately provide for the continued operation of the sewer system must be sufficient to meet the cash requirements for the sewer system's operations. Such revenue requirements include: (1) operating and maintenance expenses; (2) debt service requirements, consisting of principal, interest, and any reserve fund payments on revenue bonds; and (3) other expenditures and transfers with allowances to develop a cash reserve fund. In addition, annual revenues need to be adequate to meet the debt service coverage requirements established by the bond ordinance applicable to existing and future revenue bond issues. Projections of cash requirements to meet these system expenditures for the forecast period are developed in this section.

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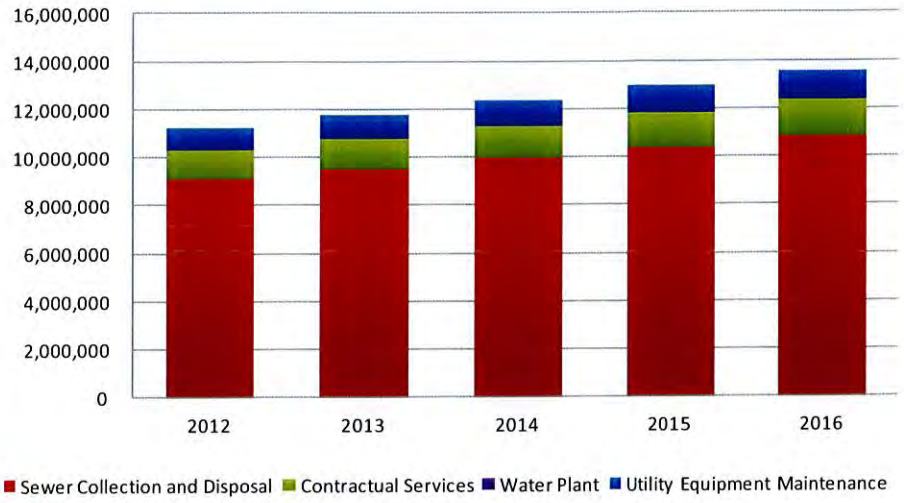
6.2.2 Operating and Maintenance Expenses

Operating and maintenance expenses include the annual expenses associated with wastewater treatment services provided by Miami-Dade County; wastewater pumping; wastewater collection and transmission; billing, collection and accounting; and administrative and general services. These expenses include the annual salaries and wages of personnel, costs for material and supplies, fuel and electric power costs, and other costs such as employee benefits, insurance, and contract services. **Figure 6** summarizes the operating and maintenance expenses for the sewer system over the forecast period. Projections of future operating and maintenance expenses are based on budget information provided by the City for FY 2012 and an analysis of current and anticipated operating conditions and trends. In recent years, operating and maintenance expenses have increased primarily due to the combined effects of inflation and of rising fuel and energy prices. Included in these projections are the aforementioned factors from Table 1 as well as other pertinent factors. Total operating and maintenance expenses are projected to increase from $11,254,200 in FY 2012 to $13,559,200 in FY 2016.

Figure 6 Projected Operating and Maintenance Expense



6.2.3 Debt Service Requirement

Debt service costs are attributed to the sewer utility's share of the existing general debt service obligations. Estimated debt service on the sewer utility's share of debt is projected using information on bond obligations on outstanding debt over the forecast period. **Table19** summarizes the debt service obligations on outstanding and proposed debt for the sewer system over the forecast period.

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Table 19 Debt Service Obligations on Outstanding Debt for Forecast Period

YEAR	DEBT SERVICE OBLIGATIONS
2012	$172,600
2013	$229,800
2014	$507,700
2015	$502,600
2016	$509,500

6.2.4 Other Expenditures & Transfers

Other expenditures and transfers include costs that are incurred by the sewer utility after the fulfillment of operating and maintenance and debt service obligations from revenues under existing rates. These costs are typically funded by cash from operations and any other unrestricted sources of funds available to the City. The City has specific funding requirements that have been mandated by the City's General and Pension Fund. As such, the City intends to transfer $608,300 and $67,200 to the General and Pension Fund respectively in FY 2012 and these totals will increase to $614,400 and $80,600 respectively by the end of FY 2016. In addition, the City is required to make annual deposits into an Employee Benefits Reserve Fund. As such the sewer system will contribute $279,400 in FY 2012 and this contribution will increase to $366,300 by FY 2016.

As a part of implementing water rates that promotes the efficient use of water resources and provides for a more stable source of revenues, Black & Veatch recommends the implementation of a rate stabilization fund. The purpose of the fund is to create a revenue stabilization mechanism, or fund balance in case of unforeseen events that would require an immediate increase in Utility System rates as a resolution to these effects on the Utility System. As such, the City will escrow an average of about $645,000 annually from water and sewer operating revenues for seven (7) consecutive years that will start in FY 2012 and end in FY 2018. The goal of the fund is to maintain a fund balance of $3.5 million that can be used by the City to stabilize Utility System rates as needed. The sewer system will contribute on average $313,400 annually to the rate stabilization fund over the forecast period defined herein.

Finally, Black & Veatch recommends the establishment of a Renewal and Replacement Fund to assist the City in funding normal annual system improvements. In implementing the establishment of this fund, the City should escrow and maintain, at a minimum, the equivalent of 6% of the value of its net plant investment in water and sewer facilities in order to provide for adequate annual renewals and replacements of the Utility System infrastructure. At the end of FY 2013, the fund's ending cash balance is anticipated to be $1,084,000 and this number will grow to $2,770,600 by the end of FY 2016. Based on the Renewal and Replacement Fund totals provided above over the forecast period, the sewer system is anticipated to contribute $1,205,800 in FY 2012 and this total will grow to $1,424,700 in FY 2016.

Table 20 shows the annual expenditures and transfer totals for the sewer system.

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Table 20 Projected Other Expenditures & Transfers

YEAR	OTHER EXPENDITURES & TRANSFERS
2012	$2,473,100
2013	$2,547,000
2014	$2,626,600
2015	$2,710,500
2016	$2,801,200

6.2.5 Major Capital Improvements

A summary of proposed sewer utility capital improvements over the forecast period is listed on **Table 21**. The estimated cost of these improvements is approximately $6.6 million over the forecast period. Future regulatory requirements may require the addition of certain facilities not currently anticipated in the proposed capital improvement program. If additional facilities are required, funds from user rate charges, additional debt financing or a combination of the two sources may be required.

A detailed sources and uses is presented in **Table 37** that outlines a coordinated financing plan based on the City's existing cash reserves and the forecasted revenues to be generated from the proposed rate presented herein.

Table 21 Sewer System CIP and CIP Financing

LINE	DESCRIPTION	2012	2013	2014	2015	2016 (1)	TOTAL
Capital Improvement Program:							
1	Lift Station Rehab.	$200,000	$200,000	$500,000	$500,000	$500,000	$1,900,000
2	Gravity Sewer Improv.	$500,000	$500,000	$500,000	$500,000	$500,000	$2,500,000
3	SS Force Main Improv.	$1,400,000	$728,000				
4	Transfer Switches			$30,000	$30,000	$30,000	$90,000
5	Total CIP	$2,100,000	$1,428,000	$1,030,000	$1,030,000	$1,030,000	$3,790,000
	Sources & Uses of Funds:						
6	Revenue Bond	$1,300,000					$1,710,845
7	Renewal. & Replace-ment	$800,000	$1,329,200	$856,100	$889,500	$1,030,000	$1,840,763
8	Cash from Operations		$98,800	$173,900	$140,500		$238,392
9	Total Financing	$2,100,000	$1,030,000	$1,030,000	$1,030,000	$1,030,000	$3,790,000

Note:

1. The FY 2012 through FY 2016 Capital Improvement Plan ("CIP") was provided by the City.

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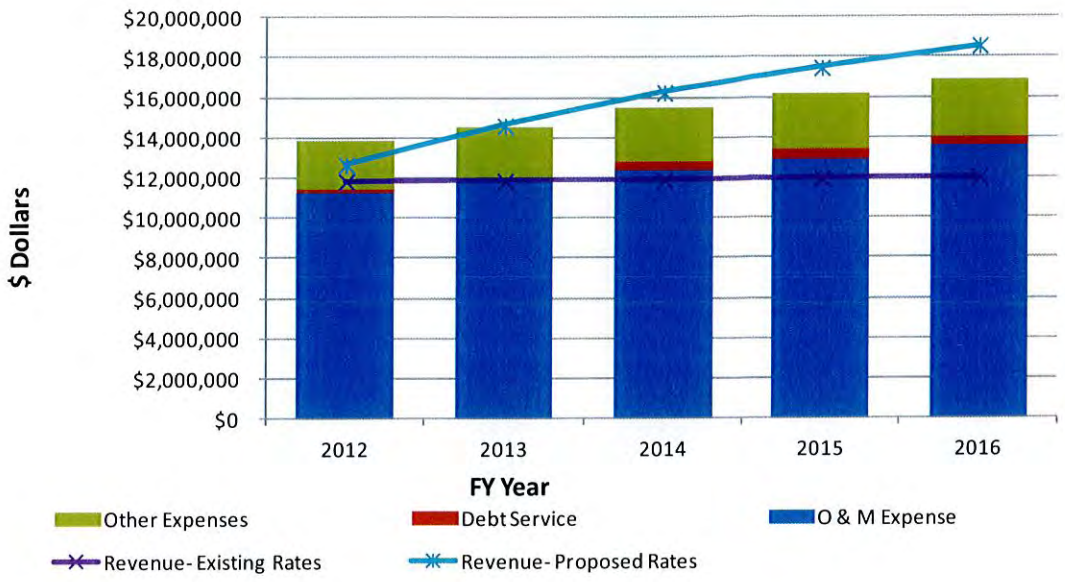
6.3 SEWER SYSTEM SUMMARY OF REVENUE AND REQUIREMENTS

Total revenue requirements, including operating and maintenance expenses, debt service obligations, and other expenditures and transfers for the sewer system are projected to grow from $13,899,900 in FY 2012 to $16,869,900 in FY 2016 as shown in **Figure 7**. Based on the projected revenues under existing rates, the current rate levels will be unable to sustain operations for the sewer utility through the study period without an increase in the existing rate levels.

The projected operating results detailed in **Table 22** and **23** respectively, show the projected sewer system operating results on an existing and proposed sewer rates basis. As shown in **Table 22**, the projected operating results under existing sewer rates do not produce the financial results necessary to maintain a self sufficient utility system. On the other hand, **Table 23** provides the City with the ability to meet debt service coverage requirement, protect against unforeseen events associated with implementation of the proposed conservation based water rates and other, and maintain appropriate cash balances. In addition, the annual overall revenue increases are identified on Lines 2 through 4 of **Table 23**.

Figure 7 Comparison of Revenue and Revenue Requirements



Tables 22 and 23, respectively, summarize a pro forma statement of revenue and expenses for the sewer utility under both the existing and proposed rates. The scenarios include projected; revenues, operating and maintenance expenses, debt service obligations, cash reserve fund transfers, and capital obligations funded from sewer user rates.

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Table 22 Projected Operating Results under Existing Rates

Line	Description	For the Fiscal Year Ended: 2012	2013	2014	2015	2016
	REVENUES					
	Operating Revenues:					
1	Existing Sewer System	$ 11,074,300	$ 11,102,000	$ 11,129,800	$ 11,185,400	$ 11,241,300
2	Percent Rate Increase	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*
3	Implementation Period	*6 months*	*12 months*	*12 months*	*12 months*	*12 months*
4	Actual Increase	0	0	0	0	0
5	**Revenue Under Proposed Rates**	$ 11,074,300	$ 11,102,000	$ 11,129,800	$ 11,185,400	$ 11,241,300
6	**Total Other Revenues**	$ 789,200	$ 789,200	$ 791,200	$ 793,200	$ 797,100
7	**Total Sewer Revenues**	$ 11,863,500	$ 11,891,200	$ 11,921,000	$ 11,978,600	$ 12,038,400
	OPERATING EXPENDITURES					
	O&M Expenses:					
8	Contractual Services	$ 1,170,400	$ 1,244,700	$ 1,324,800	$ 1,411,300	$ 1,504,800
9	Utility Equipment Maintenance	935,100	992,600	1,053,900	1,119,400	1,189,300
10	Water Plant	17,200	17,800	18,500	19,200	19,900
11	W&S Special Projects	0	0	0	0	0
12	Water Distribution	0	0	0	0	0
13	Sewer Collection and Disposal	9,131,500	9,532,400	9,951,100	10,388,400	10,845,200
14	Sewer Projects	0	0	0	0	0
15	**Total O&M Expenses**	$ 11,254,200	$ 11,787,500	$ 12,348,300	$ 12,938,300	$ 13,559,200
16	**Net Revenues**	$ 609,300	$ 103,700	$ (427,300)	$ (959,700)	$ (1,520,800)
17	**Total Debt Service**	$ 172,600	$ 229,800	$ 507,700	$ 502,600	$ 509,500
18	**Income Available for Other Exp.**	$ 436,700	$ (126,100)	$ (935,000)	$ (1,462,300)	$ (2,030,300)
	Debt Service Coverage					
19	Achieved	3.53	0.45	(0.84)	(1.91)	(2.98)
20	Target	1.20	1.20	1.20	1.20	1.20
	Other Expenditures & Transfers:					
21	Renewal and Replacement Fund	$ 1,205,800	$ 1,257,000	$ 1,310,400	$ 1,366,100	$ 1,424,700
22	Transfer to General Fund	608,300	608,300	609,800	611,300	614,400
23	Transfer to Pension Fund	67,200	70,300	73,400	77,000	80,600
24	Reserve for Employee Benefits	279,400	299,000	319,900	342,300	366,300
25	Rate Stabilization Fund	312,400	312,400	313,100	313,800	315,200
26	**Total Other Exp. & Transfers**	$ 2,473,100	$ 2,547,000	$ 2,626,600	$ 2,710,500	$ 2,801,200
27	**Total Revenue Requirements**	**$ 13,899,900**	**$ 14,564,300**	**$ 15,482,600**	**$ 16,151,400**	**$ 16,869,900**
28	**Operating Surplus/Deficit**	**$ (2,036,400)**	**$ (2,673,100)**	**$ (3,561,600)**	**$ (4,172,800)**	**$ (4,831,500)**
	Fund Balance:					
29	Beginning Fund Balance	$ 6,000	$ (2,030,400)	$ (4,802,300)	$ (8,537,800)	$ (12,851,100)
30	Operating Surplus	(2,036,400)	(2,673,100)	(3,561,600)	(4,172,800)	(4,831,500)
31	Cash Funding of Capital Projects	0	(98,800)	(173,900)	(140,500)	0
32	**Ending Fund Balance**	**$ (2,030,400)**	**$ (4,802,300)**	**$ (8,537,800)**	**$ (12,851,100)**	**$ (17,682,600)**
33	**Days Fund Balance on Hand**	**-65**	**-147**	**-249**	**-358**	**-469**

As shown in **Table 22**, the projected sewer system financial results under existing rates indicates that existing sewer rates and charges will not produce sufficient revenues to meet the financial obligations of the sewer utility over the forecast period. In addition, the associated debt service coverage ratio falls from 3.53 in FY 2012 to a negative (2.98) in FY 2016 which is below the required 1.20 debt service coverage ratio as established in the Utility System's Bond Resolution. At the beginning of FY

2012, it is forecasted that the sewer system will begin the fiscal year with a positive balance of about $6,000, but by the end of the forecast period the balance is reduced to a negative ($17.7) million.

As presented herein, the financing plan associated with the sewer system indicates an overall increase in revenues of 15.0% for sewer customers to be implemented on April 1, 2012. **Table 23** presents the projected operating results for the sewer system under the proposed rates.

Table 23 Sewer Utility Projected Operating Results under Proposed Rates

Line	Description	For the Fiscal Year Ended: 2012	2013	2014	2015	2016
	REVENUES					
	Operating Revenues:					
1	Existing Sewer System	$ 11,074,300	$ 11,934,700	$ 13,890,800	$ 15,565,600	$ 16,785,400
2	Percent Rate Increase	*15.00%*	*16.10%*	*11.50%*	*7.30%*	*6.00%*
3	Implementation Period	*6 months*	*12 months*	*12 months*	*12 months*	*12 months*
4	Actual Increase	830,600	1,921,500	1,597,400	1,136,300	1,007,100
5	**Revenue Under Proposed Rates**	$ 11,904,900	$ 13,856,200	$ 15,488,200	$ 16,701,900	$ 17,792,500
6	**Total Other Revenues**	$ 789,200	$ 789,200	$ 791,200	$ 793,200	$ 797,100
7	**Total Sewer Revenues**	$ 12,694,100	$ 14,645,400	$ 16,279,400	$ 17,495,100	$ 18,589,600
	OPERATING EXPENDITURES					
	O&M Expenses:					
8	Contractual Services	$ 1,170,400	$ 1,244,700	$ 1,324,800	$ 1,411,300	$ 1,504,800
9	Utility Equipment Maintenance	935,100	992,600	1,053,900	1,119,400	1,189,300
10	Water Plant	17,200	17,800	18,500	19,200	19,900
11	W&S Special Projects	0	0	0	0	0
12	Water Distribution	0	0	0	0	0
13	Sewer Collection and Disposal	9,131,500	9,532,400	9,951,100	10,388,400	10,845,200
14	Sewer Projects	0	0	0	0	0
15	**Total O&M Expenses**	$ 11,254,200	$ 11,787,500	$ 12,348,300	$ 12,938,300	$ 13,559,200
16	**Net Revenues**	$ 1,439,900	$ 2,857,900	$ 3,931,100	$ 4,556,800	$ 5,030,400
17	**Total Debt Service**	$ 172,600	$ 229,800	$ 507,700	$ 502,600	$ 509,500
18	**Income Available for Other Exp.**	$ 1,267,300	$ 2,628,100	$ 3,423,400	$ 4,054,200	$ 4,520,900
	Debt Service Coverage					
19	Achieved	8.34	12.44	7.74	9.07	9.87
20	Target	1.20	1.20	1.20	1.20	1.20
	Other Expenditures & Transfers:					
21	Renewal and Replacement Fund	$ 1,205,800	$ 1,257,000	$ 1,310,400	$ 1,366,100	$ 1,424,700
22	Transfer to General Fund	608,300	608,300	609,800	611,300	614,400
23	Transfer to Pension Fund	67,200	70,300	73,400	77,000	80,600
24	Reserve for Employee Benefits	279,400	299,000	319,900	342,300	366,300
25	Rate Stabilization Fund	312,400	312,400	313,100	313,800	315,200
26	**Total Other Exp. & Transfers**	$ 2,473,100	$ 2,547,000	$ 2,626,600	$ 2,710,500	$ 2,801,200
27	**Total Revenue Requirements**	**$ 13,899,900**	**$ 14,564,300**	**$ 15,482,600**	**$ 16,151,400**	**$ 16,869,900**
28	**Operating Surplus/Deficit**	**$ (1,205,800)**	**$ 81,100**	**$ 796,800**	**$ 1,343,700**	**$ 1,719,700**
	Fund Balance:					
29	Beginning Fund Balance	$ 6,000	$ (1,199,800)	$ (1,217,500)	$ (594,600)	$ 608,600
30	Operating Surplus	(1,205,800)	81,100	796,800	1,343,700	1,719,700
31	Cash Funding of Capital Projects	0	(98,800)	(173,900)	(140,500)	0
32	**Ending Fund Balance**	**$ (1,199,800)**	**$ (1,217,500)**	**$ (594,600)**	**$ 608,600**	**$ 2,328,300**
33	**Days Fund Balance on Hand**	**-38**	**-37**	**-17**	**17**	**62**

The projected operating results detailed in **Table 23** provides the City with the ability to meet debt service coverage requirement, protect against unforeseen events associated with implementation of the proposed conservation based water rates and other, and maintain appropriate cash balances. In addition, the annual overall revenue increases are identified on Lines 2 through 4 of **Table 23**.

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7 Sewer System Cost of Service Allocations

7.1 GENERAL

In developing an equitable rate structure, revenue requirements are allocated to the various customer classifications according to the cost of service rendered. Allocations of revenue requirements to customer classes should take into account the quantity of sewer used, relative peak capacity requirements placed on the system, the number and size of services to customers, proprietary interest in the system investment, and other relevant factors.

7.2 COST OF SERVICE TO BE ALLOCATED

In analyzing costs of service for allocation to customer classes, the projected annual revenue requirements for FY 2012 have been selected as test year requirements representative of the study period examined herein. In determining net costs of service to be met from charges for sewer service, income received from other sources is deducted from the total revenue requirements. For the Test Year 2012, the sewer system's net cost of service to be recovered from sewer charges is $11,904,900 which represents the total revenue requirements $12,694,100 minus other revenue received of $789,200. Other revenues and transfers are deducted from the operating expense in the calculation of costs of service.

Costs of service are apportioned among customer classes in this report on a utility basis; that is, in terms of operating expenses, depreciation expense, and return. For a municipal utility, the total of depreciation expense and return is equal to the capital cost related portion of the total cost of service.

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Depreciation is the loss, not restored by current maintenance, which occurs in the utility plant in service due to decay, inadequacy and obsolescence. Depreciation accounting is usually based on an annual percentage allowance of plant investment adequate to return the investment during the useful life of the facility. The annual allowance varies with the expected service lives of the classes of property. The annual depreciation allowance normally is not accrued as a cash reserve, but is reinvested in replacements and additions to plant facilities. As the end of the useful life of the property is reached, the equivalent in dollars will typically have been reinvested as replaced or added utility plant. Based on the information provided, the test year depreciation expense has been determined to be $901,902.

Return is the balance of annual costs of service after operating expenses and depreciation, which amounts to $387,158. Return provides for payment of the interest portion of debt service and capital improvement costs beyond that provided by the depreciation expense.

The total cost of service expressed on a utility basis is summarized below.

Operating Expense	$ 10,615,840
Depreciation Expense	901,902
Return	387,158
Total Cost of Service	$11,904,900

Table 24 expresses in detail the cost of service on both the "cash basis" and the utility basis.

Table 24 Summary of the Cash Basis and Utility Basis Cost of Service

Line	Description	Operating Expense	Capital Cost	Total
				Fiscal Year 2012
	Revenue Requirements:			
1	O&M Expense	$ 11,254,200		$ 11,254,200
2	Debt Service Requirements		172,600	172,600
3	Renewal and Replacement Fund		1,205,800	1,205,800
4	Transfer to General Fund	608,300		608,300
5	Transfer to Pension Fund	67,200		67,200
6	Reserve for Employee Benefits	279,400		279,400
7	Rate Stabilization Fund	281,160	31,240	312,400
8	Operating Surplus Generated	(1,085,220)	(120,580)	(1,205,800)
9	**Total**	**$ 11,405,040**	**$ 1,289,060**	**$ 12,694,100**
	Other Income Sources			
10	Other Operating Revenue	$ 789,200		$ 789,200
11	**Total**	**$ 789,200**	**$ 0**	**$ 789,200**
12	**Net Cost of Service**	**$ 10,615,840**	**$ 1,289,060**	**$ 11,904,900**
	Restatement of Net Costs (Utility Basis):			
13	O&M Expense	$ 10,615,840		$ 10,615,840
	Capital Costs			0
14	Depreciation		901,902	901,902
15	Return		387,158	387,158
16	**Total**	**$ 10,615,840**	**$ 1,289,060**	**$ 11,904,900**

7.3 FUNCTIONAL COST COMPONENTS

Total costs of service are assigned to the basic functional cost components of volume and customer related costs.

Volume costs are those which vary directly with the quantity of sewer contributed and include capital costs related to investment in system facilities sized on the basis of wastewater volume, and operation and maintenance expense related to those facilities. Customer costs vary in proportion to the number of customers on the system, and include meter reading, billing, collecting and customer accounting related costs.

The separation of costs of service into these principal components provides the means for further allocation of such costs to the various customer classes on the basis of their respective volume and other service requirements.

7.4 ALLOCATION OF NET PLANT INVESTMENT

The investment in sewer system facilities is allocated to appropriate cost components to determine the investment, or rate base, for which the various customer classes are responsible. The estimated Test Year 2012 net plant investment in sewer facilities consists of plant in service as of March 31, 2011, the 2011 construction work in progress, and the estimated cost of proposed capital improvements expected to be in service.

Table 25 shows the allocation of the sewer utility's total estimated plant value less contributions or net plant investment for the test year on an original cost less depreciation value basis. The total net plant investment is estimated to be $19,624,605 as indicated by Line 5 of **Table 25**.

Table 25 Allocation of Net Plant Investment

Line	Description	Total Net Plant Investment	Volume	Customers
		$	$	$
1	Land	$ 0	0	
2	Collection Systems	15,935,137	14,341,623	1,593,514
3	Pumping	412,156	412,156	
4	General Plant	3,277,312	2,957,844	319,468
5	Total	$ 19,624,605	$ 17,711,623	$ 1,912,982
	Percent Allocation:			
6	Total Plant	100.00%	90.25%	9.75%

Allocated investment for this figure is used as the basis for assigning the return portion of test year cost of service.

7.5 ALLOCATION OF OPERATING & MAINTENANCE EXPENSES AND DEPRECIATION

The projected Test Year net operating expense for the sewer system is allocated to functional cost components in generally the same manner as plant investment. The allocation of operation and maintenance expense to functional cost components is shown in **Table 26**. Expenses related to customer billing and collection are assigned directly to the customer component. The total operating and maintenance expense for the Test Year is estimated to be $10,615,840.

Also, depreciation expense is an allowance for loss in the service value of system facilities not restored by current maintenance due to a number of factors which result in the ultimate retirement of the property. The depreciation expense is based upon the total investment in facilities and would

provide for the eventual recovery of the original cost of construction of the sewer system over its service life. Depreciation on system facilities is allocated to functional cost components on the same basis used to allocate net plant investment. The allocation of test year depreciation is shown in **Table 26**. The total depreciation expense for the Test Year is estimated to be $901,902.

Table 26 Allocation of Operation & Maintenance and Depreciation Expense

Line	Description	Total	Volume	Customers
		$	$	$
	O&M Expense Summary:			
1	O&M Expense	$ 10,615,840	$ 9,103,520	$ 1,512,320
2	Percent Allocation	100.00%	85.75%	14.25%
	Depreciation Expense:			
3	Land	$ 0		
4	Collection Systems	517,490	465,741	51,749
5	Pumping	42,154	42,154	
6	General Plant	342,258	308,888	33,370
7	Total Depreciation Expense	$ 901,902	$ 816,783	$ 85,119

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7.6 DISTRIBUTION OF COSTS TO CUSTOMER CLASSES

The total cost responsibility of each class of customers may be established by the distribution of the functionally allocated cost of service for the utility among the classes based on the respective service requirements of each class.

7.7 CUSTOMER CLASSIFICATIONS

Sewer utility customers have been separated into; Apartments, Mobile Homes, Residential, Churches, Commercial, Educational, Hotels/Motels, Public Authority, and Sprinkler.

7.8 UNITS OF SERVICE

The determination of responsibility of customer classes for costs of service requires that each class be allocated a portion of volume, monthly bills, and customer related costs of service according to their respective service requirements. In addition, Black & Veatch is proposing an adjustment in the sewer billing factor from 31.0% and 36.0 for customers grouped as residential and commercial, respectively, as presently defined by the City, to 85.0% in FY 2012 and to 90.0% in FY 2013 and beyond for all classes. As a result, the estimated volume units of service for the various customer classifications as illustrated in **Table 27** takes into consideration the proposed FY 2012 adjustment in the sewer billing factor.

Table 27 Units of Service

Line	Description	Volume	Monthly Bills
		k gallons	bills
	Sewer System:		
1	Apartments	1,124,033	241,902
2	Mobile Homes	25,514	36
3	Residential	572,893	40,216
4	Churches	7,337	335
5	Commercial	379,234	7,787
6	Educational	70,126	758
7	Hotels/Motels	18,286	104
8	Public Authority	2,279	168
9	Sprinkler	0	0
10	**Total Sewer System**	**2,199,701**	**291,306**

7.9 CUSTOMER CLASS COSTS OF SERVICE

The costs of service are distributed to the various customer classes by application of unit costs of service to respective service requirements. The test year unit cost of service for each functional cost component is shown at the bottom of **Table 28**.

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Table 28 Customer Class Cost of Service

Line	Description	Total	Common to All Volume	Common to All Customer Bills
			k gallons	customers
1	**Total Units**		2,199,701	291,306
	Cost of Service:			
	Net Operating Expense			
2	Total - $	$ 10,615,840	$ 9,103,520	$ 1,512,320
3	Unit Cost - $/unit		$ 4.1385	$ 5.1915
	Depreciation Expense			
4	Total - $	$ 901,902	$ 816,783	$ 85,119
5	Unit Cost - $/unit		$ 0.3713	$ 0.2922
	Net Plant Investment			
6	Total - $	$ 19,624,605	$ 17,711,623	$ 1,912,982
7	Unit Cost - $/unit		$ 8.0518	$ 6.5669
	Return on Investment			
8	Total - $	$ 387,158	$ 349,463	$ 37,695
9	Unit Cost - $/unit		$ 0.1586	$ 0.1294
	Total Cost of Service			
10	City of North Miami - $	$ 11,904,900	$ 10,269,766	$ 1,635,134
11	Unit Cost - $/unit		$ 4.6687	$ 5.6131
12	**System Rate of Return**	**1.97%**		

The rate of return applicable for service to customers is equal to **1.97%** based on the return cost divided by the tests year net plant investment. Unit costs for return on investment are based on the rate of return applied to the unit plant investment. All customers also pay the unit costs developed for operating expense (Line 3) and depreciation expense (Line 5). Adding these unit costs to the respective unit costs for return on investment (Line 9) determines the total unit costs of service shown on Line 15 of **Table 28**.

The total unit cost of service determined in **Table 28**, applied to the respective service requirements for each customer class, results in the total allocated cost of service for each customer class as shown in **Table 29**.

Table 29 Customer Class Unit Cost of Service

Line	Description	Total	Volume	Customer Bills
			k gallons	customers
	Unit Cost of Service			
1	City of North Miami - $/unit		$ 4.6687	$ 5.6131
	Apartments:			
1	Units of Service		1,124,033	241,902
2	Allocated Cost of Service	$ 6,605,592	$ 5,247,772	$ 1,357,820
	Mobile Homes:			
3	Units of Service		25,514	36
4	Allocated Cost of Service	$ 119,317	$ 119,115	$ 202
	Residential:			
5	Units of Service		572,893	40,216
6	Allocated Cost of Service	$ 2,900,401	$ 2,674,665	$ 225,736
	Churches:			
7	Units of Service		7,337	335
8	Allocated Cost of Service	$ 36,135	$ 34,255	$ 1,880
	Commercial:			
9	Units of Service		379,234	7,787
10	Allocated Cost of Service	$ 1,814,238	$ 1,770,529	$ 43,709
	Educational:			
11	Units of Service		70,126	758
12	Allocated Cost of Service	$ 331,653	$ 327,398	$ 4,255
	Hotels/Motels:			
13	Units of Service		18,286	104
14	Allocated Cost of Service	$ 85,956	$ 85,372	$ 584
	Public Authority:			
15	Units of Service		2,279	168
16	Allocated Cost of Service	$ 11,582	$ 10,639	$ 943
	Sprinkler:			
17	Units of Service		0	0
18	Allocated Cost of Service	$ 0	$ 0	$ 0
19	**Total Sewer System**	**$ 11,904,874**	**$ 10,269,745**	**$ 1,635,129**

Table 30 presents a test year comparison of net cost of service results with revenues under existing rates for each customer class served by the City. As demonstrated in **Table 30**, the sewer system revenue under existing rates under recovers revenue requirement (or cost of service) by $830,571 in FY 2012.

Table 30 Comparison of Customer Class Cost of Service and Revenues under Existing Rates

Line	Customer Class	Cost of Service	Existing Revenue	Difference Amount	Percent Increase
	Sewer System:				
1	Apartments	$ 6,605,617	$ 5,577,731	$1,027,886	18.43%
2	Mobile Homes	119,317	138,844	(19,527)	-14.06%
3	Residential	2,900,402	2,610,241	290,161	11.12%
4	Churches	36,135	43,964	(7,829)	-17.81%
5	Commercial	1,814,239	2,177,648	(363,409)	-16.69%
6	Educational	331,653	349,247	(17,594)	-5.04%
7	Hotels/Motels	85,956	163,520	(77,564)	-47.43%
8	Public Authority	11,582	13,136	(1,554)	-11.83%
9	**Total Sewer System**	**$ 11,904,901**	**$ 11,074,330**	**$ 830,571**	**7.50%**

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8 Sewer System Rate Design

8.1 GENERAL

The revenue requirement and cost of service studies described in the preceding sections of this report provide a basis for the review and update of a schedule of sewer rates that reasonably recovers allocated costs of service. It should be recognized that these studies are the results of engineering estimates, based on historical data and, to some extent, upon judgment and experience. Detailed results should not be used as literal and exact answers, but instead as guidelines to the necessity for and nature of rate adjustments. Judgment must enter into the final choice of rates, and factors such as public reaction to the extent of changes and adjustments, previous rate levels, contractual agreements, and local practice in the past should be recognized in making rate adjustments. Rates should be reasonably simple in application and subject to as few misinterpretations as possible. Considerations with regards to the rate adjustments were made based on discussions with City staff and include the indicated desire of the City representatives to: (1) to project and examine the future operating and capital financing requirements of the utilities and the ability of existing rates to recover the requirements; (2) to develop rates that will recover these revenue requirements, promote the efficient usage of water resources in the City, address the equitability of the existing rate amongst the existing customers classes, and address issues around the affordability of existing rates for specific customers; and (3) to assess and provide recommendations regarding the financial aptitude of the City's Utility System. In attempting to meet these policy criteria, schedules of proposed rates for sewer service were developed as presented and described in the following paragraphs.

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8.2 EXISTING SEWER RATES

The existing schedule of rates for sewer service includes a monthly customer (living unit) based capital improvement fee, sewer treatment fee, and a uniform volumetric charge which is paid by all customers. The volumetric charge and is applied per 1,000 gallons of billable consumption and a water usage billing factor of 31.0 percent and 36.0 percent is applied to all the water usage customers served by customer classes grouped as residential (apartments, mobile homes, and residential) and non residential (churches, commercial, educational, hotels/motels, and public authority) respectively. The sewer treatment fee is applied to all water usage at a billing factor of 100.0 percent. On the other hand, the capital improvement fee is a fixed monthly fee that is assessed on a customer/living unit basis.

Tables 31 and 32 compare existing rates to proposed rates after adjustments.

Table 31 Existing Sewer Rates

DESCRIPTION	2012
Capital Improvement Fee (1)	
Residential:	$0.98
Non Residential:	$10.47
Sewer Treatment Fee (2)	
All Usage (All Usage)	$3.36
Volumetric (3)	
Residential (All Usage)	$1.12
Non Residential (All Usage)	$2.01

Note:

1. The capital improvement fee is a fixed monthly charge that is assessed on the basis of customers/living units.
2. The sewer treatment fee is a usage based charge that is assessed at 100.0% of a customer's total water usage.
3. The volumetric charge is a usage based charge that is assessed at 31,0% and 36.0% of water usage for specific customers categorized at residential and commercial respectively.

8.3 PROPOSED SEWER RATES

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The cost of service studies described in the preceding section of this report provides the basis for the design of sewer rates schedules to cover those costs. As previously indicated, sewer sales revenues shown for the FY 2012 and debt service coverage requirements are anticipated to be recovered under five projected annual rate adjustments assumed to be implemented by the City on April 1, 2012 for FY 2012 and on the first day of the preceding fiscal years 2013, 2014, 2015, and 2016, respectively. Total sewer sales revenues under each of these rate adjustments are projected to increase 15.0, 16.1, 11.5, 7.3, and 6.0 percent, respectively, for the fiscal years discussed herein. **Table 32** summarizes the proposed rate adjustments for the FY 2012 test year.

In addition to the proposed annual revenue increase presented for the sewer system, Black & Veatch recommends that the City implement an upward adjustment to the existing sewer billing factor of 31.0% and 36.0% for customers designated a residential and non-residential respectively. The South Florida region has experienced severe drought conditions over the last 36 months, so all outdoor water usage has been reduced significantly over this period. Therefore, the proportion of wastewater entering the sanitary sewer systems has increased as percentage of total water usage.

As such, Black & Veatch is proposing an increase in the sewer billing factor to 85.0% in FY 2012 and 90.0% at the beginning of FY 2013 applicable to all customers served by the City. This should be implemented as a part of the proposed rates and financing plan presented herein. The proposed volumetric rate for sewer service presented in **Table 32** includes the FY 2011 85.0% sewer billing factor adjustment.

Finally, as a part of the proposed sewer rate plan discussed herein, Black & Veatch recommends reducing the eight (8) customer designations to five (5). As listed below, the residential, apartments, and mobile home classes will remain the same, but the new commercial class is a combination of the old commercial, churches, and the hotel/motels classes and the new City class is a combination of the educational and the public authority classes. As a part of the analysis performed herein, the Black &

Veatch team reviewed the billing determinant information for customers across all customer classes served by the City and is proposing the merger of the customer classes described above.

As a part of the due diligence performed during the course of the study described herein, the Black & Veatch team performed specific analysis on the effectiveness of each sewer rate component that makes up the existing sewer rates. As such, the Black & Veatch team has made specific recommendations about the actual sewer rate components to be assessed to customers.

The proposed sewer rates will consist of two components: 1) a monthly base charge, varies by meter size and is applied on a customer/living unit basis and; 2) a uniform block rate that is assessed per 1,000 gallons of usage. The proposed volumetric rates will be assessed with a billing factor 85.0 percent of the total water usage in the Test Year FY 2012.

Finally, the City has maintained a policy to apply a multiplier of 1.25 to the rates of all outside city customers. As such, Black & Veatch will maintain this policy in the assessment of the water rates that are charged to outside the city customers.

Table 32 Proposed Sewer Rates

DESCRIPTION	2012
Monthly Base Charge	
Residential (per living unit):	$12.15
All Other Classes:	
3/4" Meter	$12.15
1" Meter	$23.50
1.5" Meter	$57.64
2" Meter	$142.99
2 (2)" Meter	$142.99
3" Meter	$256.73
4" Meter	$512.66
6" Meter	$967.81
8" Meter	$1,707.24
Volumetric Rate:	
All Usage	$3.18

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Note:

1. The monthly base charges for the residential, apartments, and mobile home customer classes are assessed per living unit.
2. The monthly base charges for the commercial, city, and sprinkler customer classes are assessed on a per customer basis.
3. The volumetric rate is applied to all water usage at a billing factor of 85.0%.

The proposed adjustments detailed in **Table 32** allows the sewer utility to meet annual sewer system revenue requirements, meet debt service coverage requirements, and maintain adequate cash balances in case of an emergency or an unforeseen event.

8.4 SEWER SERVICE REVENUE UNDER PROPOSED RATES

A comparison of the estimated test year revenue under the proposed rates with allocated costs of service for each of the customer classes is shown in **Table 33.** The proposed rates generate enough revenue to develop an operating surplus and to grow cash balances.

Table 33 Comparison of Customer Class Cost of Service and Revenues under Proposed Rates

Line	Customer Class	Cost of Service	Proposed Revenue	Revenue Recovery Amount	Revenue Recovery Percent
		$	$	$	%
	Sewer System:				
1	Apartments	$ 6,605,592	$ 6,685,843	$ 80,251	101.21%
2	Mobile Homes	119,317	87,074	(32,243)	72.98%
3	Residential	2,900,402	3,078,729	178,327	106.15%
4	Commercial	1,936,330	1,721,584	(214,746)	88.91%
5	City	343,235	331,602	(11,633)	96.61%
6	**Total Sewer System**	**$ 11,904,876**	**$ 11,904,832**	**$ (44)**	**100.00%**

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9 Combined System Summary

9.1 GENERAL

The water and sewer user charges recommended herein are designed to meet cost of service for each year of the study period, 2012 through 2016.

The adequacy of the proposed increases in revenues from rates is demonstrated in the figures and tables at the end of this section. These show the combined application of funds of both the water and sewer utilities during the forecast period, including funds received based upon proposed revenue adjustments.

9.2 COMPARISON OF PROJECTED REVENUE TO COST OF SERVICE ALLOCATION

The annual cost of service for the combined water and sewer system to be met from rates during the test year 2012 is as follows:

Table 34 provides a summary of the combined system cost of service summary

Table 34 Comparison of the Combined System Cost of Service Summary

TOTAL REVENUE REQUIREMENTS	
Operating and Maintenance Expenses	$19,355,000
Debt Service Requirements	543,000
Renewal and Replacement Fund	1,884,000
Transfer to General Fund	1,559,700
Transfer to Pension Fund	166,900
Reserve for Employee Benefits	279,400
Rate Stabilization Fund	641,500
Operating Surplus Generated	1,213,000
Subtotal	**$25,642,500**
REVENUE REQUIREMENTS MET FROM OTHER SOURCES	
Other Operating Revenue	(1,688,600)
Net Costs to be Met From Charges	**$23,953,000**

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Table 35 shows a comparison of total adjusted cost of service for the combined utilities with the combined revenue recovery under existing rates. The revenue increase required for the entire system is approximately 4.0% as indicated by the combined system cost of service results, but the revenue increase will be implemented over 6 months for the Test Year FY 2012 which will produce an aggregate rate increase of 8.0%.

Table 35 Comparison of the Combined System Revenue and Revenue Requirements under Existing Rates

LINE	DESCRIPTION	ADJUSTED COST OF SERVICE	REVENUE UNDER EXISTING RATES	PERCENT REVENUE INCREASE
1	Apartments	$10,882,542	$10,625,504	2.42%
2	Mobile Homes	174,504	160,436	8.77%
3	Residential	8,037,841	7,153,492	12.36%
4	Churches	78,867	100,296	(21.37%)
5	Commercial	3,381,598	3,691,492	(8.39%)
6	Educational	726,203	705,722	2.90%
7	Hotels/Motels	133,299	218,755	(39.06%)
8	Public Authority	117,094	97,047	20.66%
9	Sprinkler	421,988	274,938	53.48%
10	**Total**	**$23,953,936**	**$23,027,683**	**4.02%**

Table 36 shows a comparison of total adjusted cost of service for the combined utilities with combined revenue under proposed rates.

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Table 36 Comparison of the Combined System Revenue and Revenue Requirements under Proposed Rates

LINE	DESCRIPTION	ADJUSTED COST OF SERVICE	REVENUE UNDER PROPOSED RATES	PERCENT REVENUE RECOVERY
1	Apartments	$10,882,478	$11,002,520	101.10%
2	Mobile Homes	174,504	114,529	65.63%
3	Residential	8,037,841	8,199,371	102.01%
5	Commercial	3,593,764	3,393,212	94.42%
6	City	843,297	820,615	97.31%
9	Sprinkler	421,988	423,627	100.39%
10	Total	$23,953,872	$23,953,873	100.00%

9.3 PRO-FORMA OF OPERATING RESULTS UNDER PROPOSED RATE DESIGN

Table 37 is a combined statement of financial operations for the Utility System. It shows the projected revenues of the combined water and sewer utilities including the proposed revenue increases and the debt service on proposed new bonds. Presently, only one of the combined utilities, the water system, is self sufficient, so it is critical for the utility to achieve self reliance and the proposed rate increases outline a path to achieve the goal of self sufficiency and meet established utility system benchmarks such as 90 – 120 days worth of fund balance.

Table 37 Comparison of the Combined System Revenue and Revenue

Line	Description	For the Fiscal Year Ended: 2012	2013	2014	2015	2016
	COMBINED SYSTEM					
	REVENUES					
	Revenues Under Existing Rates:					
1	Water	$ 11,953,400	$ 12,079,200	$ 12,351,600	$ 12,785,700	$ 13,415,000
2	Sewer	11,074,300	11,934,600	13,890,700	15,565,500	16,785,300
3	**Total System**	$ 23,027,700	$ 24,013,800	$ 26,242,300	$ 28,351,200	$ 30,200,300
	Percent Rate Increase:					
4	Water	1.60%	2.00%	3.00%	4.40%	6.00%
5	Sewer	15.00%	16.10%	11.50%	7.30%	6.00%
6	**Total System**	8.00%	9.00%	7.50%	6.00%	6.00%
	Actual Rate Increase:					
7	Implementation Period	*6 months*	*12 months*	*12 months*	*12 months*	*12 months*
8	Water	$ 95,650	$ 241,600	$ 370,500	$ 562,600	$ 804,900
9	Sewer	830,550	1,921,500	1,597,400	1,136,300	1,007,100
10	**Total System**	$ 926,200	$ 2,163,100	$ 1,967,900	$ 1,698,900	$ 1,812,000
11	**Revenues Under Proposed Rates**	$ 23,953,900	$ 26,176,900	$ 28,210,200	$ 30,050,100	$ 32,012,300
12	**Total Other Revenues**	$ 1,688,600	$ 1,688,600	$ 1,692,900	$ 1,697,100	$ 1,705,600
13	**Total System Revenues**	$ 25,642,500	$ 27,865,500	$ 29,903,100	$ 31,747,200	$ 33,717,900
	OPERATING EXPENDITURES					
	O&M Expenses:					
14	Contractual Services	$ 2,956,400	$ 3,144,600	$ 3,347,400	$ 3,566,700	$ 3,803,500
15	Utility Equipment Maintenance	1,081,200	1,146,800	1,216,700	1,291,200	1,370,700
16	Water Plant	4,802,800	4,949,300	5,105,200	5,277,400	5,460,400
17	W&S Special Projects	0	0	0	0	0
18	Water Distribution	1,383,000	1,458,300	1,537,800	1,621,700	1,710,300
19	Sewer Collection and Disposal	9,131,500	9,532,400	9,951,100	10,388,400	10,845,200
20	Sewer Projects	0	0	0	0	0
21	**Total O&M Expenses**	$ 19,354,900	$ 20,231,400	$ 21,158,200	$ 22,145,400	$ 23,190,100
22	**Net Revenues**	$ 6,287,600	$ 7,634,100	$ 8,744,900	$ 9,601,800	$ 10,527,800
23	**Total Debt Service**	$ 543,000	$ 721,000	$ 1,863,200	$ 1,852,800	$ 1,950,100
24	**Income Available for Other Exp.**	$ 5,744,600	$ 6,913,100	$ 6,881,700	$ 7,749,000	$ 8,577,700
	Debt Service Coverage					
25	Achieved	**11.58**	**10.59**	**4.69**	**5.18**	**5.40**
26	Target	**1.20**	**1.20**	**1.20**	**1.20**	**1.20**
	Other Expenditures & Transfers:					
27	Renewal and Replacement Fund	$ 1,884,000	$ 1,964,100	$ 2,047,600	$ 2,134,600	$ 2,225,800
28	Transfer to General Fund	1,559,600	1,559,600	1,563,500	1,567,400	1,575,300
29	Transfer to Pension Fund	167,000	174,500	182,400	191,100	200,200
30	Reserve for Employee Benefits	279,400	299,000	319,900	342,300	366,300
31	Rate Stabilization Fund	641,500	641,500	642,900	644,400	647,500
32	**Total Other Exp. & Transfers**	$ 4,531,500	$ 4,638,700	$ 4,756,300	$ 4,879,800	$ 5,015,100
33	**Total Revenue Requirements**	**$ 24,429,400**	**$ 25,591,100**	**$ 27,777,700**	**$ 28,878,000**	**$ 30,155,300**
34	**Operating Surplus/Deficit**	**$ 1,213,100**	**$ 2,274,400**	**$ 2,125,400**	**$ 2,869,200**	**$ 3,562,600**
	Fund Balance:					
35	Beginning Fund Balance	$ 12,300	$ 1,225,400	$ 2,999,800	$ 2,579,700	$ 4,448,900
36	Operating Surplus	1,213,100	2,274,400	2,125,400	2,869,200	3,562,600
37	Cash Funding of Capital Projects	0	(500,000)	(2,545,500)	(1,000,000)	0
38	**Ending Fund Balance**	**$ 1,225,400**	**$ 2,999,800**	**$ 2,579,700**	**$ 4,448,900**	**$ 8,011,500**
39	**Days Fund Balance on Hand**	**23**	**53**	**44**	**72**	**124**

As stated in the description of the assumption utilized for these analyses, the debt service coverage minimum ratio for the Utility System is 1.20. The debt service coverage ratios remain well above the minimum requirement of 1.20 with the proposed rate scenario. In FY 2012 the debt coverage ratio is 11.58 and is projected to be 5.40 in FY 2016. The ratios are highlighted in Line 25 of **Table 37.** It is critical that the City maintains this ratio well above the minimum, as shown in Line 25, to achieve as high a bond rating as possible for the financial benefit of the City.

In addition, the proposed rate scenario maintains the ending fund balance of the Utility System. The ending fund balance is projected to increase from $1,225,400 at the end of FY 2012 to $8,011,500 at the end of the forecast period ending in FY 2016. The ending fund balances are detailed in Line 38 of **Table 37.** The Utility System ended FY 2012 with 23 days worth of fund balance. While this ending fund balance is not at an adequate level, Black & Veatch worked with the City to develop a plan that prudently funds revenue requirement obligations over the forecast period and meets optimal levels of fund balance at the end of the forecast period of 120 days.

The proposed rate scenario, which includes the overall rate level increases of 8.0, 9.0, 7.5, 6.0, and 6.0 percent respectively in FY 2012 through FY 2016. These rate increases produces operating results for the Combined Utility System which achieve the financial goals outlined in this report: (1) to project and examine the future operating and capital financing requirements of the utilities and the ability of existing rates to recover the requirements; (2) to develop rates that will recover these revenue requirements, promote the efficient usage of water resources in the City, address the equitability of the existing rate amongst the existing customers classes, and address issues around the affordability of existing rates for specific customers; and (3) to maintain the financial solvency of the combined system over the forecast period.

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9.4 COMBINED SYSTEM SOURCES & USES OF FUNDS

Table 38 presents the combined system sources and uses of funds.

Table 38 Utility System Flow of Funds

Line	Description	For the Fiscal Year Ended: 2012	2013	2014	2015	2016
	FUNDS					
	Unrestricted Fund Balance					
1	Beginning Balance	$ 12,300	$ 1,225,400	$ 2,999,800	$ 2,579,700	$ 4,448,900
	Contributions:					
2	Beginning Operating Cash (In)	$ 1,213,100	$ 2,274,400	$ 2,125,400	$ 2,869,200	$ 3,562,600
3	Change in Operating Cash (In)					
4	Repair & Renewal Fund (Out)					
5	Cash Funding of CIP (Out)	$ 0	$ (500,000)	$ (2,545,500)	$ (1,000,000)	$ 0
6	Rate Stabilization Fund (Out)					
7	**Ending Balance**	**$ 1,225,400**	**$ 2,999,800**	**$ 2,579,700**	**$ 4,448,900**	**$ 8,011,500**
	Renewal and Replacement:					
8	Beginning Balance	$ 0	$ 1,084,000	$ 1,048,100	$ 1,640,200	$ 1,874,800
9	Contributions:					
10	Operations (In)	$ 1,884,000	$ 1,964,100	$ 2,047,600	$ 2,134,600	$ 2,225,800
	Unrestricted Cash (In)	$ 0	$ 0	$ 0	$ 0	$ 0
11	CIP (Out)	$ (800,000)	$ (2,000,000)	$ (1,455,500)	$ (1,900,000)	$ (1,330,000)
12	**Ending Balance**	**$ 1,084,000**	**$ 1,048,100**	**$ 1,640,200**	**$ 1,874,800**	**$ 2,770,600**
	Rate Stabilization:					
13	Beginning Balance	$ 0	$ 641,500	$ 1,283,000	$ 1,925,900	$ 2,570,300
14	Contributions:					
15	Operating Fund (In)	$ 641,500	$ 641,500	$ 642,900	$ 644,400	$ 647,500
16	CIP (Out)					
17	**Ending Balance**	**$ 641,500**	**$ 1,283,000**	**$ 1,925,900**	**$ 2,570,300**	**$ 3,217,800**
18	**Total Utility System**	**$ 2,950,900**	**$ 5,330,900**	**$ 6,145,800**	**$ 8,894,000**	**$ 13,999,900**

As demonstrated in **Table 38** (Line 1), the beginning unrestricted fund balance of $12,300 at the beginning of FY 2012 is increased to $1.2 million at the end of FY 2012 and this total increases to $8.0 million by the end of FY 2016. Black & Veatch proposes the development of two dedicated Utility System funds: (1) Renewal and Replacement Fund; and (2) Rate Stabilization Fund.

The Renewal and Replacement Fund is forecasted to grow from $1.1 million in FY 2012 to $2.8 million by the end of FY 2016. Black & Veatch proposes the implementation of a Rate Stabilization Fund as a part of the proposed rates and financing plan defined herein. The Rate Stabilization Fund requires an annual average deposit of about $644,000 annually through FY 2017 with the goal of establishing the total fund amount of $3.5 million. The Utility System will draw upon these funds to protect against unforeseen events that may hamper the stability of Utility System revenues. Upon drawing down these funds, the Utility System will maintain the annual contributions in the range of $645,000 annually to preserve the fund by meeting the targeted fund balance of $3.5 million.

9.5 TYPICAL MONTHLY BILL IMPACTS UNDER THE PROPOSED RATE DESIGN

Listed below is a summary of the combined systems monthly customer bill impacts for the designated customer groups provided herein.

Table 39 presents the combined systems residential monthly bill impact for a customer using a ¾ inch water meter.

Table 39 Residential Bill Impact

			.75"			
	Usage	Living			Difference	
Line	Level	Units	Existing	Proposed	Actual	Percent
0	0	1,263	$ 23.54	$ 23.55	$ 0.01	0.0%
1	1,000	1,142	$ 26.90	$ 27.98	$ 1.08	4.0%
2	2,000	1,045	$ 30.26	$ 32.42	$ 2.16	7.1%
3	3,000	1,511	$ 33.62	$ 36.85	$ 3.23	9.6%
4	4,000	1,762	$ 36.98	$ 41.28	$ 4.30	11.6%
5	5,000	1,981	$ 40.34	$ 45.72	$ 5.38	13.3%
6	6,000	2,122	$ 45.17	$ 50.84	$ 5.67	12.6%
7	7,000	2,340	$ 49.99	$ 55.96	$ 5.97	11.9%
8	8,000	2,565	$ 54.82	$ 61.08	$ 6.26	11.4%
9	9,000	2,743	$ 59.65	$ 66.21	$ 6.56	11.0%
10	10,000	2,823	$ 64.48	$ 71.33	$ 6.85	10.6%
11	11,000	4,016	$ 69.30	$ 76.45	$ 7.15	10.3%
12	12,000	3,016	$ 74.13	$ 81.58	$ 7.45	10.1%
13	13,000	2,852	$ 78.96	$ 87.39	$ 8.43	10.7%
14	14,000	2,787	$ 83.78	$ 93.20	$ 9.42	11.2%
15	15,000	2,640	$ 88.61	$ 99.02	$ 10.41	11.7%

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Table 40 presents the combined systems multi-unit bill impact for a customer using a ¾ inch water meter.

Table 40 Apartment Bill Impact

			.75"			
	Usage	Living			Difference	
Line	Level	Units	Existing	Proposed	Actual	Percent
0	0	462	$ 23.54	$ 23.55	$ 0.01	0.0%
1	1,000	693	$ 26.90	$ 27.87	$ 0.97	3.6%
2	2,000	2,178	$ 30.26	$ 32.20	$ 1.94	6.4%
3	3,000	14,688	$ 33.62	$ 36.60	$ 2.98	8.8%
4	4,000	54,359	$ 36.98	$ 41.00	$ 4.02	10.9%
5	5,000	50,841	$ 40.34	$ 45.49	$ 5.15	12.8%
6	6,000	29,684	$ 45.17	$ 49.97	$ 4.80	10.6%
7	7,000	13,747	$ 49.99	$ 54.45	$ 4.46	8.9%
8	8,000	6,090	$ 54.82	$ 59.09	$ 4.27	7.8%
9	9,000	3,690	$ 59.65	$ 63.74	$ 4.09	6.8%
10	10,000	1,481	$ 64.48	$ 68.38	$ 3.90	6.0%
11	11,000	1,012	$ 69.30	$ 73.02	$ 3.72	5.4%
12	12,000	946	$ 74.13	$ 77.67	$ 3.54	4.8%
13	13,000	394	$ 78.96	$ 82.31	$ 3.35	4.2%
14	14,000	604	$ 83.78	$ 86.95	$ 3.17	3.8%
15	15,000	551	$ 88.61	$ 91.60	$ 2.99	3.4%

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Table 41 presents the combined systems commercial bill impact for a customer using a 2.0 inch water meter.

Table 41 Commercial Bill Impact

			2.0"			
	Usage				Difference	
Line	Level	Customers	Existing	Proposed	Actual	Percent
0	0	969	$ 200.07	$ 277.20	$ 77.13	38.6%
1	1,000	823	$ 203.43	$ 281.45	$ 78.02	38.4%
2	2,000	655	$ 206.79	$ 285.71	$ 78.92	38.2%
3	3,000	510	$ 210.15	$ 289.96	$ 79.81	38.0%
4	4,000	365	$ 213.51	$ 294.21	$ 80.70	37.8%
5	5,000	352	$ 216.87	$ 298.47	$ 81.60	37.6%
6	6,000	292	$ 222.96	$ 302.72	$ 79.76	35.8%
7	7,000	275	$ 229.06	$ 306.97	$ 77.91	34.0%
8	8,000	230	$ 235.15	$ 311.22	$ 76.07	32.3%
9	9,000	206	$ 241.24	$ 315.48	$ 74.24	30.8%
10	10,000	191	$ 247.34	$ 319.73	$ 72.39	29.3%
11	20,000	1,310	$ 308.27	$ 362.26	$ 53.99	17.5%
12	30,000	764	$ 369.21	$ 404.79	$ 35.58	9.6%
13	40,000	527	$ 430.15	$ 447.32	$ 17.17	4.0%
14	50,000	409	$ 491.08	$ 489.85	$ (1.23)	-0.3%

Table 42 presents the combined systems city bill impact for a customer using a 2.0 inch water meter.

Table 42 City Bill Impact

			2.0"			
	Usage				Difference	
Line	Level	Customers	Existing	Proposed	Actual	Percent
0	0	168	$ 200.07	$ 277.20	$ 77.13	38.6%
1	1,000	28	$ 203.43	$ 281.45	$ 78.02	38.4%
2	2,000	29	$ 206.79	$ 285.71	$ 78.92	38.2%
3	3,000	34	$ 210.15	$ 289.96	$ 79.81	38.0%
4	4,000	35	$ 213.51	$ 294.21	$ 80.70	37.8%
5	5,000	46	$ 216.87	$ 298.47	$ 81.60	37.6%
6	6,000	23	$ 222.96	$ 302.72	$ 79.76	35.8%
7	7,000	25	$ 229.06	$ 306.97	$ 77.91	34.0%
8	8,000	24	$ 235.15	$ 311.22	$ 76.07	32.3%
9	9,000	22	$ 241.24	$ 315.48	$ 74.24	30.8%
10	10,000	30	$ 247.34	$ 319.73	$ 72.39	29.3%
11	20,000	158	$ 308.27	$ 362.26	$ 53.99	17.5%
12	30,000	107	$ 369.21	$ 404.79	$ 35.58	9.6%
13	40,000	67	$ 430.15	$ 447.32	$ 17.17	4.0%
14	50,000	48	$ 491.08	$ 489.85	$ (1.23)	-0.3%
15	60,000	42	$ 552.02	$ 532.38	$ (19.64)	-3.6%
16	70,000	27	$ 612.95	$ 582.71	$ (30.24)	-4.9%
17	80,000	28	$ 673.89	$ 633.04	$ (40.85)	-6.1%
18	90,000	21	$ 734.83	$ 683.37	$ (51.46)	-7.0%
19	100,000	26	$ 795.76	$ 733.70	$ (62.06)	-7.8%

Table 43 presents the combined systems sprinkler bill impact for a customer using a 2.0 inch water meter.

Table 43 Sprinkler Bill Impact

		2.0"			
	Usage			Difference	
Line	Level	Existing	Proposed	Actual	Percent
1	1,000	$ 203.43	$ 283.08	$ 79.65	39.2%
2	2,000	$ 206.79	$ 288.97	$ 82.18	39.7%
3	3,000	$ 210.15	$ 294.85	$ 84.70	40.3%
4	4,000	$ 213.51	$ 300.73	$ 87.22	40.8%
5	**5,000**	**$ 216.87**	**$ 306.62**	**$ 89.75**	**41.4%**
6	6,000	$ 222.96	$ 312.50	$ 89.54	40.2%
7	7,000	$ 229.06	$ 318.38	$ 89.32	39.0%
8	8,000	$ 235.15	$ 324.26	$ 89.11	37.9%
9	9,000	$ 241.24	$ 330.15	$ 88.91	36.9%
10	10,000	$ 247.34	$ 336.03	$ 88.69	35.9%
11	11,000	$ 253.43	$ 341.91	$ 88.48	34.9%
12	12,000	$ 259.53	$ 347.80	$ 88.27	34.0%
13	13,000	$ 265.62	$ 353.68	$ 88.06	33.2%
14	14,000	$ 271.71	$ 359.56	$ 87.85	32.3%
15	15,000	$ 277.81	$ 365.45	$ 87.64	31.5%

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