

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

PREPARED FOR

City of North Miami, Florida

NOVEMBER 2021

FINAL



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1 Executive Summary

A financing plan has been developed based on the analysis of the rates utilized to furnish water and sewer service 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 assesses the adequacy of projected revenues under existing rates in meeting the revenue requirement of the Utility System and identifies any adjustments necessary to the existing revenue levels over the study period. The plan consists of reviewing the existing water rate structure in promoting water conservation, implementing annual revenue increases over the forecast period of fiscal years ("FY") 2022 through 2026, 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 7.6, 7.5, 7.0, 7.0 and 5.0 percent for the FY 2022 through FY 2026. For the analyses defined and presented herein, FY 2022 is established as the "Test Year" to conduct the analysis detailed herein.

The total cost of service, or revenue requirements, for the combined Utility System for FY 2022 is projected to be \$37,570,235. The first proposed uniform rate increase resulting from this study is recommended to become effective October 1, 2021. The allocated cost of service by customer class for the water and sewer utilities, net of the revenue requirements met from other operating revenues are summarized in **Tables 15 and 31**, respectively. In addition, these tables outline the projection revenues under existing rates, the overall comparison of existing revenue to cost of service, and the revenue adjustments to existing revenues by customer class necessary to meet the allocated cost of service.

The proposed rate schedules have been designed to reasonably recover Utility System cost 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 services to approximately 22,389 water customers, 39,567 water living units, 14,152 sewer customers, and 31,357 sewer living units as of the end of FY 2019. The City estimated annual customer growth of 0.50%, so it is projected that the City will serve approximately 22,727 water customers, 40,163 water living units, 14,365 sewer customers, and 31,830 sewer living units by the end of FY 2022. From FY 2023 through the end of the forecast period, it is anticipated that the City's customer base will experience customer growth of about 0.75% annually. At the end of the FY 2026, it is projected that the Utility System will provide service to approximately 23,416 water customers, 41,382 water living units, 14,801 sewer customers, and 32,795 sewer living units.

The City currently bills certain customers on a monthly, semiannual, and 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 Unit. Flow associated with properties/customers that maintain living units is assessed and aggregated in a Living Unit basis.

- 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 \$34,914,655 in FY 2022 to \$35,973,938 in FY 2026. Other revenues for the combined systems are projected to increase from \$420,931 to \$438,022 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 rate structure will be maintained throughout the forecast period.

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, and cash reserve 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 \$14,012,446 in FY 2022 to \$16,401,947 in FY 2026. The operating and maintenance expenses for the sewer utility are projected to increase from \$17,366,898 in FY 2022 to \$20,661,872 in FY 2026. The increases for both systems come principally from inflation, cost of materials, and the cost of fuel, to name a few.
- Outstanding annual debt, including principal and interest payments, for the Utility System is approximately \$369,347 for the Test Year. In FY 2022, the City intends to issue \$ 29,285,100 in an SRF loan which results in additional annual debt service of about \$250,457 in FY 2022, 2023 and 2024, and \$1,956,189 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 \$2,583,298 in FY 2025 and the lowest amount is \$619,222 in 2023.
- Over the forecast period, the City will make routine transfers to the General Fund and the Pension Fund in the amounts of \$3,244,438 and \$213,932 respectively beginning in FY 2022. The General Fund and Pension Fund transfers will amount to \$3,651,644 and \$213,932 by the end of FY 2026 respectively.
- The City will make specific contributions to fund Reserves for Employee Benefits in the amount of \$694,453 in FY 2022 and this amount will grow to \$781,613 in FY 2026.

1.3 COST OF SERVICE ALLOCATIONS

As a basis of evaluating and understanding the ability of existing rates to meet annual revenue requirements, 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 nine (9) customer categorizations are summarized herein in **Table 1**:

Table 1 Customer Class Cost of Service Allocation

LINE	DESCRIPTION	ADJUSTED COST OF SERVICE	REVENUE UNDER EXISTING RATES	PERCENT INCREASE (DECREASE)
1	Apartments	\$12,976,723	\$15,270,734	-15.0%
2	Mobile Homes	187,031	133,184	40.4%
3	Residential	15,277,793	11,803,842	29.4%
4	Churches	120,363	127,190	-5.4%
5	Commercial	5,362,493	4,429,456	21.1%
6	Educational	1,165,620	998,634	16.7%
7	Hotels/Motels	201,537	161,565	24.7%
8	Public Authority	892,891	850,085	5.0%
9	Sprinkler	1,385,783	1,139,965	21.6%
	Total	\$35,570,235	\$34,914,655	7.6%

1.4 PROPOSED WATER AND SEWER RATE ADJUSTMENTS

The schedules of proposed rates for FY 2022 that recognize cost of service principles and policy considerations described in this report are shown in **Table 24 A and 24 B** for water service and **Table 42** for sewer service.

In addition, analyses of projected revenues and revenue requirements for the Utility System was conducted to determine the adequacy of existing rates in meeting requirements. **Table 2** below summarizes the projected overall annual revenue increases required annually over the forecast period, per Utility System, to meet future revenue requirements, maintain and improve Utility System infrastructure, promote the efficient use of water resources, maintain adequate debt service coverage ratios, and maintain adequate cash reserves to improve the financial condition of the Utility System.

Table 2 Projected Overall Annual Revenue Increases

INDICATED NEEDED REVENUE INCREASE			
Year	Water	Sewer	Combined
2022	6.0%	9.0%	7.6%
2023	7.0%	8.0%	7.5%
2024	7.0%	7.0%	7.0%
2025	7.0%	7.0%	7.0%
2026	5.0%	5.0%	5.0%

It is recommended that the City consider adopting the schedule of proposed water and sewer rates for FY 2022, as shown in **Section 1.5**, to be effective on October 1, 2021. The recommended revenue increases are to be applied to existing water and sewer rates on a uniform basis.

1.5 PROPOSED WATER AND SEWER RATES

Tables 3, 4 and 5 summarize the proposed FY 2022 water and sewer rates to be implemented on October 1, 2021. 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 herein, 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 water and sewer rates of all outside city customers. As such, Black & Veatch will maintain the integrity of this policy throughout the entirety of this study.

Table 3 summarizes the proposed inside city monthly base charges for the water system to be implemented October 1, 2021.

Table 3 Proposed FY 2022 Water System Rates Inside City Customers Monthly Base Charge

METER SIZE (1)	CUSTOMER CLASSES						
	Residential (2) (per living unit) (Single Family)		Apartments (2) (per living unit)	Mobile Homes (2)	Commercial	City	Sprinkler
3/4" Meter	\$13.79	\$13.79	\$13.79	\$13.79	\$13.79	\$13.79	\$13.79
1" Meter	\$13.79	\$26.68	\$13.79	\$26.68	\$26.68	\$26.68	\$26.68
1.5" Meter	\$13.79	\$65.41	\$13.79	\$65.41	\$65.41	\$65.41	\$65.41
2" Meter	\$13.79	\$162.28	\$13.79	\$162.28	\$162.28	\$162.28	\$162.28
2 (2)" Meter	\$13.79	\$162.28	\$13.79	\$162.28	\$162.28	\$162.28	\$162.28
3" Meter	\$13.79	\$291.35	\$13.79	\$291.35	\$291.35	\$291.35	\$291.35
4" Meter	\$13.79	\$581.79	\$13.79	\$581.79	\$581.79	\$581.79	\$581.79
6" Meter	\$13.79	\$1,098.33	\$13.79	\$1,098.33	\$1,098.33	\$1,098.33	\$1,098.33
8" Meter	\$13.79	\$1,937.48	\$13.79	\$1,937.48	\$1,937.48	\$1,937.48	\$1,937.48

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 are assessed on a per customer and meter size basis.

Table 4 summarizes the proposed inside city volumetric rates for the water system to be implemented October 1, 2021.

Table 4 Proposed FY 2022 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	\$	\$2.09	\$2.93	\$3.76	\$4.19
Usage Blocks	<i>Gallons</i>	<i>0 – 5,000</i>	<i>5,001–12,000</i>	<i>12,001-20,000</i>	<i>Above 20,000</i>
Apartment	\$	\$1.95	\$2.05	\$2.15	\$2.35
Usage Blocks	<i>Gallons</i>	<i>0 – 2,000</i>	<i>2,001–4,000</i>	<i>4,001-7,000</i>	<i>Above 7,000</i>
Mobile Homes	\$	\$2.00	\$2.90		
Usage Blocks	<i>Gallons</i>	<i>0 - 295,000</i>	<i>Above 295,000</i>		
Commercial	\$	\$1.90	\$2.52	\$2.85	\$3.81
Usage Blocks	<i>Gallons</i>	<i>0 – 15,000</i>	<i>15,001–75,000</i>	<i>75,001 – 315,000</i>	<i>Above 315,000</i>
Sprinkler	\$	\$3.85			
Usage Blocks	<i>Gallons</i>	<i>All Usage</i>			
City	\$	\$1.88	\$2.82	\$3.38	\$3.83
Usage Blocks	<i>Gallons</i>	<i>0 – 60,000</i>	<i>60,001–405,000</i>	<i>405,001 – 780,000</i>	<i>Above 780,000</i>

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.

Table 5 below shows the proposed FY 2022 sewer monthly base charge and volumetric rates.

Table 5 Proposed FY 2022 Sewer Customer Monthly Base Charge and Volumetric Rates

CUSTOMER CLASS	INSIDE CITY
Base Charge	
Residential (per living unit)	\$19.14
Apartment (per living unit)	\$19.14
Mobile Home (per living unit)	\$19.14
Base Charge All Other Customers:	
3/4" Meter	\$19.14
1" Meter	\$37.01
1.5" Meter	\$90.76
2" Meter	\$225.14
2 (2)" Meter	\$225.14
3" Meter	\$404.24
4" Meter	\$807.23
6" Meter	\$1,523.91
8" Meter	\$2,688.20
Volumetric Rate (Per 1,000 Gals.)	
All Usage	\$5.00

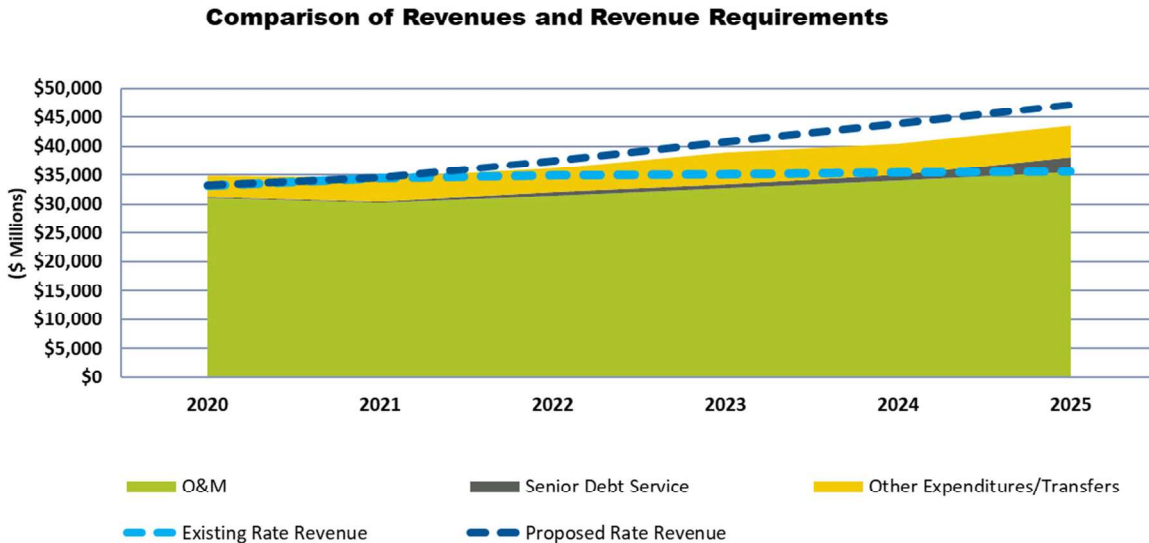
Note:

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

1.6 COMBINED UTILITIES SYSTEM OPERATING RESULTS

Figure 1 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.

Figure 1 Combined System Comparison of Revenues and Revenue Requirements



1.7 RECOMMENDATIONS

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

1. The City should prepare the documents and filing notifications necessary to obtain approval of the proposed financial plan and water and sewer rates;
2. The City should complete all planning studies and update the Water and Sewer System Capital Improvement Plan; and
3. 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.

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 the analyses pertaining to the projection of revenues under existing rates, projected revenue requirements, and the 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.

Section 4 – Water System Cost of Service Allocations: Using the anticipated cash revenue requirements for FY 2022 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, 2021.

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 2022 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, 2021.

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 develop 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 5, 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 65,000 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 rates 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, 2026 and considers proposed rate adjustments on a uniform basis per system. 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.

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 and develop rates that promote the efficient usage of the City’s water resources; 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

anticipated 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.

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.

2.5 GENERAL DESCRIPTION OF THE WATER AND SEWER SYSTEMS

The City's water system served about 22,389 customers as of September 30, 2019, while the sewer system served about 14,152 customers at that date. The Utility System serves the City's population of about 65,000 people and 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. Miami-Dade County provides a portion of the potable water sold to existing customers, processes the corresponding sewer flows of the Utility System, and the City operates sanitary sewer transportation pipelines and sewer pump stations which transports wastewater produced by the City to be treated by Miami-Dade County.

2.6 GENERAL ASSUMPTIONS

The 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 0.50% in FY 2022 and 0.75% from FY 2023 through FY 2026 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 over the study period.

- Other operating and non-operating revenues are projected based on the aforementioned customer growth rate for applicable fees and earnings.

Operating and Maintenance Expenses

- Projected expenses associated with the operations of the water and sewer systems are adjusted for growth based on the escalation factors in **Table 6**.

Table 6 Escalation Factors

FACTOR	FORECAST PERIOD 2022-2026
Labor	3.00%
General	3.00%
Customer Growth (1)	0.50%
Other	5.00%
Electric/Fuel Factor	5.00%
Benefits	4.00%
Chemicals	4.00%

Note:

1. For the Test Year FY 2022, the forecast of customer growth is 0.50%, thereafter, an annual growth rate of 0.75% for the Fiscal Years FY 2023 through FY 2026, respectively.

Major Capital Improvements

- Includes all improvements identified in the fiscal year 2022 through fiscal year 2026 capital improvement plan.

Capital Improvement Financing

- The water and sewer system improvements will be financed primarily through funds from operations and debt.
- SRF loans are issued with 20-year terms, an average interest rate of 1.50 percent, and equal annual principal and interest payments.
- SRF loans issuance costs are estimated to be 1.00 percent of the issue amount.
- The City intends to issue \$29.3 million in an SRF loan in FY 2022.

Operating Cash Flow

- At beginning FY 2022, the Utility System is projected to have \$13.7 million in unrestricted fund balances as provided by the City.
- Throughout the entirety of the forecast period defined herein, the City's targets a minimum Utility System cash balance of 120 days.

3 Water System Revenue and Revenue Requirements

3.1 WATER REVENUE

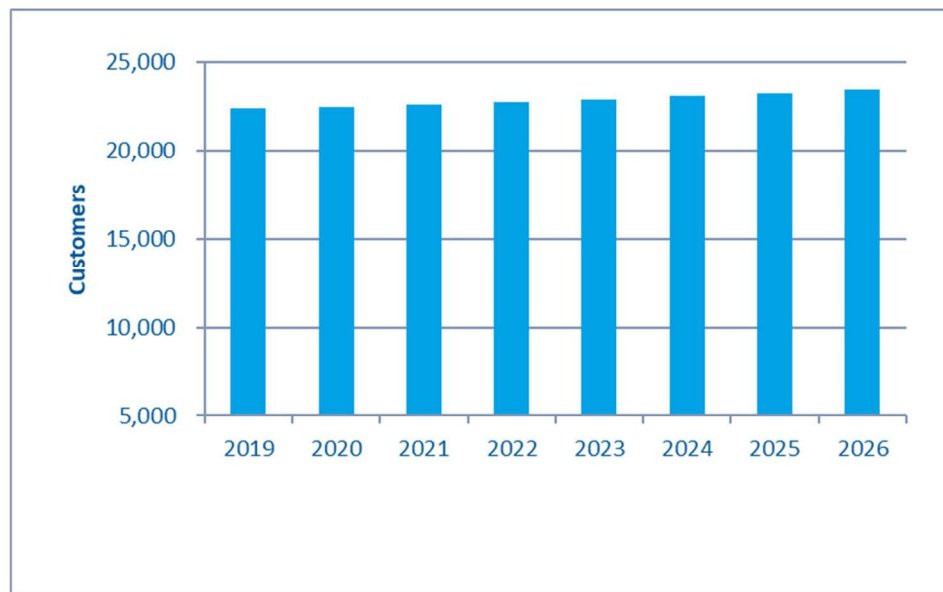
3.1.1 General

The City's water system derives revenues primarily from charges for treated water service. Other sources of income include fees for billing, service charges, metering fees, connection fees, delinquent fees, and other miscellaneous revenues, to name a few.

3.1.2 Customers and Growth

Analysis of the customer base indicates a slight increase in new customer connections to the water system. As a result, the forecast of customer growth is 0.50% in FY 2022, and 0.75% is forecasted annually from FY 2023 through FY 2026. **Figure 2** summarizes historical and projected customer accounts. Treated water service as of the end of FY 2019 is provided to 18,379 residential customers, 753 apartment customers, 5 mobile home customers, 2,021 commercial customers, 70 churches customers, 78 educational customers, 14 hotel customers, 308 city customers, and 761 sprinkler customers. The total number of water customers served by the City is anticipated to grow from 22,727 in FY 2022 to 23,416 in FY 2026.

Figure 2 Historical and Projected Customer Account



In addition, the City bills customer classified as, residential, mobile homes, and apartment, on a living unit 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. In response to determining the magnitude of water service required on the property, the City designates the total

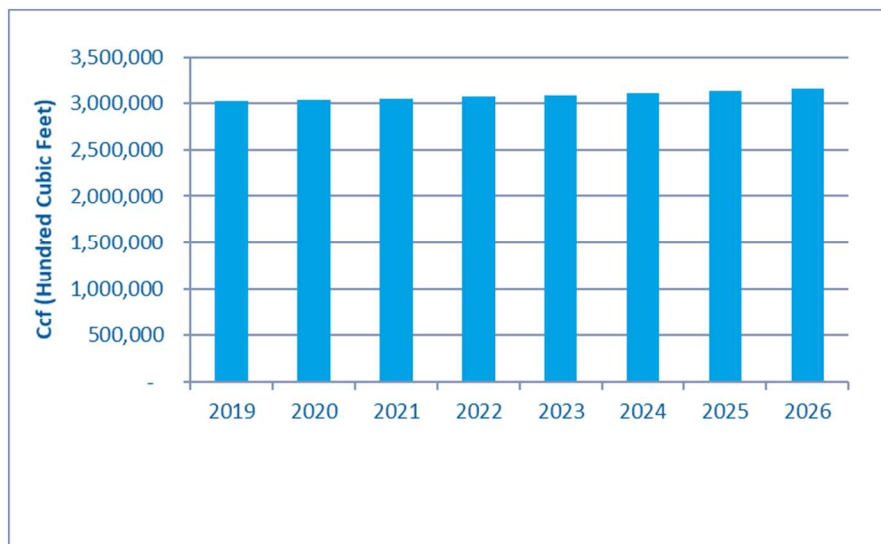
water capacity available to this property and the total amounts of residences on the property in the form of living units. The living unit designation is intended to summarize the total actual amount of residences on a property and serve as the equivalent basis to provide service to a typical customer using a 3/4" water meter. For example, water usage at a property that maintains multiple living units is divided by the number of living units behind the property's meter and the residential volumetric rates are assessed to the aggregated flow per living unit in order to calculate a utility bill per living unit.

At the end of FY 2019, the City served approximately 39,567 water living units. 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 units is expected to be 40,163 in FY 2022 and it is projected to increase to 41,382 by FY 2026.

3.1.3 Water Sales

The sale of treated water is projected to increase slightly over the forecast period. Over the past years, water utilities operating in the South Florida region of the United States have experienced moderate to severe drought conditions that have prompted the South Florida Water Management District (SFWMD) to issue specific water use mandates to promote the efficient use of water resources. As issues pertaining to water restrictions and conservation continue to be critical in preserving existing water resources, average customer usage is projected to remain fairly stable over the forecast period. 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 3** summarizes the historical and projected volume of water sales over the forecast period. The volume of water sales is projected to increase from 3,069,980 ccf (hundred cubic feet) in 2022 to 3,163,121 ccf (hundred cubic feet) in 2026.

Figure 3 Historical and Projected Water Sales



3.1.4 Water Revenue

The projection of water sales revenues 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. The combination of these 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 existing base charges and volumetric rates are projected to grow from \$16,224,660 in FY 2022 to \$16,716,903 in FY 2026.

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 \$348,218 in 2022 to \$362,357 in 2026. The following table summarizes the total revenue produced by the water system over the forecast period. **Table 7** presents a summary of water system revenues under existing rates, including both water sales revenue and revenue from other sources.

Table 7 Water System Projected Revenue under Existing Rates

FISCAL YEAR	REVENUE
2022	\$16,224,660
2023	\$16,346,345
2024	\$16,468,943
2025	\$16,592,460
2026	\$16,716,903

3.2 WATER REVENUE REQUIREMENTS

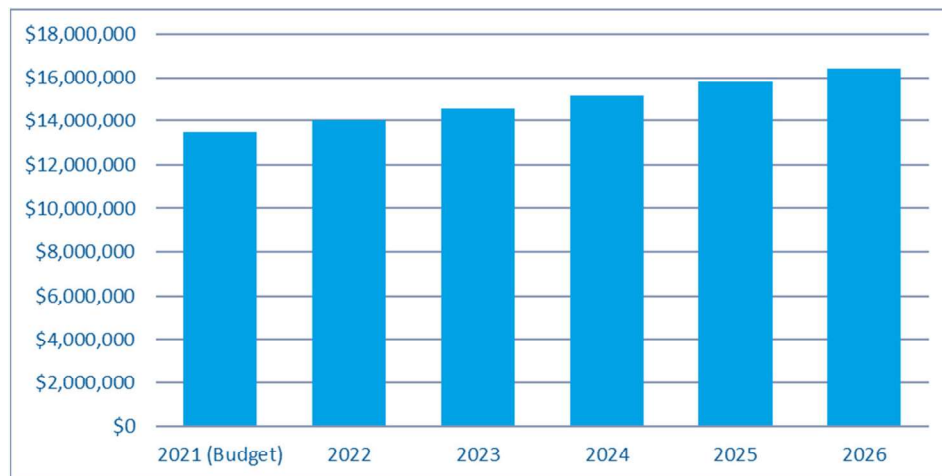
3.2.1 General

The revenues 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 over 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 4** 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 2021 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 \$14,012,446 in 2022 to \$16,401,947 in 2026.

Figure 4 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 8** summarizes the debt service obligations on outstanding and proposed debt for the forecast period.

Table 8 Debt Service Obligations on Outstanding Debt

YEAR	DEBT SERVICE OBLIGATIONS
2022	\$202,393
2023	\$201,810
2024	\$202,392
2025	\$202,392
2026	\$202,392

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 \$1,507,981 and \$135,779 to the General and Pension Fund respectively in FY 2022 and these totals will amount to \$1,697,245 and \$135,779 respectively by the end of FY 2026.

Table 9 shows the annual expenditures and transfer totals for the water system.

Table 9 Projected Other Expenditures and Transfers

YEAR	OTHER EXPENDITURES AND TRANSFERS
2022	\$2,085,277
2023	\$2,726,252
2024	\$2,785,967
2025	\$2,747,472
2026	\$3,010,823

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 \$40.9 million over the forecast period.

The proposed water capital improvement projects shown in **Table 10** were identified based on future needs and current regulatory mandates. Additional projects may 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 is expected to be financed from existing fund balances, annual operating revenues available for cash financing of capital improvements, and State Revolving Fund loans, as shown in **Table 10**.

Table 10 Water System CIP and CIP Financing

LINE	DESCRIPTION	2022	2023	2024	2025	2026 (1)	TOTAL
Capital Improvement Program:							
1	Water Distribution	\$25,000	\$1,225,000	\$25,000	\$1,225,000	\$-	\$2,500,000
2	Water Treatment Plant	15,600,000	10,400,000	-	-	-	\$26,000,000
3	Distribution System	275,000	275,000	275,000	275,000	-	\$1,100,000
4	Meter Replacement	8,000,000	-	-	-	-	\$8,000,000
5	Other Capital Project	-	-	-	-	2,000,000	\$2,000,000
6	Other	350,000	150,000	350,000	150,000	-	\$1,000,000
7	Total CIP	\$24,519,819	12,050,000	\$650,000	\$1,650,000	\$2,000,000	\$40,869,819
Sources & Uses of Funds:							
8	SRF Loan Funds	\$19,285,100	\$8,130,000				\$27,415,100
9	Transfer from Operating Fund	\$2,000,000	\$2,800,000	\$450,000	\$1,000,000	\$700,000	\$6,950,000
10	Transfer from Operations	\$11,719	\$1,120,000	\$200,000	\$650,000	\$1,300,000	\$3,281,719
11	Capital Improvement Fund	\$3,223,000					\$3,223,000
12	Total Financing	\$24,519,819	\$12,050,000	\$650,000	\$1,650,000	\$2,000,000	\$40,869,819

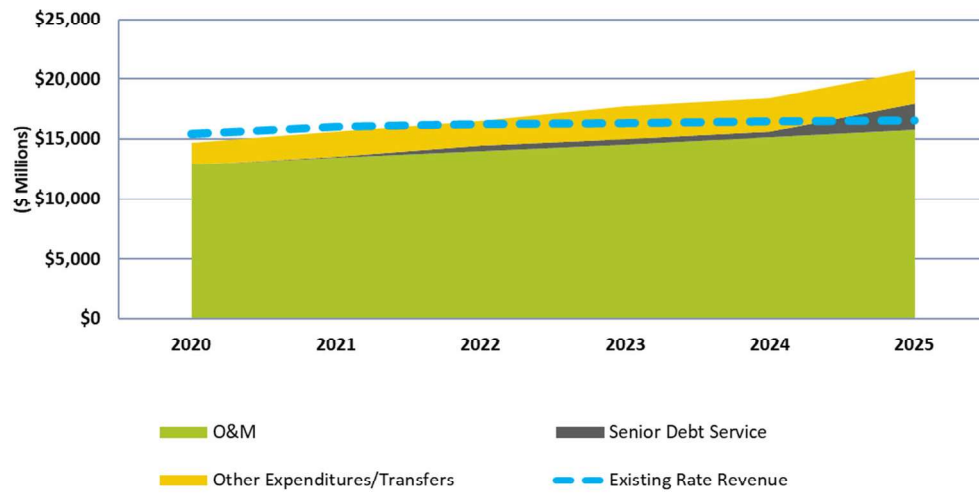
Note:

- The FY 2022 through FY 2026 Capital Improvement Plan ("CIP") was provided by the City.

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 \$16.5 million in FY 2022 to \$21.6 million in FY 2026, as shown in **Figure 5**. 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 5 Comparison of Revenues and Revenue Requirements
Comparison of Revenues and Revenue Requirements



Tables 11 and 12 respectively, summarize the projected operating results for the water utility under both the existing and proposed rates.

Table 11 Projected Operating Results under Existing Rates

Line No.	Description	2022	2023	2024	2025	2026
1	Water Service - Existing Rates	\$ 16,224,660	\$ 16,346,345	\$ 16,468,943	\$ 16,592,460	\$ 16,716,903
2	Wastewater Service - Existing Rates	-	-	-	-	-
3	Total Service Revenue - Existing Rates	\$ 16,224,660	\$ 16,346,345	\$ 16,468,943	\$ 16,592,460	\$ 16,716,903
	Additional Revenue Required					
	<u>Fiscal Year</u>	<u>\$ Increase</u>				
4	2022	0.0%	-	-	-	-
5	2023	0.0%	-	-	-	-
6	2024	0.0%	-	-	-	-
7	2025	0.0%	-	-	-	-
8	2026	0.0%	-	-	-	-
9	Total Additional Revenue Required	\$ -	\$ -	\$ -	\$ -	\$ -
10	Other Revenue	\$ 348,218	\$ 351,700	\$ 355,217	\$ 358,769	\$ 362,357
11	Total Revenues	\$ 16,572,878	\$ 16,698,045	\$ 16,824,160	\$ 16,951,229	\$ 17,079,260
12	Operating Expense	\$ 14,012,446	\$ 14,573,126	\$ 15,157,557	\$ 15,766,796	\$ 16,401,947
13	Net Revenues after Operations	\$ 2,560,432	\$ 2,124,920	\$ 1,666,603	\$ 1,184,433	\$ 677,313
	Debt Service					
14	Outstanding Debt Service	\$ 202,393	\$ 201,810	\$ 202,392	\$ 202,392	\$ 202,392
15	Projected Future Debt Service	250,457	250,457	250,457	1,956,189	1,956,189
16	Total Debt Service	\$ 452,849	\$ 452,267	\$ 452,849	\$ 2,158,581	\$ 2,158,581
17	Transfer to General Fund	\$ 1,507,981	\$ 1,553,220	\$ 1,599,817	\$ 1,647,811	\$ 1,697,245
18	Transfer to Pension Fund	\$ 135,779	\$ 135,779	\$ 135,779	\$ 135,779	\$ 135,779
19	Reserve for Employee Benefits	\$ 424,518	\$ 437,254	\$ 450,371	\$ 463,883	\$ 477,799
20	Cash Funded Capital Project	\$ 17,000	\$ 600,000	\$ 600,000	\$ 500,000	\$ 700,000
21	Annual Operating Balance	\$ 22,306	\$ (1,053,599)	\$ (1,572,212)	\$ (3,721,620)	\$ (4,492,091)
22	Debt Service Coverage Ratio	5.65	4.70	3.68	0.55	0.31
23	Debt Service Coverage Ratio Target	1.30	1.30	1.30	1.30	1.30
24	Unrestricted Operating Fund Ending Balance	\$ 10,092,961	\$ 3,275,460	\$ (3,742,792)	\$ (14,672,713)	\$ (27,555,059)
25	Target Operating Balance (% of O&M) 50%	\$ 7,006,223	\$ 7,286,563	\$ 7,578,779	\$ 7,883,398	\$ 8,200,974

As shown in **Table 11** the projected water system financial results under existing rates indicates that existing water rates and charges will not produce sufficient revenues to meet the financial obligations of the water utility over the forecast period. In addition, the associated debt service coverage ratio falls from 5.65 in FY 2022 to 0.31 in FY 2026. At the end of FY 2022, the water system ends the fiscal year with about \$10.0 m in unrestricted cash, but by the end of the forecast period cash decreases to a balance of negative \$27.6 million.

As shown in **Table 12**, the projected water system financial results under proposed rates will produce sufficient revenues to meet the financial obligations of the water utility over the forecast period. Also, the debt coverage ratio over the forecast period is significantly higher than the 1.30 target and the unrestricted fund balance increases from \$12.7 million in FY 2022 to \$14.7 million in FY 2026.

Table 12 Projected Operating Results under Proposed Rates

Line No.	Description		2022	2023	2024	2025	2026
1	Water Service - Existing Rates		\$ 16,224,660	\$ 16,346,345	\$ 16,468,943	\$ 16,592,460	\$ 16,716,903
2	Wastewater Service - Existing Rates		-	-	-	-	-
3	Total Service Revenue - Existing Rates		\$ 16,224,660	\$ 16,346,345	\$ 16,468,943	\$ 16,592,460	\$ 16,716,903
	Additional Revenue Required						
	<u>Fiscal Year</u>	<u>% Increase</u>					
4	2022	6.0%	973,480	980,781	988,137	995,548	1,003,014
5	2023	7.0%		1,212,899	1,221,996	1,231,161	1,240,394
6	2024	7.0%			1,307,535	1,317,342	1,327,222
7	2025	7.0%				1,409,556	1,420,127
8	2026	5.0%					1,085,383
9	Total Additional Revenue Required		\$ 973,480	\$ 2,193,680	\$ 3,517,667	\$ 4,953,606	\$ 6,076,141
10	Other Revenue		\$ 348,218	\$ 351,700	\$ 355,217	\$ 358,769	\$ 362,357
11	Total Revenues		\$ 17,546,358	\$ 18,891,725	\$ 20,341,827	\$ 21,904,835	\$ 23,155,401
12	Operating Expense		\$ 14,012,446	\$ 14,573,126	\$ 15,157,557	\$ 15,766,796	\$ 16,401,947
13	Net Revenues after Operations		\$ 3,533,912	\$ 4,318,599	\$ 5,184,270	\$ 6,138,039	\$ 6,753,454
	Debt Service						
14	Outstanding Debt Service		\$ 202,393	\$ 201,810	\$ 202,392	\$ 202,392	\$ 202,392
15	Projected Future Debt Service		250,457	250,457	250,457	1,956,189	1,956,189
16	Total Debt Service		\$ 452,849	\$ 452,267	\$ 452,849	\$ 2,158,581	\$ 2,158,581
17	Transfer to General Fund		\$ 1,507,981	\$ 1,553,220	\$ 1,599,817	\$ 1,647,811	\$ 1,697,245
18	Transfer to Pension Fund		\$ 135,779	\$ 135,779	\$ 135,779	\$ 135,779	\$ 135,779
19	Reserve for Employee Benefits		\$ 424,518	\$ 437,254	\$ 450,371	\$ 463,883	\$ 477,799
20	Cash Funded Capital Project		\$ 17,000	\$ 600,000	\$ 600,000	\$ 500,000	\$ 700,000
21	Annual Operating Balance		\$ 995,785	\$ 1,140,080	\$ 1,945,455	\$ 1,231,985	\$ 1,584,050
22	Debt Service Coverage Ratio	✓	7.80	9.55	11.45	2.84	3.13
23	Debt Service Coverage Ratio Target		1.30	1.30	1.30	1.30	1.30
24	Unrestricted Operating Fund Ending Balance		\$ 12,748,540	\$ 11,461,424	\$ 12,885,891	\$ 13,556,861	\$ 14,745,504
25	Target Operating Balance (% of O&M)	50%	\$ 7,006,223	\$ 7,286,563	\$ 7,578,779	\$ 7,883,398	\$ 8,200,974

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 consider 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 2022 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 \$17.2 million which represents the total revenue requirements \$17.5 million minus other revenues and transfers received of \$348,218. 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.

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 be reinvested as replaced or added utility plant. Based on the information provided, the test year depreciation expense has been determined to be \$596,543.

Return is the balance of annual costs of service after operating expenses and depreciation, which amounts to \$109,390. 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	\$ 16,492,208
Depreciation Expense	596,543
Return	<u>109,390</u>
Total Cost of Service	\$17,198,140

Table 13 presents a detailed cost of service on both the “cash basis” and the utility basis.

Table 13 Summary of Cash Basis and Utility Basis Cost of Service

Line No.	Description	Operating Expense	Capital Cost	Total Cost
Statement of Net Revenue Requirements (Cash Basis)				
Revenue Requirements				
1	O&M Expenses	14,012,446		14,012,446
2	Debt Service		452,849	452,849
3	Other Expenditures & Transfers:			
4	Transfer to General Fund	1,357,183	150,798	1,507,981
5	Transfer to Pension Fund	135,779		135,779
6	Reserve for Employee Benefits	424,518		424,518
7	Cash Funded Capital Projects		17,000	17,000
8	Funding to/(from) Operating Reserve	896,207	99,579	995,785
9	Subtotal	16,826,132	720,226	17,546,358
Less Revenue Requirements Met from Other Sources				
10	Other Revenues	333,925	14,293	348,218
11	Subtotal	333,925	14,293	348,218
12	Net Revenue Requirements to be Recovered by Rates	16,492,208	705,933	17,198,140
Restatement of Net Cost of Service (Utility Basis)				
13	O&M Expenses	16,492,208		16,492,208
14	Depreciation		596,543	596,543
15	Return		109,390	109,390
16	Subtotal	16,492,208	705,933	17,198,140
17	Net Cost of Service (Utility Basis)	\$ 16,492,208	\$ 705,933	\$ 17,198,140

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, energy, and certain operating and capital costs of the water system associated with service to customers to the extent required for a constant, and/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, as provided by the City. 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.

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 2022 plant investment in water facilities consists of net plant in service as of September 30, 2019, construction in progress, and proposed capital improvements expected to be in service. Total plant investment is estimated to be \$14.2 million as indicated by line 7 in **Table 14**.

Table 14 Allocation of Net Plant Investment

Line	Description	Total	Common to All Customers			Customer
			Base	Max. Day	Max. Hour	Equivalent Meters
1	Source of Supply	1,038,941	1,038,941			
2	Pumping Plant	34,746	23,164	11,582		
3	Water Treatment Plant	2,487,846	1,658,564	829,282		
4	Transmission Plant	5,461,864	2,117,019	1,058,509	2,117,019	169,318
5	Distribution Plant	3,877,504	1,551,002	775,501	1,551,002	
6	General Plant	1,338,322	662,754	277,488	380,516	17,565
7	Net Plant Investment	\$ 14,239,223	\$ 7,051,443	\$ 2,952,362	\$ 4,048,536	\$ 186,883

4.6 ALLOCATION OF OPERATING & MAINTENANCE AND DEPRECIATION EXPENSES

Depreciation expense is based on system investment including capitalized interest and current utility depreciation rates which is projected to total \$596,543 in FY 2022. The allocation of depreciation expense to functional cost components is summarized in **Table 15**.

Table 15 Allocation of Depreciation Expense

Line	Description	Total	Common to All Customers			Customer
			Base	Max. Day	Max. Hour	Equivalent Meters
1	Source of Supply	24,218	24,218			
2	Pumping Plant	7,872	5,248	2,624		
3	Water Treatment Plant	83,164	55,442	27,721		
4	Transmission Plant	155,928	60,438	30,219	60,438	4,834
5	Distribution Plant	247,205	98,882	49,441	98,882	
6	General Plant	78,156	38,704	16,205	22,222	1,026
7	Depreciation Expense	\$ 596,543	\$ 282,932	\$ 126,210	\$ 181,541	\$ 5,860
8	Percent of Total	100.0%	47.4%	21.2%	30.4%	1.0%
9	Percent of Total w/o Gener	100.0%	47.1%	21.2%	30.7%	0.9%

Table 16 presents the allocation of the total operating and maintenance expense. The net operating and maintenance expense of \$16,492,208 is derived after subtracting water revenue from other

source of \$333,925 from the beginning operating and maintenance expense of \$16,826,132. Certain operations and maintenance expense components are directly assigned to functional costs components based on the nature of the services and activities provided by the City in order to determine the net operating and maintenance expense.

Table 16 Allocation of Operations & Maintenance Expenses

Line	Description	Total	Common to All Customers			Customer	
			Base	Max. Day	Max. Hour	Equivalent Meters	Bills
1	Energy	335,343	335,343				
2	Chemicals	541,408	541,408				
3	Customer Billing	1,202,628					1,202,628
4	Meters & Boxes	36,050				36,050	
5	Water Purchased for Resale	6,260,867	4,173,911	2,086,956			
6	Transmission Mains	4,333,383	1,679,619	839,810	1,679,619	134,335	
7	Distribution Mains	51,500	20,600	10,300	20,600		
8	Allocation of Other Cost	4,064,954	2,013,016	842,828	1,155,759	53,350	-
9	Total	\$ 16,826,132	\$ 8,763,898	\$ 3,779,893	\$ 2,855,978	\$ 223,735	\$ 1,202,628
10	Percent Allocation	100.0%	52.1%	22.5%	17.0%	1.3%	7.1%
11	Less: Other Income Sources	\$ 333,925	\$ 173,925	\$ 75,014	\$ 56,679	\$ 4,440	\$ 23,867
12	Net O&M Expenses	\$ 16,492,208	\$ 8,589,973	\$ 3,704,879	\$ 2,799,299	\$ 219,295	\$ 1,178,761

4.7 THE 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 the resulting costs of service to each customer class and the 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 **Tables 17 and 18** on the following pages. 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 customer 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 billings 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.

Table 17 presents the estimated test year units of service requirements for inside City water customer classifications.

Table 17 Units of Service Inside City

Line No.	Description	Consumption			Maximum Day		Maximum Hour			Customer	
		Annual	Avg. Day	Factor	Total	Extra	Factor	Total	Extra	Eq. Meters	Billing/Collection
	Units of Measure	(1,000 Gal)	(1,000 gpd)	(%)	(1,000 gpd)	(1,000 gpd)	(%)	(1,000 gpd)	(1,000 gpd)	(EMs)	(Bills)
WATER SYSTEM											
Inside City Monthly											
1	Apartments	698,707	1,914	180%	3,446	1,531	270%	5,169	1,723	15,539	4,414
2	Mobile Homes	0	0	180%	0	0	270%	0	0	0	0
3	Residential	3,195	9	220%	19	11	350%	31	11	57	615
4	Churches	2,264	6	160%	10	4	250%	16	6	44	109
5	Commercial	172,174	472	160%	755	283	250%	1,179	425	1,351	2,979
6	Educational	115,795	317	170%	539	222	260%	825	286	679	651
7	Hotels	9,251	25	170%	43	18	260%	66	23	41	72
8	Public Authority	170,462	467	170%	794	327	260%	1,214	420	786	1,821
9	Sprinkler	110,025	301	250%	754	452	400%	1,206	452	907	1,604
10	Subtotal	1,281,873	3,512		6,360	2,848		9,705	3,345	19,404	12,265
Inside City Quarterly											
11	Apartments	31,667	87	180%	156	69	270%	234	78	771	579
12	Mobile Homes	0	0	180%	0	0	270%	0	0	0	0
13	Residential	662,585	1,815	220%	3,994	2,178	350%	6,354	2,360	11,719	42,290
14	Churches	3,826	10	160%	17	6	250%	26	9	42	125
15	Commercial	85,421	234	160%	374	140	250%	585	211	1,545	5,383
16	Educational	142	0	170%	1	0	260%	1	0	3	8
17	Hotels	600	2	170%	3	1	260%	4	1	3	8
18	Public Authority	102	0	170%	0	0	260%	1	0	4	16
19	Sprinkler	70,556	193	250%	483	290	400%	773	290	1,083	2,340
20	Subtotal	854,898	2,342		5,028	2,686		7,978	2,950	15,171	50,748

Table 18 presents the estimated test year units of service requirements for outside City water customer classifications.

Table 18 Units of Service Outside City

Line No.	Description	Consumption			Maximum Day		Maximum Hour			Customer	
		Annual	Avg. Day	Factor	Total	Extra	Factor	Total	Extra	Eq. Meters	Billing/Collection
Units of Measure		(1,000 Gal)	(1,000 gpd)	(%)	(1,000 gpd)	(1,000 gpd)	(%)	(1,000 gpd)	(1,000 gpd)	(EMs)	(Bills)
Outside City Monthly											
21	Apartments	174,985	479	180%	863	384	270%	1,294	431	3,536	1,278
22	Mobile Homes	8,463	23	180%	42	19	270%	63	21	5	60
23	Residential	1,360	4	220%	8	4	350%	13	5	50	193
24	Churches	1,176	3	160%	5	2	250%	8	3	97	121
25	Commercial	85,088	233	160%	373	140	250%	583	210	778	1,315
26	Educational	11,733	32	170%	55	23	260%	84	29	208	229
27	Hotels	1,374	4	170%	6	3	260%	10	3	9	60
28	Public Authority	596	2	170%	3	1	260%	4	1	38	60
29	Sprinkler	26,133	72	250%	179	107	400%	286	107	245	386
30	Subtotal	310,908	852		1,534	682		2,345	811	4,965	3,702
Outside City Quarterly											
31	Apartments	25,370	70	180%	125	56	270%	188	63	615	551
32	Mobile Homes	0	0	180%	0	0	270%	0	0	0	0
33	Residential	513,887	1,408	220%	3,097	1,689	350%	4,928	1,830	8,581	31,324
34	Churches	2,904	8	160%	13	5	250%	20	7	26	80
35	Commercial	30,255	83	160%	133	50	250%	207	75	407	1,307
36	Educational	367	1	170%	2	1	260%	3	1	6	12
37	Hotels	540	1	170%	3	1	260%	4	1	2	4
38	Public Authority	450	1	170%	2	1	260%	3	1	12	24
39	Sprinkler	4,089	11	250%	28	17	400%	45	17	55	56
40	Subtotal	577,862	1,583		3,402	1,819		5,397	1,995	9,703	33,358
41	Total System	3,025,541	8,289		16,324	8,035		25,425	9,101	49,241	100,074

Notes:**Class Diversity Test:**

Total Noncoincidental Demand	16,324	25,425
Total Coincidental Demand	12,434	20,723
Ratio Non to Coincidental	1.31	1.23
Diversity Factor Typical Range for Utilities	1.10 - 1.40	1.10 - 1.40
Residential Peaking Factor	10,354	15,208
Commercial Peaking Factor	2,537	2,980

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 **0.77%**. **Table 19** 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 **Lines 18 and 19 of Table 19** and the associated net cost of service by cost function is shown on **Line 22 of Table 19**.

Table 19 Development of Test Year Unit Cost of Service

Line No.	Description	Total	Common to All Customers			Customer	
			Base	Max. Day	Max. Hour	Eq. Meters	Billing/Collection
			1,000 gal.	1,000 gpd.	1,000 gpd.	Equiv. Meters	Bills
Number of Units:							
1	Total System		3,025,541	8,035	9,101	49,241	100,074
Costs of Service:							
Net Operating Expense							
2	Total - \$	\$ 16,492,208	\$ 8,589,973	\$ 3,704,879	\$ 2,799,299	\$ 219,295	\$ 1,178,761
3	Unit Cost - \$/unit	\$ 2.8392	\$ 461.1132	\$ 307.5801	\$ 4.4535	\$ 11.7789	
Depreciation Expense							
4	Total - \$	\$ 596,543	\$ 282,932	\$ 126,210	\$ 181,541	\$ 5,860	\$ 0
5	Unit Cost - \$/unit	\$ 0.0935	\$ 15.7082	\$ 19.9473	\$ 0.1190	\$ 0	
Net Plant Investment							
6	Total - \$	\$ 14,239,223	\$ 7,051,443	\$ 2,952,362	\$ 4,048,536	\$ 186,883	\$ 0
7	Unit Cost - \$/unit	\$ 2.3306	\$ 367.4541	\$ 444.8431	\$ 3.7952	\$ 0	
Return on Net Plant Investment							
8	Outside City, Unit Return - \$/unit	1.00%	\$ 0.0233	\$ 3.6745	\$ 4.4484	\$ 0.0380	
9	Outside City, Units of Service		888,770	2,501	2,806	14,667	37,060
10	Outside City, Net Plant Investment	\$ 4,294,234	\$ 2,071,401	\$ 919,017	\$ 1,248,150	\$ 55,666	
11	Outside City, Return on Net Plant Investment	\$ 42,942	\$ 20,714	\$ 9,190	\$ 12,482	\$ 557	
12	Inside City, Unit Return - \$/unit	0.67%	\$ 0.0156	\$ 2.4551	\$ 2.9722	\$ 0.0254	
13	Inside City, Units of Service		2,136,772	5,534	6,295	34,574	63,014
14	Inside City, Net Plant Investment	\$ 9,944,989	\$ 4,980,042	\$ 2,033,344	\$ 2,800,385	\$ 131,217	
15	Inside City, Return on Net Plant Investment	\$ 66,447	\$ 33,274	\$ 13,586	\$ 18,711	\$ 877	
16	Total System Return on Net Plant Investment - \$	\$ 109,390	\$ 53,988	\$ 22,776	\$ 31,192	\$ 1,433	
17	Total System Return on Net Plant Investment - %	0.77%					
Total Unit Cost of Service							
18	Outside City Unit Cost - \$/unit	\$ 2.9560	\$ 480.4960	\$ 331.9758	\$ 4.6104	\$ 11.7789	
19	Inside City Unit Cost - \$/unit	\$ 2.9482	\$ 479.2766	\$ 330.4996	\$ 4.5978	\$ 11.7789	
Net Cost of Service:							
20	Outside City - Cost of Service	5,264,537	2,627,180	1,201,739	931,465	67,622	436,531
21	Inside City - Cost of Service	11,933,603	6,299,714	2,652,126	2,080,568	158,966	742,230
22	Total Cost of Service	\$ 17,198,140	\$ 8,926,893	\$ 3,853,865	\$ 3,012,033	\$ 226,588	\$ 1,178,761

The cost of service allocated to each customer classes is summarized in **Tables 20 and 21** and the total cost of service for each customer class is based on unit costs of service outlined in **Table 19**.

Table 20 Inside City Customer Class Unit Cost of Service

Line No.	Description	Total	Common to All Customers			Customer	
			Base	Max. Day	Max. Hour	Eq. Meters	Billing/Collection
			per 1,000 Gal	per 1,000 gpd	per 1,000 gpd	per Eq. Meter	per Bill
Inside City							
1	Retail Cost per Unit (Inside City)		\$ 2.9482	\$ 479.2766	\$ 330.4996	\$ 4.5978	\$ 11.7789
Apartments							
2	Units		730,374	1,601	1,801	16,310	4,993
3	Allocation of costs of service	\$ 3,649,557	\$ 2,153,316	\$ 767,235	\$ 595,204	\$ 74,991	\$ 58,810
Mobile Homes							
4	Units		0	0	0	0	0
5	Allocation of costs of service	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
Residential							
6	Units		665,780	2,189	2,371	11,776	42,905
7	Allocation of costs of service	\$ 4,355,179	\$ 1,962,880	\$ 1,049,073	\$ 783,705	\$ 54,143	\$ 505,379
Churches							
8	Units		6,090	10	15	86	233
9	Allocation of costs of service	\$ 30,860	\$ 17,956	\$ 4,798	\$ 4,963	\$ 396	\$ 2,746
Commercial							
10	Units		257,595	423	635	2,896	8,362
11	Allocation of costs of service	\$ 1,284,125	\$ 759,450	\$ 202,946	\$ 209,922	\$ 13,315	\$ 98,491
Educational							
12	Units		115,937	222	286	682	659
13	Allocation of costs of service	\$ 553,755	\$ 341,809	\$ 106,565	\$ 94,480	\$ 3,135	\$ 7,766
Hotels							
14	Units		9,851	19	24	44	80
15	Allocation of costs of service	\$ 47,276	\$ 29,043	\$ 9,055	\$ 8,028	\$ 203	\$ 947
Public Authority							
16	Units		170,564	327	421	790	1,837
17	Allocation of costs of service	\$ 823,906	\$ 502,862	\$ 156,775	\$ 138,997	\$ 3,631	\$ 21,639
Sprinkler							
18	Units		180,581	742	742	1,990	3,944
19	Allocation of costs of service	\$ 1,188,946	\$ 532,397	\$ 355,679	\$ 245,269	\$ 9,150	\$ 46,452
20	Total Inside City	\$ 11,933,603	\$ 6,299,714	\$ 2,652,126	\$ 2,080,568	\$ 158,966	\$ 742,230

Table 21 Outside City Customer Class Unit Cost of Service

Line No.	Description	Total	Common to All Customers			Customer	
			Base	Max. Day	Max. Hour	Eq. Meters	Billing/Collection
			per 1,000 Gal	per 1,000 gpd	per 1,000 gpd	per Eq. Meter	per Bill
Outside City							
21	Retail Cost per Unit (Outside City)		\$ 2.9560	\$ 480.4960	\$ 331.9758	\$ 4.6104	\$ 11.7789
Apartments							
22	Units		200,355	439	494	4,151	1,829
23	Allocation of costs of service	\$ 1,007,931	\$ 592,243	\$ 211,002	\$ 164,005	\$ 19,136	\$ 21,545
Mobile Homes							
24	Units		8,463	19	21	5	60
25	Allocation of costs of service	\$ 41,591	\$ 25,017	\$ 8,913	\$ 6,928	\$ 23	\$ 710
Residential							
26	Units		515,246	1,694	1,835	8,631	31,517
27	Allocation of costs of service	\$ 3,357,239	\$ 1,523,055	\$ 813,941	\$ 609,217	\$ 39,792	\$ 371,233
Churches							
28	Units		4,080	7	10	123	201
29	Allocation of costs of service	\$ 21,558	\$ 12,061	\$ 3,223	\$ 3,340	\$ 566	\$ 2,368
Commercial							
30	Units		115,343	190	284	1,184	2,621
31	Allocation of costs of service	\$ 562,803	\$ 340,950	\$ 91,104	\$ 94,416	\$ 5,459	\$ 30,873
Educational							
32	Units		12,100	23	30	214	241
33	Allocation of costs of service	\$ 60,649	\$ 35,768	\$ 11,150	\$ 9,905	\$ 985	\$ 2,841
Hotels							
34	Units		1,914	4	5	11	64
35	Allocation of costs of service	\$ 9,793	\$ 5,656	\$ 1,763	\$ 1,566	\$ 49	\$ 758
Public Authority							
36	Units		1,046	2	3	50	84
37	Allocation of costs of service	\$ 6,136	\$ 3,093	\$ 964	\$ 856	\$ 229	\$ 994
Sprinkler							
38	Units		30,222	124	124	300	442
39	Allocation of costs of service	\$ 196,837	\$ 89,336	\$ 59,678	\$ 41,232	\$ 1,382	\$ 5,209
40	Total Outside City	\$ 5,264,537	\$ 2,627,180	\$ 1,201,739	\$ 931,465	\$ 67,622	\$ 436,531
41	Total System Allocated Cost of Service	\$ 17,198,140	\$ 8,926,893	\$ 3,853,865	\$ 3,012,033	\$ 226,588	\$ 1,178,761

Table 22 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 22**, the under existing rates the water system under recovers the annual test year cost of service by \$973,480 in FY 2022.

Table 22 Comparison of Customer Class Cost of Service and Revenues under Existing Rates

Line	Description	Allocated		Existing		Revenue Recovery		Percent Increase
		Cost of Service		Revenues		Amount	Percent	
		\$		\$		\$	%	%
City of North Miami Water Utility								
1	Apartments	\$	4,657,488	\$	5,295,709	\$	638,221	113.7%
2	Mobile Homes		41,591		21,946		(19,644)	52.8%
3	Residential		7,712,418		6,690,407		(1,022,011)	86.7%
4	Churches		52,418		61,520		9,102	117.4%
5	Commercial		1,846,928		1,684,013		(162,915)	91.2%
6	Educational		614,404		502,719		(111,686)	81.8%
7	Hotels		57,069		38,869		(18,200)	68.1%
8	Public Authority		830,042		789,513		(40,528)	95.1%
9	Sprinkler		1,385,783		1,139,965		(245,818)	82.3%
10	Total	\$	17,198,140	\$	16,224,660	\$	(973,480)	94.3%
								6.0%

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. 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 and promote the efficient usage of water resources; and (3) to assess and provide recommendations regarding the financial capabilities of the City's Utility System. In attempting to meet these policy criteria, schedules of proposed rates for water service were developed as presented and described in the following sections.

5.2 EXISTING WATER RATES

The existing water rates 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. **Tables 23 and 24** compare existing rates to proposed rates after adjustments.

Table 23 Existing Water Rates (All Classes)

A. Monthly Base Charge (Inside City)

DESCRIPTION	2021
Monthly Base Charge (1) (Min. Allowance of 5,000 gallons)	Rate
Living Units (3/4" meter):	\$13.01
3/4" Meter	\$13.01
1" Meter	\$25.17
1.5" Meter	\$61.71
2" Meter	\$153.09
2 (2)" Meter	\$153.09
3" Meter	\$274.86
4" Meter	\$548.86
6" Meter	\$1,036.16
8" Meter	\$1,827.81

B. Volumetric Rates (Inside City)

CUSTOMER CLASSES	USAGE BLOCKS				
	Units	Block 1	Block 2	Block 3	Block 4
Residential	\$	\$1.97	\$2.76	\$3.55	\$3.95
Usage Blocks	<i>Gallons</i>	<i>0 – 5,000</i>	<i>5,001–12,000</i>	<i>12,001-20,000</i>	<i>Above 20,000</i>
Apartment	\$	\$1.84	\$1.93	\$2.03	\$2.22
Usage Blocks	<i>Gallons</i>	<i>0 – 2,000</i>	<i>2,001–4,000</i>	<i>4,001-7,000</i>	<i>Above 7,000</i>
Mobile Homes	\$	\$1.89	\$2.74		
Usage Blocks	<i>Gallons</i>	<i>0 - 295,000</i>	<i>Above 295,000</i>		
Commercial	\$	\$1.79	\$2.38	\$2.69	\$3.59
Usage Blocks	<i>Gallons</i>	<i>0 – 15,000</i>	<i>15,001–75,000</i>	<i>75,001 – 315,000</i>	<i>Above 315,000</i>
Sprinkler	\$	\$3.63			
Usage Blocks	<i>Gallons</i>	<i>All Usage</i>			
City	\$	\$1.77	\$2.66	\$3.19	\$3.61
Usage Blocks	<i>Gallons</i>	<i>0 – 60,000</i>	<i>60,001–405,000</i>	<i>405,001 – 780,000</i>	<i>Above 780,000</i>

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 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 .

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 2022 and debt service coverage requirements are anticipated to be recovered under five projected annual rate adjustments assumed to be implemented by the City on October 1, 2021. 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. 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 respective customer classes.

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 served by the City.

The proposed water rates will maintain the existing meter base charge and volumetric rate structures and the proposed revenue adjustment must be applied to the existing rates, by Utility System, on a uniform basis.

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.

Tables 24A & B summarizes the proposed FY 2022 rates.

Table 24 Proposed FY 2022 Water System Rates

A. Monthly Base Charge (Inside City)

METER SIZE (1)	CUSTOMER CLASSES						
	Residential (2) (per living unit) (Single Family)		Apartments (2) (per living unit)	Mobile Homes (2)	Commercial	City	Sprinkler
3/4" Meter	\$13.79	\$13.79	\$13.79	\$13.79	\$13.79	\$13.79	\$13.79
1" Meter	\$13.79	\$26.68	\$13.79	\$26.68	\$26.68	\$26.68	\$26.68
1.5" Meter	\$13.79	\$65.41	\$13.79	\$65.41	\$65.41	\$65.41	\$65.41
2" Meter	\$13.79	\$162.28	\$13.79	\$162.28	\$162.28	\$162.28	\$162.28
2 (2)" Meter	\$13.79	\$162.28	\$13.79	\$162.28	\$162.28	\$162.28	\$162.28
3" Meter	\$13.79	\$291.35	\$13.79	\$291.35	\$291.35	\$291.35	\$291.35
4" Meter	\$13.79	\$581.79	\$13.79	\$581.79	\$581.79	\$581.79	\$581.79
6" Meter	\$13.79	\$1,098.33	\$13.79	\$1,098.33	\$1,098.33	\$1,098.33	\$1,098.33
8" Meter	\$13.79	\$1,937.48	\$13.79	\$1,937.48	\$1,937.48	\$1,937.48	\$1,937.48

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 are assessed on a per customer and meter size basis.

B. Volumetric Rates (Inside City)

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	\$	\$2.09	\$2.93	\$3.76	\$4.19
Usage Blocks	<i>Gallons</i>	<i>0 – 5,000</i>	<i>5,001–12,000</i>	<i>12,001–20,000</i>	<i>Above 20,000</i>
Apartment	\$	\$1.95	\$2.05	\$2.15	\$2.35
Usage Blocks	<i>Gallons</i>	<i>0 – 2,000</i>	<i>2,001–4,000</i>	<i>4,001–7,000</i>	<i>Above 7,000</i>
Mobile Homes	\$	\$2.00	\$2.90		
Usage Blocks	<i>Gallons</i>	<i>0 - 295,000</i>	<i>Above 295,000</i>		
Commercial	\$	\$1.90	\$2.52	\$2.85	\$3.81
Usage Blocks	<i>Gallons</i>	<i>0 – 15,000</i>	<i>15,001–75,000</i>	<i>75,001 – 315,000</i>	<i>Above 315,000</i>
Sprinkler	\$	\$3.85			
Usage Blocks	<i>Gallons</i>	<i>All Usage</i>			
City	\$	\$1.88	\$2.82	\$3.38	\$3.83
Usage Blocks	<i>Gallons</i>	<i>0 – 60,000</i>	<i>60,001–405,000</i>	<i>405,001 – 780,000</i>	<i>Above 780,000</i>

Note:

- 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 24B.

The proposed adjustments detailed in **Tables 24 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 25**.

Table 25 Comparison of Customer Class Cost of Service and Revenues under Proposed Rates

Line	Description	Allocated Cost of Service		Proposed Revenues	Revenue Recovery		Percent Increase	Change in Rev. by Class		
					Amount	Percent				
Water System										
1	Apartments	\$	4,657,488	\$	5,356,111	\$	698,623	115.0%	-13%	1.1%
2	Mobile Homes		41,591		29,113		(12,477)	70.0%	43%	32.7%
3	Residential		7,712,418		7,583,161		(129,257)	98.3%	2%	13.3%
4	Commercial		1,956,415		1,858,594		(97,821)	95.0%	5%	4.2%
5	City		1,444,446		1,401,113		(43,333)	97.0%	3%	8.4%
6	Sprinkler		1,385,783		970,048		(415,735)	70.0%	43%	-14.9%
7	Total	\$	17,198,140	\$	17,198,140	\$	0	100.0%	0.0%	6.0%

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 include 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 0.50% growth for the test year FY 2022, and 0.75% growth annually from FY 2023 to 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 14,365 to 14,801 from FY 2022 to FY 2026.

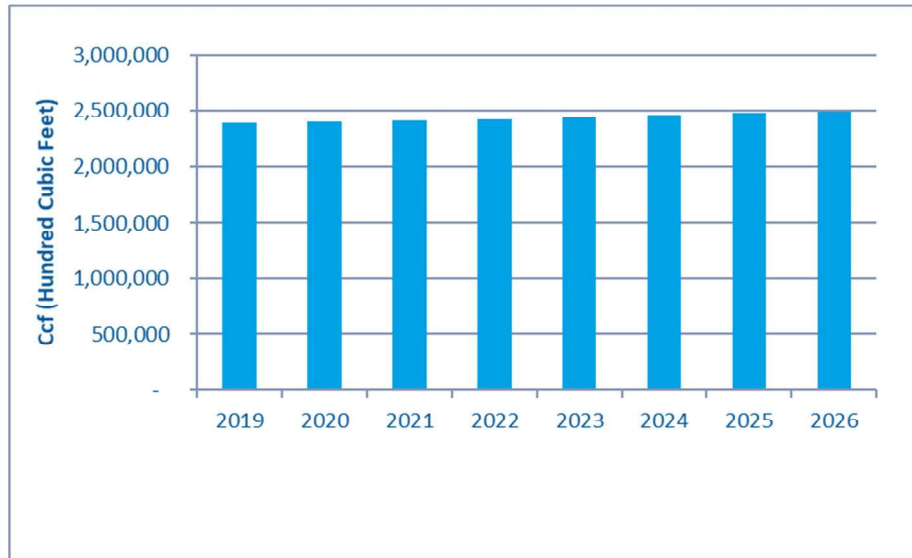
In addition, the City bills customers classified as, residential, mobile homes, and apartment, on a living unit basis which is designated by the City at the time service is initiated. As a part of the Utility Service Initiation, customers served in the residential, mobile home, and apartment customer 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.

At the end of FY 2019, the City served approximately 31,357 sewer living units. These included 20,688 apartments, 3 mobile homes, and 10,666 residential 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. 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 21,637, 3, and 11,155 for the apartment, mobile home, and residential customer classes, respectively, for a total living unit count of 32,795 by the end of FY 2026.

Billable sewer usage is projected to increase slightly over the forecast period. The increase billable sewer usage is directly related to the growth in the Utility System customers over the forecast period. The total billed sewer volume is anticipated to be 2,423,395 hundred cubic feet (ccf) by the end of FY 2022 and this total will grow to 2,496,919 hundred cubic feet (ccf) by the end of FY 2026.

Figure 6 summarizes the historical and projected sewer volumes over the forecast period.

Figure 6 Annual Historical & Projected Sewer Sales



6.1.3 Sewer Revenue

The sewer system derives revenue from an availability charge, 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 under existing rates is projected to grow from \$18,689,995 in FY 2022 to \$19,257,034 in FY 2026.

6.1.4 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 \$ 72,713 in FY 2022 to \$75,665 in FY 2026.

Table 26 summarizes the total revenue produced by the sewer system over the forecast period, including both sewer sales revenue and miscellaneous other operating revenue under existing rates.

Table 26 Sewer Utility Projected Revenue under Existing Rates

YEAR	REVENUE
2022	\$18,689,995
2023	\$18,830,170
2024	\$18,971,396
2025	\$19,113,682
2026	\$19,257,034

6.2 SEWER REVENUE REQUIREMENTS

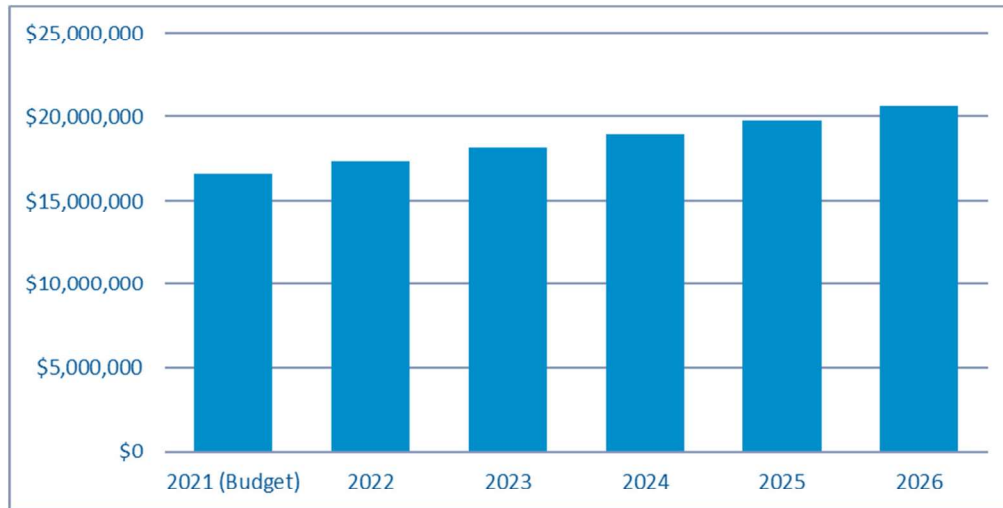
6.2.1 General

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.

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 7** 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 2021 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 \$17,366,898 in FY 2022 to \$20,661,872 in FY 2026.

Figure 7 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. **Table 27** summarizes the debt service obligations on outstanding and proposed debt for the sewer system over the forecast period.

Table 27 Debt Service Obligations on Outstanding Debt for Forecast Period

YEAR	DEBT SERVICE OBLIGATIONS
2022	\$166,955
2023	\$166,955
2024	\$424,718
2025	\$424,718
2026	\$424,718

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 \$1,736,458 and \$78,153 to the General and Pension Fund respectively in FY 2022 and these totals will amount to \$1,954,398 and \$78,153 respectively by the end of FY 2026. In addition, the City is required to make annual deposits into an Employee Benefits Reserve Fund. As such the sewer system will contribute \$269,935 in FY 2022 and this contribution will increase to \$303,814 by FY 2026.

Table 28 shows the annual expenditures and transfer totals for the sewer system.

Table 28 Projected Other Expenditures & Transfers

YEAR	OTHER EXPENDI- TURES & TRANSFERS
2022	\$2,095,737
2023	\$2,864,000
2024	\$2,726,735
2025	\$2,690,592
2026	\$3,136,365

6.2.5 Major Capital Improvements

A summary of proposed sewer utility capital improvements over the forecast period is listed on **Table 22**. The estimated cost of these improvements is approximately \$13.5 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 and additional debt financing or a combination of the two sources may be required.

A detailed source and uses summary is presented in **Table 29** 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 29 Sewer System CIP and CIP Financing

LINE	DESCRIPTION	2022	2023	2024	2025	2026 (1)	TOTAL
Capital Improvement Program:							
1	Sewer Collection & Disposal	\$100,000	\$100,000	\$100,000	\$100,000	-	\$400,000
2	Sewer Mains	\$1,300,000	\$1,200,000	\$2,300,000	\$1,200,000	\$1,300,000	\$6,000,000
3	Lift Stations	\$400,000	\$1,200,000	\$200,000	\$1,200,000	-	\$3,000,000
4	Collection System	\$120,000	\$120,000	\$120,000	\$120,000	-	\$480,000
5	Vehicles	-	-	-	-		\$3,000,000
						\$3,000,000	
6	Other	\$150,000	\$150,000	\$150,000	\$150,000	-	\$600,000
5	Total CIP	\$2,093,032	\$2,770,000	\$2,870,000	\$2,770,000	\$3,000,000	\$13,503,032
Sources & Uses of Funds:							
6	SRF Loan		\$1,870,000				\$1,870,000
7	Transfer from Operating Fund	\$800,000	\$700,000	\$1,950,000	\$2,500,000	\$2,800,000	\$8,750,000
8	Cash - From Operations	\$16,032	\$200,000	\$920,000	\$270,000	\$200,000	\$1,606,032
9	Capital Improvement Fund	\$1,277,000	\$-	\$-	\$-	\$-	\$1,277,000
9	Total Financing	\$2,093,032	\$2,770,000	\$2,870,000	\$2,770,000	\$3,000,000	\$13,503,032

Note:

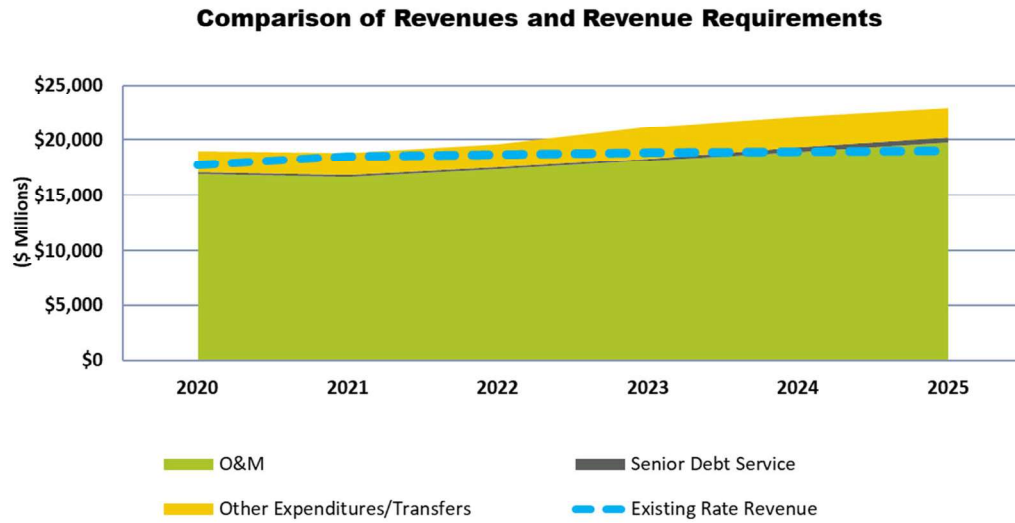
1. The FY 2022 through FY 2026 Capital Improvement Plan ("CIP") was provided by the City.

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 \$19,629,150 in FY 2022 to \$24,222,955 in FY 2026 as shown in **Figure 8**. Based on the projected revenues under existing rates, the current rate levels will be unable to sustain operations of the sewer utility over the study period without an increase in the existing rate levels.

The projected operating results detailed in **Tables 30** and **31** respectively, show the projected sewer system operating results on an existing and proposed sewer rates basis. As shown in **Table 30**, 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 31** provides the City with the ability to fund annual operating and capital obligations, meet debt service coverage requirement, and maintain appropriate cash balances. In addition, the annual overall revenue increases are identified on **Table 31**.

Figure 8 Comparison of Revenue and Revenue Requirements



Tables 30 and 31, 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.

Table 30 Projected Operating Results under Existing Rates

Line No.	Description	2022	2023	2024	2025	2026
1	Water Service - Existing Rates	\$ -	\$ -	\$ -	\$ -	\$ -
2	Wastewater Service - Existing Rates	18,689,995	18,830,170	18,971,396	19,113,682	19,257,034
3	Total Service Revenue - Existing Rates	\$ 18,689,995	\$ 18,830,170	\$ 18,971,396	\$ 19,113,682	\$ 19,257,034
	Additional Revenue Required					
	<u>Fiscal Year</u>	<u>% Increase</u>				
4	2022	0.0%	-	-	-	-
5	2023	0.0%	-	-	-	-
6	2024	0.0%	-	-	-	-
7	2025	0.0%	-	-	-	-
8	2026	0.0%	-	-	-	-
9	Total Additional Revenue Required	\$ -	\$ -	\$ -	\$ -	\$ -
10	Other Revenue	\$ 72,713	\$ 73,440	\$ 74,174	\$ 74,916	\$ 75,665
11	Total Revenues	\$ 18,762,708	\$ 18,903,610	\$ 19,045,570	\$ 19,188,598	\$ 19,332,699
12	Operating Expense	\$ 17,366,898	\$ 18,135,820	\$ 18,940,157	\$ 19,781,588	\$ 20,661,872
13	Net Revenues after Operations	\$ 1,395,809	\$ 767,790	\$ 105,413	\$ (592,990)	\$ (1,329,172)
	Debt Service					
14	Outstanding Debt Service	\$ 166,955	\$ 166,955	\$ 424,718	\$ 424,718	\$ 424,718
15	Projected Future Debt Service	-	-	-	-	-
16	Total Debt Service	\$ 166,955	\$ 166,955	\$ 424,718	\$ 424,718	\$ 424,718
17	Transfer to General Fund	\$ 1,736,458	\$ 1,788,551	\$ 1,842,208	\$ 1,897,474	\$ 1,954,398
18	Transfer to Pension Fund	\$ 78,153	\$ 78,153	\$ 78,153	\$ 78,153	\$ 78,153
19	Reserve for Employee Benefits	\$ 269,935	\$ 278,033	\$ 286,374	\$ 294,965	\$ 303,814
20	Cash Funded Capital Project	\$ 10,751	\$ 720,000	\$ 520,000	\$ 420,000	\$ 800,000
21	Annual Operating Balance	\$ (866,442)	\$ (2,263,902)	\$ (3,046,039)	\$ (3,708,300)	\$ (4,890,255)
22	Debt Service Coverage Ratio	✓ 8.36	✓ 4.60	✗ 0.25	✗ (1.40)	✗ (3.13)
23	Debt Service Coverage Ratio Target	1.30	1.30	1.30	1.30	1.30
24	Unrestricted Operating Fund Ending Balance	\$ 10,092,961	\$ 3,275,460	\$ (3,742,792)	\$ (14,672,713)	\$ (27,555,059)
25	Target Operating Balance (% of O&M)	50%	\$ 8,683,449	\$ 9,067,910	\$ 9,470,079	\$ 9,890,794

As shown in **Table 30**, 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 8.36 in FY 2022 to a negative (3.13) in FY 2026 which is below the required 1.30 debt service coverage ratio as established in the Utility System's Bond Resolution. At the end of FY 2022, it is forecasted that the sewer system will end the fiscal year with a positive balance of about \$10.0 million in unrestricted funds, but by the end of the forecast period the balance is reduced to a negative (\$27.5) million.

As presented herein, the financing plan associated with the sewer system indicates an overall increase in revenues of 9.0% for sewer customers to be implemented on October 1, 2021. **Table 31** presents the projected operating results for the sewer system under the proposed rates.

Table 31 Sewer Utility Projected Operating Results under Proposed Rates

Line No.	Description	2022	2023	2024	2025	2026
1	Water Service - Existing Rates	\$ -	\$ -	\$ -	\$ -	\$ -
2	Wastewater Service - Existing Rates	18,689,995	18,830,170	18,971,396	19,113,682	19,257,034
3	Total Service Revenue - Existing Rates	\$ 18,689,995	\$ 18,830,170	\$ 18,971,396	\$ 19,113,682	\$ 19,257,034
	Additional Revenue Required					
	<u>Fiscal Year</u>	<u>% Increase</u>				
4	2022	9.0%	1,682,100	1,694,715	1,707,426	1,720,231
5	2023	8.0%		1,641,991	1,654,306	1,666,713
6	2024	7.0%		1,563,319	1,575,044	1,586,857
7	2025	7.0%			1,685,297	1,697,937
8	2026	5.0%				1,297,709
9	Total Additional Revenue Required	\$ 1,682,100	\$ 3,336,706	\$ 4,925,050	\$ 6,647,285	\$ 7,994,848
10	Other Revenue	\$ 72,713	\$ 73,440	\$ 74,174	\$ 74,916	\$ 75,665
11	Total Revenues	\$ 20,444,807	\$ 22,240,316	\$ 23,970,621	\$ 25,835,883	\$ 27,327,548
12	Operating Expense	\$ 17,366,898	\$ 18,135,820	\$ 18,940,157	\$ 19,781,588	\$ 20,661,872
13	Net Revenues after Operations	\$ 3,077,909	\$ 4,104,496	\$ 5,030,464	\$ 6,054,295	\$ 6,665,676
	Debt Service					
14	Outstanding Debt Service	\$ 166,955	\$ 166,955	\$ 424,718	\$ 424,718	\$ 424,718
15	Projected Future Debt Service	-	-	-	-	-
16	Total Debt Service	\$ 166,955	\$ 166,955	\$ 424,718	\$ 424,718	\$ 424,718
17	Transfer to General Fund	\$ 1,736,458	\$ 1,788,551	\$ 1,842,208	\$ 1,897,474	\$ 1,954,398
18	Transfer to Pension Fund	\$ 78,153	\$ 78,153	\$ 78,153	\$ 78,153	\$ 78,153
19	Reserve for Employee Benefits	\$ 269,935	\$ 278,033	\$ 286,374	\$ 294,965	\$ 303,814
20	Cash Funded Capital Project	\$ 10,751	\$ 720,000	\$ 520,000	\$ 420,000	\$ 800,000
21	Annual Operating Balance	\$ 815,657	\$ 1,072,804	\$ 1,879,011	\$ 2,938,985	\$ 3,104,593
22	Debt Service Coverage Ratio	✓ 18.44	✓ 24.58	✓ 11.84	✓ 14.25	✓ 15.69
23	Debt Service Coverage Ratio Target	1.30	1.30	1.30	1.30	1.30
24	Unrestricted Operating Fund Ending Balance	\$ 12,748,540	\$ 11,461,424	\$ 12,885,891	\$ 13,556,861	\$ 14,745,504
25	Target Operating Balance (% of O&M)	50% \$ 8,683,449	\$ 9,067,910	\$ 9,470,079	\$ 9,890,794	\$ 10,330,936

The projected operating results detailed in **Table 31** 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.

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 consider 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 2022 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 2022, the sewer system’s net cost of service to be recovered from sewer charges is \$ 20,372,095 which represents the total revenue requirements \$20,444,807 minus other revenue received of \$72,713 . 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.

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 \$732,084.

Return is the balance of annual costs of service after operating expenses and depreciation, which amounts to negative \$300,707. 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	\$ 19,940,717
Depreciation Expense	732,084
Return	<u>(300,707)</u>
Total Cost of Service	\$20,372,095

Table 32 expresses in detail the cost of service on both the “cash basis” and the utility basis.

Table 32 Summary of the Cash Basis and Utility Basis Cost of Service

Line No.	Description	Operating Expense	Capital Cost	Total Cost
Statement of Net Revenue Requirements (Cash Basis)				
Revenue Requirements				
1	O&M Expenses	17,366,898		17,366,898
2	Debt Service		166,955	166,955
3	Other Expenditures & Transfers:			
4	Transfer to General Fund	1,562,812	173,646	1,736,458
5	Transfer to Pension Fund	78,153		78,153
6	Reserve for Employee Benefits	269,935		269,935
7	Cash Funded Capital Project		10,751	10,751
8	Funding to/(from) Operating Reserve	734,092	81,566	815,657
9	Subtotal	20,011,890	432,917	20,444,807
Less Revenue Requirements Met from Other Sources				
10	Other Revenues	71,173	1,540	72,713
11	Subtotal	71,173	1,540	72,713
12	Net Revenue Requirements to be Recovered by Rates	19,940,717	431,378	20,372,095
Restatement of Net Cost of Service (Utility Basis)				
13	O&M Expenses	19,940,717		19,940,717
14	Depreciation		732,084	732,084
15	Return		(300,707)	(300,707)
16	Subtotal	19,940,717	431,378	20,372,095
17	Net Cost of Service (Utility Basis)	\$ 19,940,717	\$ 431,378	\$ 20,372,095

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 the operations 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 AND DEPRECIATION

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 2022 net plant investment in sewer facilities consists of plant in service as of FY 2020, the

2020 construction work in progress, and the estimated cost of proposed capital improvements expected to be in service.

Table 33 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 \$17,987,438 as indicated by Line 5 of **Table 33**.

The allocated investment in the sewer system is used as the basis for assigning the return portion of test year cost of service.

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 provides a basis to restore 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 33**. The total depreciation expense for the Test Year is estimated to be \$732,084.

Table 33 Allocation of Net Plant Investment and Depreciation Expense

Line No.	Description	Total	Common to All		
			Volume		Customer
Net Plant Investment & Depreciation					
Net Plant Investment:					
1	Land	\$ -	\$ -		
2	Collection	15,910,825	14,319,742		1,591,082
3	Pumping	374,920	374,920		
4	General Plant	1,701,694	1,535,442		166,252
5	Total Net Plant Investment	\$ 17,987,438	\$ 16,230,104	\$	1,757,334
Depreciation Expense:					
6	Land	\$ -	\$ -		
7	Collection	575,989	518,390		57,599
8	Pumping	60,636	60,636		-
9	General Plant	95,459	86,133		9,326
10	Total Depreciation Expense	\$ 732,084	\$ 665,159	\$	66,925

7.5 ALLOCATION OF OPERATING & MAINTENANCE EXPENSES

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 34**. 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 \$19.9 million.

Table 34 Allocation of Operation & Maintenance Expense

Line No.	Description	Total	Volume	Customer Billing	Customer
Allocation of O&M Expenses					
1	Energy	140,340	140,340		
2	Sewage Disposal	12,017,215	12,017,215		
3	Customer Billing	764,704		764,704	
4	Collection System	103,000	92,700		10,300
5	All Other Cost	6,986,630	6,304,051	-	682,579
6	Total	\$ 20,011,890	\$ 18,554,307	\$ 764,704	\$ 692,879
7	Percent Allocation	100.0%	92.7%	3.8%	3.5%
8	Less: Other Income Sources	71,173	65,989	2,720	2,464
9	Net O&M Expenses	\$ 19,940,717	\$ 18,488,318	\$ 761,984	\$ 690,415

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 customer classes based on the respective service requirements.

7.7 CUSTOMER CLASSIFICATIONS

Sewer system customer classes have been separated into the following categories; 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. As a result, the estimated units of service for the various customer classifications as illustrated in **Table 35**.

Table 35 presents the Inside City Units of Service.

Table 35 Inside City Units of Service

Line	Customer Classes	Contributed	I&I	Total	Customer	
		Volume		Volumes	Bills	Eq. Meters
		gallons (000s)	gallons (000s)	gallons (000s)	bills	(EMs)
Inside City Monthly						
1	Apartments	695,721	153,437	849,158	4,100	12,187
2	Mobile Homes	0	0	0	0	0
3	Residential	2,991	7,654	10,645	639	59
4	Churches	1,748	1,496	3,244	109	44
5	Commercial	190,217	63,541	253,758	3,039	1,313
6	Educational	66,823	17,092	83,915	603	629
7	Hotels	7,346	1,808	9,154	60	34
8	Public Authority	3,470	5,015	8,485	398	176
9	Subtotal	968,316	250,044	1,218,360	8,948	14,442
Inside City Quarterly						
10	Apartments	30,113	10,801	40,914	547	693
11	Mobile Homes	0	0	0	0	0
12	Residential	590,128	559,203	1,149,331	41,595	10,644
13	Churches	3,094	1,839	4,933	121	40
14	Commercial	62,867	70,422	133,289	5,395	1,516
15	Educational	442	158	600	8	3
16	Hotels	827	218	1,045	8	3
17	Public Authority	687	241	928	12	3
18	Subtotal	688,158	642,882	1,331,040	47,686	12,902

Table 36 presents the Outside City Units of Service.

Table 36 Outside City Units of Service

Line	Customer Classes	Contributed	I&I	Total	Customer	
		Volume		Volumes	Bills	Eq. Meters
		gallons (000s)	gallons (000s)	gallons (000s)	bills	(EMs)
Outside City Monthly						
19	Apartments	453,048	96,069	549,117	2,328	7,793
20	Mobile Homes	22,420	3,863	26,283	36	3
21	Residential	5,376	3,947	9,323	277	31
22	Churches	1,275	1,424	2,699	109	73
23	Commercial	173,506	41,558	215,064	1,315	755
24	Educational	9,852	3,827	13,679	205	188
25	Hotels	13,111	2,562	15,673	48	78
26	Public Authority	0	675	675	60	6
27	Subtotal	678,588	153,924	832,512	4,378	8,926
Outside City Quarterly						
28	Apartments	7,540	2,570	10,110	125	119
29	Mobile Homes	0	0	0	0	0
30	Residential	48,386	54,839	103,225	4,209	845
31	Churches	171	206	377	16	8
32	Commercial	8,191	5,653	13,844	390	163
33	Educational	0	0	0	0	0
34	Hotels	0	0	0	0	0
35	Public Authority	0	0	0	0	0
36	Subtotal	64,288	63,268	127,556	4,740	1,134
37	Total City of North Miami	2,399,350	1,110,117	3,509,467	65,752	37,405
38	Total System	2,399,350	1,110,117	3,509,467	65,752	37,405

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 in **Table 37**.

Table 37 Unit Cost of Service

Line No.	Description	Total	Volume gallons (000s)	Customer	
				Bills bills	Eq. Meters (EMs)
Number of Units:					
1	Total System		3,509,467	65,752	37,405
Net Operating Expense					
2	Total - \$	\$ 19,940,717	\$ 18,488,318	\$ 761,984	\$ 690,415
3	Unit Cost - \$/unit		\$ 5.2681	\$ 11.5888	\$ 18.4580
Depreciation Expense:					
4	Total - \$	\$ 732,084	\$ 665,159	\$ 0	\$ 66,925
5	Unit Cost - \$/unit		\$ 0.1895	\$ 0	\$ 1.7892
Net Plant Investment:					
6	Total - \$	\$ 17,987,438	\$ 16,230,104	\$ 0	\$ 1,757,334
7	Unit Cost - \$/unit		\$ 4.6247	\$ 0	\$ 46.9818
Return on Net Plant Investment:					
8	Outside City, Unit Return - \$/unit	1.25%	\$ 0.0578		\$ 0.5873
9	Outside City, Units of Service		960,068	9,118	10,061
10	Outside City, Net Plant Investment	\$ 4,912,653	\$ 4,439,991		\$ 472,662
11	Outside City, Return on Net Plant Investment	\$ 61,408	\$ 55,500		\$ 5,908
12	Inside City, Unit Return - \$/unit	-2.77%	\$ (0.1281)		\$ (1.3012)
13	Inside City, Units of Service		2,549,399	56,634	27,344
14	Inside City, Net Plant Investment	\$ 13,074,785	\$ 11,790,113		\$ 1,284,672
15	Inside City, Return on Net Plant Investment	\$ (362,115)	\$ (326,535)		\$ (35,580)
16	Total System Return on Net Plant Investment - \$	\$ (300,707)	\$ (271,035)		\$ (29,672)
17	Total System Return on Net Plant Investment - %	-1.67%			
Total Unit Cost of Service					
18	Total Outside City - Unit Cost \$/unit		\$ 5.5155	\$ 11.5888	\$ 20.8345
19	Total Inside City - Unit Cost \$/unit		\$ 5.3296	\$ 11.5888	\$ 18.9460
Net Cost of Service:					
20	Outside City - Cost of Service	5,610,497	5,295,224	105,666	209,606
21	Inside City - Cost of Service	14,761,597	13,587,218	656,318	518,062
22	Total Cost of Service	\$ 20,372,095	\$ 18,882,442	\$ 761,984	\$ 727,668

The rate of return applicable for service to customers is equal to **negative 1.67%** 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. In addition, all customers 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 8 and 12) determines the total unit costs of service shown on Lines 18 and 19 of **Table 37**.

The total unit cost of service determined in **Table 36**, 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 **Tables 38** and **39**. **Table 38** shows the Inside City Customer Class Unit Cost of Service and **Table 39** presents the Outside City Customer Class Unit Cost of Service.

Table 38 Inside City Customer Class Unit Cost of Service

Line No.	Description	Total	Common to All		Customer	
			Volume		Bills	Eq. Meters
			per 1,000 Gal		per bill	per Eq. Meter
1	Inside City Total Inside City - Unit Cost \$/unit		\$ 5.3296	\$ 11.5888	\$ 18.9460	
Apartments						
2	Units		890,072	4,647	12,880	
3	Allocation of costs of service	\$ 5,041,585	\$ 4,743,705	\$ 53,853	\$ 244,027	
Mobile Homes						
4	Units		0	0	0	
5	Allocation of costs of service	\$ 0	\$ 0	\$ 0	\$ 0	
Residential						
6	Units		1,159,976	42,234	10,703	
7	Allocation of costs of service	\$ 6,874,399	\$ 6,182,182	\$ 489,440	\$ 202,777	
Churches						
8	Units		8,178	230	84	
9	Allocation of costs of service	\$ 47,845	\$ 43,583	\$ 2,665	\$ 1,597	
Commercial						
10	Units		387,046	8,434	2,829	
11	Allocation of costs of service	\$ 2,214,134	\$ 2,062,793	\$ 97,740	\$ 53,601	
Educational						
12	Units		84,515	611	632	
13	Allocation of costs of service	\$ 469,479	\$ 450,431	\$ 7,081	\$ 11,967	
Hotels						
14	Units		10,199	68	37	
15	Allocation of costs of service	\$ 55,851	\$ 54,355	\$ 788	\$ 708	
Public Authority						
16	Units		9,413	410	179	
17	Allocation of costs of service	\$ 58,305	\$ 50,168	\$ 4,751	\$ 3,385	
18	Total Inside City	\$ 14,761,597	\$ 13,587,218	\$ 656,318	\$ 518,062	

Table 39 Outside City Customer Class Unit Cost of Service

Line No.	Description	Total	Common to All		Customer	
			Volume		Bills	Eq. Meters
			per 1,000 Gal		per bill	per Eq. Meter
19	Outside City Total Outside City - Unit Cost \$/unit		\$ 5.5155	\$ 11.5888	\$ 20.8345	
Apartments						
20	Units		559,226	2,453	7,911	
21	Allocation of costs of service	\$ 3,277,651	\$ 3,084,395	\$ 28,427	\$ 164,829	
Mobile Homes						
22	Units		26,283	36	3	
23	Allocation of costs of service	\$ 145,441	\$ 144,961	\$ 417	\$ 63	
Residential						
24	Units		112,548	4,486	875	
25	Allocation of costs of service	\$ 690,976	\$ 620,753	\$ 51,987	\$ 18,235	
Churches						
26	Units		3,076	125	81	
27	Allocation of costs of service	\$ 20,100	\$ 16,966	\$ 1,449	\$ 1,686	
Commercial						
28	Units		228,908	1,705	918	
29	Allocation of costs of service	\$ 1,301,430	\$ 1,262,535	\$ 19,759	\$ 19,136	
Educational						
30	Units		13,679	205	188	
31	Allocation of costs of service	\$ 81,737	\$ 75,445	\$ 2,376	\$ 3,917	
Hotels						
32	Units		15,673	48	78	
33	Allocation of costs of service	\$ 88,617	\$ 86,445	\$ 556	\$ 1,616	
Public Authority						
34	Units		675	60	6	
35	Allocation of costs of service	\$ 4,544	\$ 3,725	\$ 695	\$ 124	
36	Total Outside City	\$ 5,610,497	\$ 5,295,224	\$ 105,666	\$ 209,606	
37	Total System Allocated Cost of Service	\$ 20,372,095	\$ 18,882,442	\$ 761,984	\$ 727,668	

Table 40 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 40**, the sewer system revenue under existing rates under recovers revenue requirement (or cost of service) by \$1,682,100 in FY 2022.

Table 40 Comparison of Customer Class Cost of Service and Revenues under Existing Rates

Line	Description	Allocated		Existing	Revenue Recovery		Percent Increase		
		Cost of Service			Amount	Percent			
		\$		\$	\$	%	%		
City of North Miami Wastewater Utility									
1	Apartments	\$	8,319,236	\$	9,975,026	\$	1,655,790	119.9%	-16.6%
2	Mobile Homes		145,441		111,237		(34,204)	76.5%	30.7%
3	Residential		7,565,375		5,113,435		(2,451,940)	67.6%	48.0%
4	Churches		67,945		65,671		(2,274)	96.7%	3.5%
5	Commercial		3,515,565		2,745,443		(770,121)	78.1%	28.1%
6	Educational		551,216		495,916		(55,300)	90.0%	11.2%
7	Hotels		144,468		122,696		(21,772)	84.9%	17.7%
8	Public Authority		62,849		60,572		(2,277)	96.4%	3.8%
9	Total	\$	20,372,095	\$	18,689,995	\$	(1,682,100)	91.7%	9.0%

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 and promote the efficient usage of water resources in the City, address the equitability of the existing rate amongst the existing customers classes; 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.

8.2 EXISTING SEWER RATES

The existing schedule of rates for sewer service includes a monthly base charge for the residential, apartments, and mobile home customer classes that is assessed per living unit. In addition, the monthly base charges are assessed to all other customers on a per customer and a per meter basis. The volumetric rate is applied per 1,000 gallons of billable consumption to all water usage at a billing factor of 85.0%.

Tables 41 and 42 compare existing rates to proposed rates after adjustments. **Table 41** summarizes the existing sewer rates.

Table 41 Existing Sewer Rates

CUSTOMER CLASS	INSIDE CITY
Base Charge	
Residential (per living unit)	\$17.56
Apartment (per living unit)	\$17.56
Mobile Home (per living unit)	\$17.56
Base Charge All Other Customers:	
3/4" Meter	\$17.56
1" Meter	\$33.95
1.5" Meter	\$83.27
2" Meter	\$206.55
2 (2)" Meter	\$206.55
3" Meter	\$370.86
4" Meter	\$740.58
6" Meter	\$1,398.08
8" Meter	\$2,466.24
Volumetric Rate (Per 1,000 Gals.)	
All Usage	\$4.59

Note:

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

8.3 PROPOSED SEWER RATES

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 2022 and debt service coverage requirements are anticipated to be recovered under five projected annual rate adjustments assumed to be implemented by the City on October 1, 2021 and on the first day of the preceding fiscal years 2023, 2024, 2025, and 2026, respectively. Total sewer sales revenues under each of these rate adjustments are projected to increase 9.0, 8.0, 7.0, 7.0, and 5.0 percent, respectively, for the fiscal years discussed herein. **Table 42** summarizes the proposed rate adjustments for the FY 2022 test year.

Table 42 Proposed Sewer Rates

CUSTOMER CLASS	INSIDE CITY
Base Charge	
Residential (per living unit)	\$19.14
Apartment (per living unit)	\$19.14
Mobile Home (per living unit)	\$19.14
Base Charge All Other Customers:	
3/4" Meter	\$19.14
1" Meter	\$37.01
1.5" Meter	\$90.76
2" Meter	\$225.14
2 (2)" Meter	\$225.14
3" Meter	\$404.24
4" Meter	\$807.23
6" Meter	\$1,523.91
8" Meter	\$2,688.20
Volumetric Rate (Per 1,000 Gals.)	
All Usage	\$5.00

Note:

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

The proposed volumetric rate for sewer service presented in **Table 42** includes a sewer billing factor adjustment of 85.0%.

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 still 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 2022.

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.

The proposed adjustments detailed in **Table 42** 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 43**. The proposed rates generate enough revenue to develop an operating surplus and to grow cash balances.

Table 43 Comparison of Customer Class Cost of Service and Revenues under Proposed Rates

Line	Description	Allocated		Proposed	Revenue Recovery		Percent Increase	Change in Rev. by Class		
		Cost of Service			Revenues	Amount			Percent	
Wastewater System										
1	Apartments	\$	8,319,236	\$	10,833,207	\$	2,513,971	130.2%	-23%	8.6%
2	Mobile Homes		145,441		129,452		(15,989)	89.0%	12%	16.4%
3	Residential		7,565,375		5,548,972		(2,016,403)	73.3%	36%	8.5%
4	Commercial		3,727,978		3,255,517		(472,461)	87.3%	15%	11.0%
5	City		614,065		604,946		(9,119)	98.5%	2%	8.7%
6	Total	\$	20,372,095	\$	20,372,095	\$	0	100.0%	0.0%	9.0%

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, 2022 through 2026.

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 2022 is as follows:

Table 44 provides a summary of the combined system cost of service summary

Table 44 Comparison of the Combined System Cost of Service Summary

Line No.	Description	Operating Expense	Capital Cost	Total Cost
Statement of Net Revenue Requirements (Cash Basis)				
Revenue Requirements				
1	O&M Expenses	31,379,344		31,379,344
2	Debt Service		619,804	619,804
3	Other Expenditures & Transfers:			
4	Transfer to General Fund	2,919,994	324,444	3,244,438
5	Transfer to Pension Fund	213,932		213,932
6	Reserve for Employee Benefits	694,453		694,453
7	Cash Funded Capital Projects		27,751	27,751
8	Funding to/(from) Operating Reserve	1,630,298	181,144	1,811,443
9	Subtotal	36,838,022	1,153,143	37,991,165
Less Revenue Requirements Met from Other Sources				
10	Other Revenues	405,098	15,833	420,931
11	Subtotal	405,098	15,833	420,931
12	Net Revenue Requirements to be Recovered by Rates	36,432,925	1,137,310	37,570,235
Restatement of Net Cost of Service (Utility Basis)				
13	O&M Expenses	36,432,925		36,432,925
14	Depreciation		1,328,627	1,328,627
15	Return		(191,317)	(191,317)
16	Subtotal	36,432,925	1,137,310	37,570,235
17	Net Cost of Service (Utility Basis)	\$ 36,432,925	\$ 1,137,310	\$ 37,570,235

Table 45 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 7.6% as indicated by the combined system cost of service results.

Table 45 Comparison of the Combined System Revenue and Revenue Requirements under Existing Rates

Line	Description	Allocated Cost of Service	Existing Revenues	Revenue Recovery		Percent Increase
				Amount	Percent	
		\$	\$	\$	%	%
City of North Miami Combined Utility						
1	Apartments	\$ 12,976,723	\$ 15,270,734	\$ 2,294,011	117.7%	-15.0%
2	Mobile Homes	187,031	133,184	(53,848)	71.2%	40.4%
3	Residential	15,277,793	11,803,842	(3,473,951)	77.3%	29.4%
4	Churches	120,363	127,190	6,827	105.7%	-5.4%
5	Commercial	5,362,493	4,429,456	(933,037)	82.6%	21.1%
6	Educational	1,165,620	998,634	(166,986)	85.7%	16.7%
7	Hotels	201,537	161,565	(39,972)	80.2%	24.7%
8	Public Authority	892,891	850,085	(42,806)	95.2%	5.0%
9	Sprinkler	1,385,783	1,139,965	(245,818)	82.3%	21.6%
10	Total	\$ 37,570,235	\$ 34,914,655	\$ (2,655,579)	92.9%	7.6%

Table 46 shows a comparison of total adjusted cost of service for the combined utilities with combined revenue under proposed rates.

Table 46 Comparison of the Combined System Revenue and Revenue Requirements under Proposed Rates

Line	Description	Allocated		Proposed	Revenue Recovery		Percent	Change in Rev.		
		Cost of Service			Amount	Percent			Increase	by Class
Water System										
1	Apartments	\$	12,976,723	\$	16,189,317	\$	3,212,594	124.8%	-20%	6.0%
2	Mobile Homes		187,031		158,566		(28,466)	84.8%	18%	19.1%
3	Residential		15,277,793		13,132,133		(2,145,660)	86.0%	16%	11.3%
4	Commercial		5,684,393		5,114,111		(570,281)	90.0%	11%	8.4%
5	City		2,058,511		2,006,059		(52,452)	97.5%	3%	8.5%
6	Sprinkler		1,385,783		970,048		(415,735)	70.0%	43%	-14.9%
7	Total	\$	37,570,235	\$	37,570,235	\$	0	100.0%	0.0%	7.6%

9.3 PRO-FORMA OF OPERATING RESULTS UNDER PROPOSED RATE DESIGN

Table 47 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 debt.

Table 47 Comparison of the Combined System Revenue and Revenue

Line No.	Description	2022	2023	2024	2025	2026
1	Water Service - Existing Rates	\$ 16,224,660	\$ 16,346,345	\$ 16,468,943	\$ 16,592,460	\$ 16,716,903
2	Wastewater Service - Existing Rates	18,689,995	18,830,170	18,971,396	19,113,682	19,257,034
3	Total Service Revenue - Existing Rates	\$ 34,914,655	\$ 35,176,515	\$ 35,440,339	\$ 35,706,142	\$ 35,973,938
	Additional Revenue Required					
	<u>Fiscal Year</u>	<u>% Increase</u>				
4	2022	7.6%	2,655,579	2,675,496	2,695,562	2,715,779
5	2023	7.5%		2,854,890	2,876,301	2,897,874
6	2024	7.0%			2,892,386	2,914,078
7	2025	7.0%			3,094,853	3,118,064
8	2026	5.0%				2,383,092
9	Total Additional Revenue Required	\$ 2,655,579	\$ 5,530,386	\$ 8,442,718	\$ 11,600,891	\$ 14,070,989
10	Other Revenue	\$ 420,931	\$ 425,140	\$ 429,391	\$ 433,685	\$ 438,022
11	Total Revenues	\$ 37,991,165	\$ 41,132,041	\$ 44,312,448	\$ 47,740,718	\$ 50,482,949
12	Operating Expense	\$ 31,379,344	\$ 32,708,946	\$ 34,097,714	\$ 35,548,384	\$ 37,063,819
13	Net Revenues after Operations	\$ 6,611,821	\$ 8,423,095	\$ 10,214,734	\$ 12,192,333	\$ 13,419,130
	Debt Service					
14	Outstanding Debt Service	\$ 369,347	\$ 368,765	\$ 627,109	\$ 627,110	\$ 627,110
15	Projected Future Debt Service	250,457	250,457	250,457	1,956,189	1,956,189
16	Total Debt Service	\$ 619,804	\$ 619,222	\$ 877,566	\$ 2,583,299	\$ 2,583,298
17	Transfer to General Fund	\$ 3,244,438	\$ 3,341,771	\$ 3,442,024	\$ 3,545,285	\$ 3,651,644
18	Transfer to Pension Fund	\$ 213,932	\$ 213,932	\$ 213,932	\$ 213,932	\$ 213,932
19	Reserve for Employee Benefits	\$ 694,453	\$ 715,286	\$ 736,745	\$ 758,847	\$ 781,613
20	Cash Funded Capital Project	\$ 27,751	\$ 1,320,000	\$ 1,120,000	\$ 920,000	\$ 1,500,000
21	Annual Operating Balance	\$ 1,811,443	\$ 2,212,884	\$ 3,824,466	\$ 4,170,970	\$ 4,688,643
22	Debt Service Coverage Ratio	✓ 10.67	✓ 13.60	✓ 11.64	✓ 4.72	✓ 5.19
23	Debt Service Coverage Ratio Target	1.30	1.30	1.30	1.30	1.30
24	Unrestricted Operating Fund Ending Balance	\$ 12,748,540	\$ 11,461,424	\$ 12,885,891	\$ 13,556,861	\$ 14,745,504
25	Target Operating Balance (% of O&M)	50%	\$ 15,689,672	\$ 16,354,473	\$ 17,048,857	\$ 17,774,192

As stated in the description of the assumption utilized for these analyses, the debt service coverage minimum ratio for the Utility System is 1.30. The debt service coverage ratios remain well above the minimum requirement of 1.30 with the proposed rate scenario. In FY 2022 the debt coverage ratio is 10.67 and is projected to be 5.19 in FY 2026. It is critical that the City maintains this ratio well above the minimum 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 \$12.7 million at the end of FY 2022 to \$14.7 million at the end of the forecast period ending in FY 2026.

The proposed rate scenario includes the overall rate level increases of 7.6, 7.5, 7.0, 7.0 and 5.0 percent respectively in FY 2022 through FY 2026. 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.

9.4 COMBINED SYSTEM SOURCES & USES OF FUNDS

Table 48 presents the combined system sources and uses of funds.

Table 48 Utility System Flow of Funds

Line No.	Description	2022	2023	2024	2025	2026
Combined Utility Funds						
Projected Flow of Funds - Construction Fund						
Construction Funds Available						
1	Beginning Balance	\$ -	\$ -	\$ -	\$ -	\$ -
2	FY 2022 SRF Loan Funds	19,285,100	10,000,000			
3	Transfer from the Operation Fund	2,800,000	3,500,000	2,400,000	3,500,000	3,500,000
		27,751	1,320,000	1,120,000	920,000	1,500,000
4	Transfer from CIF Fund	4,500,000				-
5	Total Funds Available	\$ 26,612,851	\$ 14,820,000	\$ 3,520,000	\$ 4,420,000	\$ 5,000,000
Construction Funds Used						
6	Capital Improvements	\$ 26,320,000	\$ 14,820,000	\$ 3,520,000	\$ 4,420,000	\$ 5,000,000
7	Revenue Bond Issuance Expense	-	-	-	-	-
8	State Revolving Fund Issuance Expense	292,851	-	-	-	-
9	General Obligation Bond Issuance Expense	-	-	-	-	-
10	Total Funds Utilized	\$ 26,612,851	\$ 14,820,000	\$ 3,520,000	\$ 4,420,000	\$ 5,000,000
	Ending Balance	\$ -	\$ -	\$ -	\$ -	\$ -
Projected Flow of Funds - CIF Fund						
CIF Funds Available						
11	Beginning Balance	\$ 4,518,801	\$ 18,801	\$ 18,801	\$ 18,801	\$ 18,801
12	Deposit From Operating Fund					
13	Transfer to Construction Fund	\$ (4,500,000)	\$ -	\$ -	\$ -	\$ -
14	Ending Balance	\$ 18,801	\$ 18,801	\$ 18,801	\$ 18,801	\$ 18,801
Projected Flow of Funds - Unrestricted Operating Fund						
15	Beginning Balance	\$ 13,737,098	\$ 12,748,540	\$ 11,461,424	\$ 12,885,891	\$ 13,556,861
16	Transfer to Construction Fund	(2,800,000)	(3,500,000)	(2,400,000)	(3,500,000)	(3,500,000)
17	Annual Operating Balance	1,811,443	2,212,884	3,824,466	4,170,970	4,688,643
18	Ending Balance	\$ 12,748,540	\$ 11,461,424	\$ 12,885,891	\$ 13,556,861	\$ 14,745,504
19	Days Cash on Hand	148	128	138	139	145
20	Minimum Balance Requirement	120	\$ 10,316,497	\$ 10,753,626	\$ 11,210,207	\$ 11,687,140
						\$ 12,185,365

As demonstrated in **Table 48, Line 15**, a beginning unrestricted fund balance of \$13.7 million at the beginning of FY 2022 is estimated to increase to \$14.7 million by the end of FY 2026. **Table 48** outlines the plan to fund the Utility System's capital requirements on a combined system basis. Additionally, the Utility System meets the annual fund balance target of 120 days in unrestricted fund over the forecast period.



Water & Sewer Rate Study – Initial Financial Plan Results

September 28, 2021

Robert Chambers
Principal Consultant



Our Discussion Today

Why

Adequate Cost Recovery, Maintain
Operational Resilience, Build the
Financial Health of the Utility System

How

Integrated Approach to Financial Planning

What

Reliable Service, “the **BEST Water in
Florida**”, and Affordable Rates

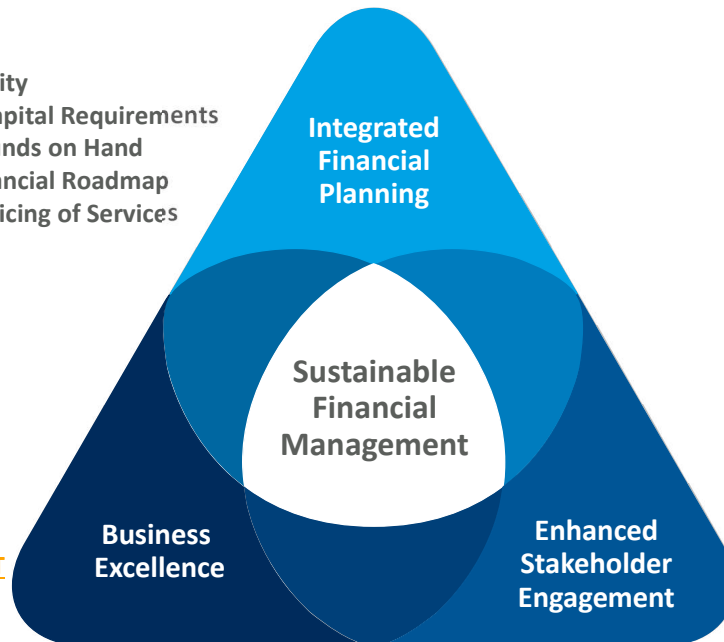
Drivers and Purpose



Drivers

- Revenue Stability
- Operating & Capital Requirements
- Appropriate Funds on Hand
- Integrated Financial Roadmap
- Appropriate Pricing of Services

- Operational Resilience
- Sustainable Infrastructure Management
- Water Conservation
- “Continue to produce the BEST Water in Florida”

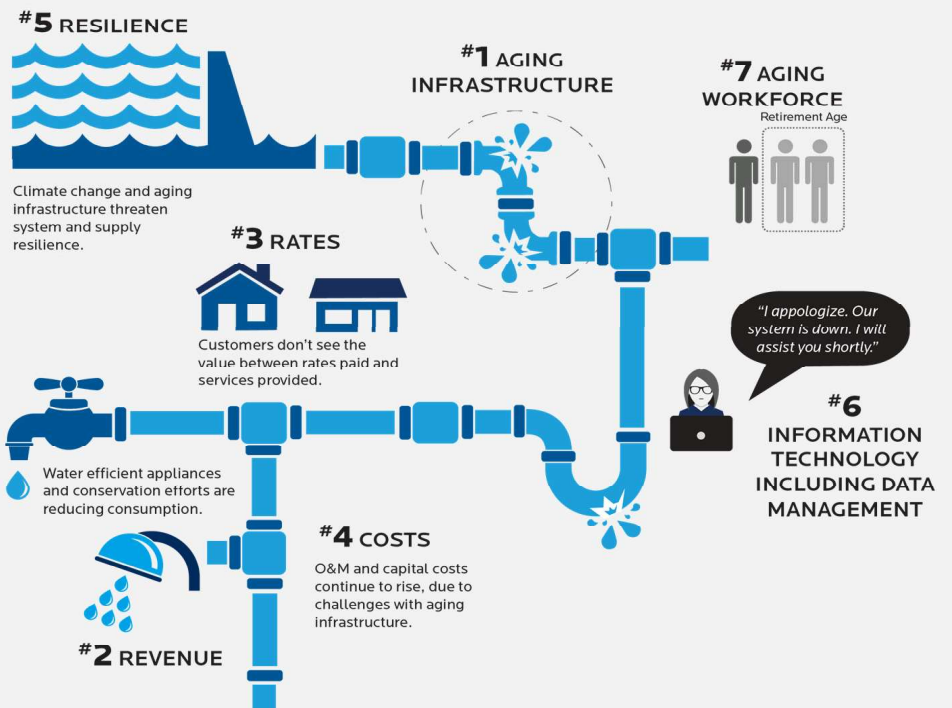


- Adequately Inform Stakeholders
- Retain Feedback from Stakeholders
 - Customers
 - City Council Members
- Abide by the Appropriate Legislative Requirements

CORONAVIRUS (COVID-19)

Utilities strive to build a resilient water industry for current and future generations through strategic, financial, and technological services and thought leadership:

Top Water Industry Issues



Purpose of the Rate Study

Perform independent water and sewer rate study that will accomplish the following:



Establish operating and capital financing plans that fully fund water and sewer requirements



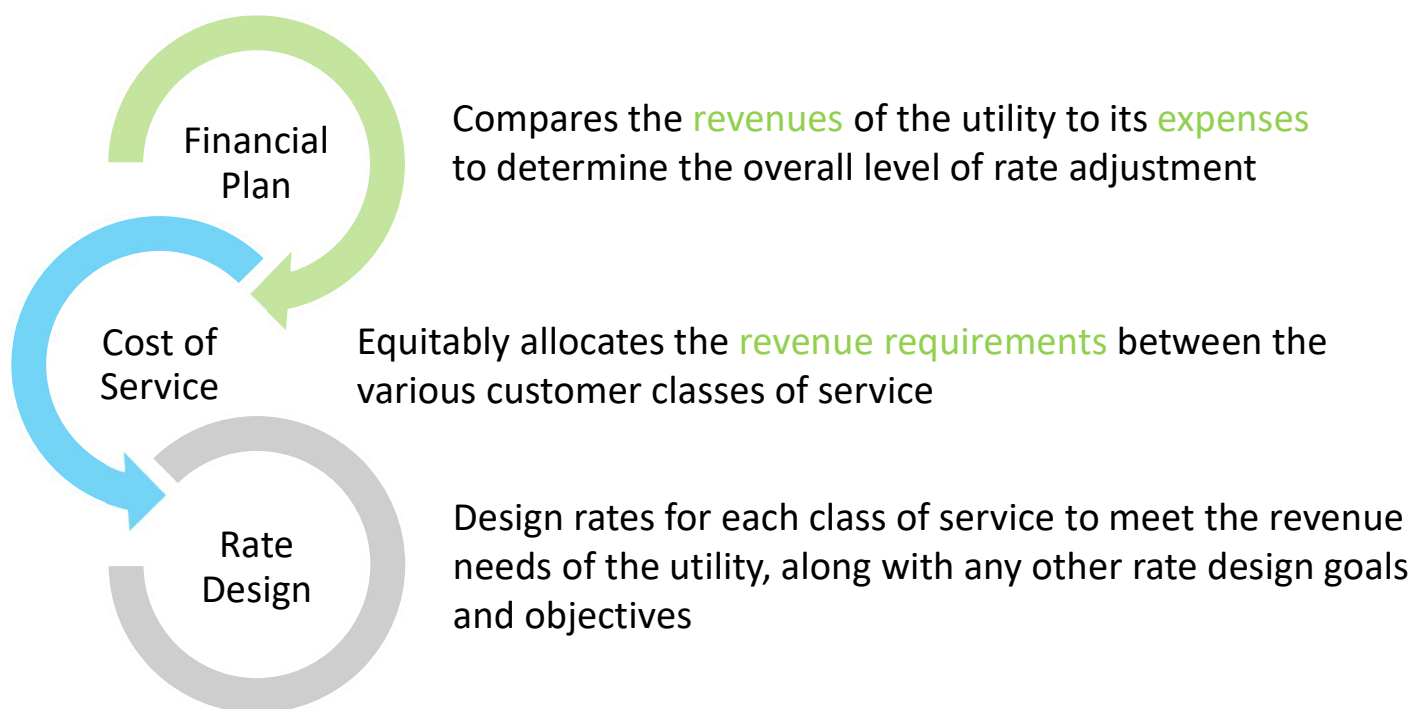
Perform a cost of service analysis to understand the cost to serve existing customers



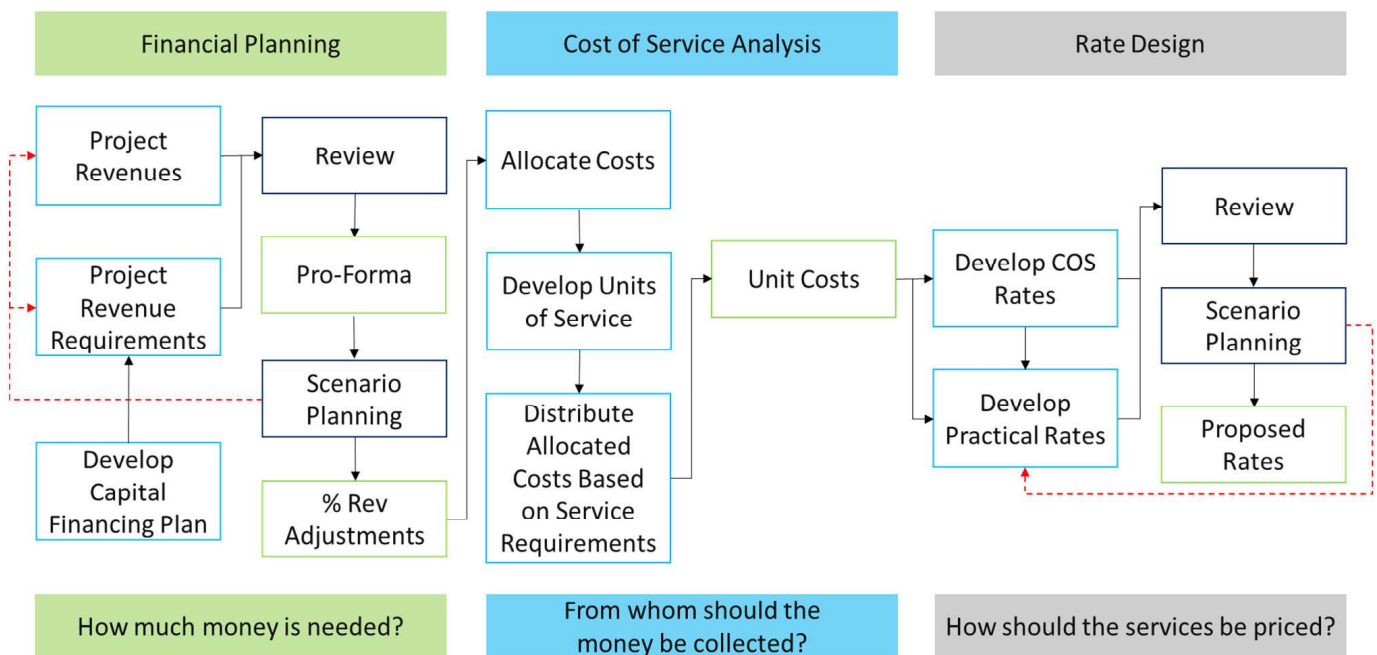
Review the existing rate structure and design proposed rates that provide adequate system revenues

Approach

Components of Rate Study



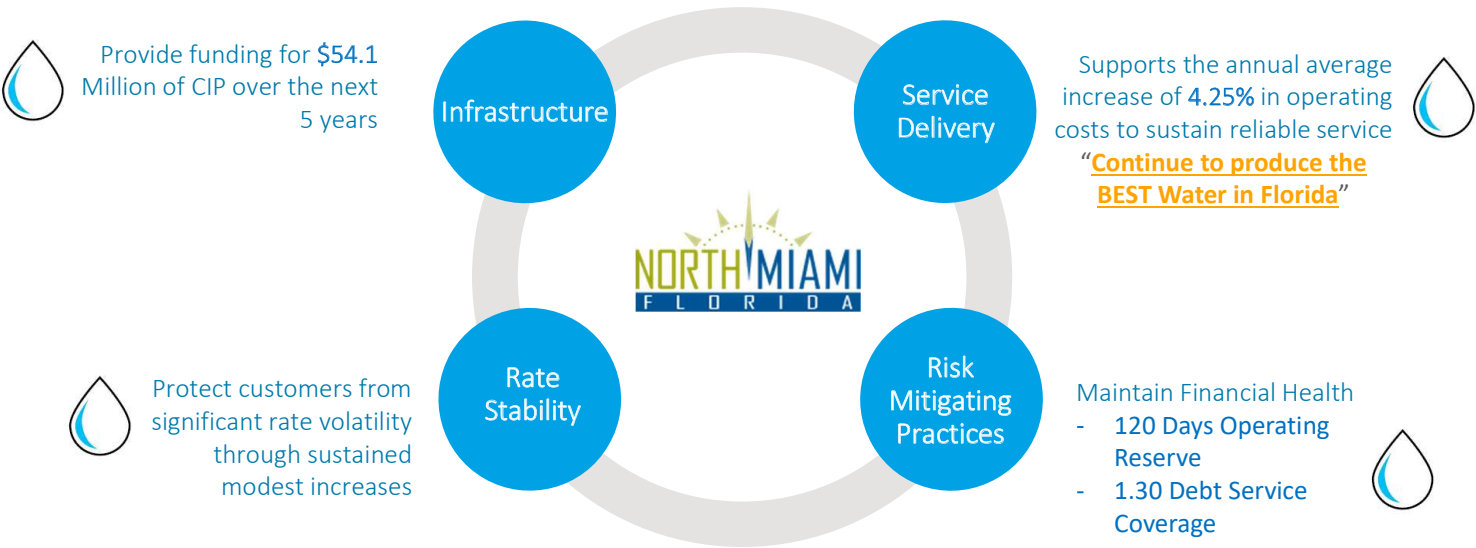
Rate Making Process



[Study approach that is data driven, based on defensible principles, and meets industry best practices](#)

Financial Plan

Why do we need a Rate Increase?



Protect our Community's Economic, Environment, and Social Health

Cost Driver: Five-Year Capital Expenditure

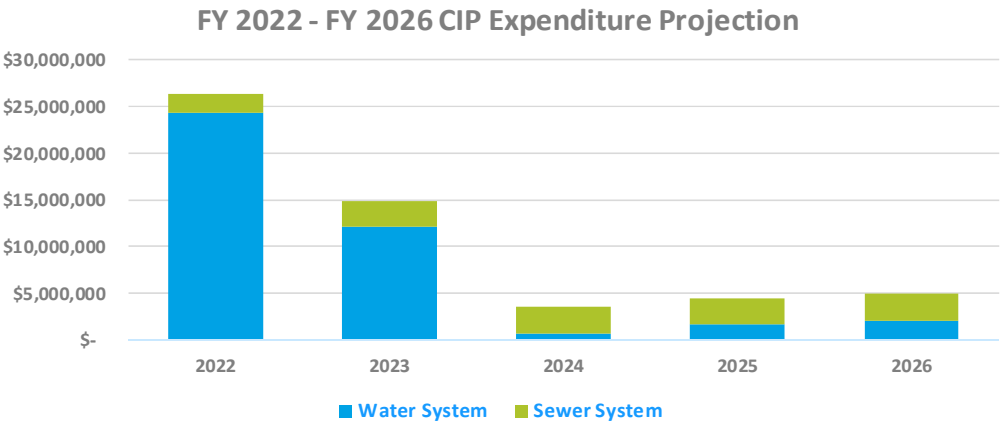
Six-year capital expenditure:
\$54.1 Million

- \$40.6 Million (Water)
- \$13.5 Million (Sewer)

Five-year aggregate **annual** debt increase: 4.1 times



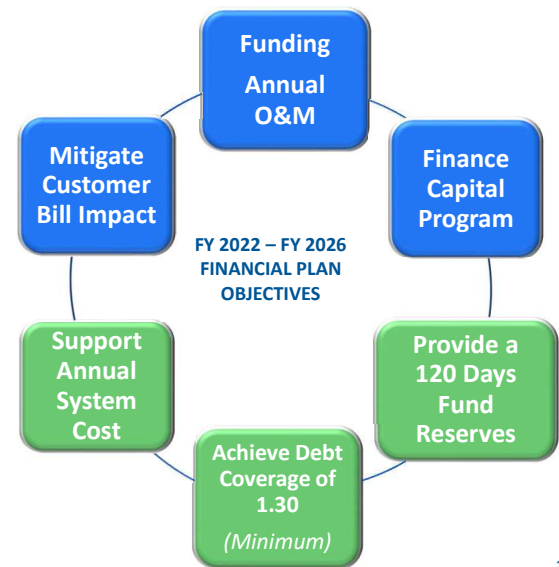
Leverage fund balance to enhance cash financing and mitigate debt service volatility



Financial Plan: Achieve Key Performance Metrics

Line	Description	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
1	Water System	6.0%	7.0%	7.0%	7.0%	5.0%
2	Sewer System	9.0%	8.0%	7.0%	7.0%	5.0%
3	Combined System	7.6%	7.5%	7.0%	7.0%	5.0%

- Financial plan must consider and balance multiple objectives
- Meet annual operating and capital requirements
- Sustain the 120-Day O&M annual reserve
- Meet Debt Service Coverage of 1.30
- Pragmatic balancing of operating needs, capital financing, debt coverage, fund balance, and annual revenue adjustments



Financial Plan under Existing Rates (Combined System)

Line	Description	2022	2023	2024	2025	2026
1	Water Service - Existing Rates	\$ 16,224,660	\$ 16,346,345	\$ 16,468,943	\$ 16,592,460	\$ 16,716,903
2	Wastewater Service - Existing Rates	18,689,995	18,830,170	18,971,396	19,113,682	19,257,034
3	Total Service Revenue - Existing Rates	\$ 34,914,655	\$ 35,176,515	\$ 35,440,339	\$ 35,706,142	\$ 35,973,938
	Additional Revenue Required					
	<u>Fiscal Year</u>	<u>% Increase</u>				
4	2022	0.0%	-	-	-	-
5	2023	0.0%	-	-	-	-
6	2024	0.0%	-	-	-	-
7	2025	0.0%	-	-	-	-
8	2026	0.0%	-	-	-	-
9	Total Additional Revenue Required	\$ -	\$ -	\$ -	\$ -	\$ -
10	Other Revenue	\$ 420,931	\$ 425,140	\$ 429,391	\$ 433,685	\$ 438,022
11	Total Revenues	\$ 35,335,586	\$ 35,601,655	\$ 35,869,730	\$ 36,139,827	\$ 36,411,960
12	Operating Expense	\$ 31,379,344	\$ 32,708,946	\$ 34,097,714	\$ 35,548,384	\$ 37,063,819
13	Net Revenues after Operations	\$ 3,956,241	\$ 2,892,710	\$ 1,772,016	\$ 591,443	\$ (651,859)
14	Total Debt Service	\$ 619,804	\$ 619,222	\$ 877,566	\$ 2,583,299	\$ 2,583,298
15	Transfer to General Fund	\$ 3,244,438	\$ 3,341,771	\$ 3,442,024	\$ 3,545,285	\$ 3,651,644
16	Transfer to Pension Fund	\$ 213,932	\$ 213,932	\$ 213,932	\$ 213,932	\$ 213,932
17	Reserve for Employee Benefits	\$ 694,453	\$ 715,286	\$ 736,745	\$ 758,847	\$ 781,613
18	Cash Funded Capital Project	\$ 27,751	\$ 1,320,000	\$ 1,120,000	\$ 920,000	\$ 1,500,000
19	Annual Operating Balance	\$ (844,137)	\$ (3,317,502)	\$ (4,618,251)	\$ (7,429,921)	\$ (9,382,346)
20	Debt Service Coverage Ratio	6.38	4.67	2.02	0.23	(0.25)
21	Debt Service Coverage Ratio Target	1.30	1.30	1.30	1.30	1.30

➤ Existing rates and charges will not produce sufficient revenues to meet financial obligations

➤ Financial metrics will not be achieved

Disclaimer:
The Financial Plan presented herein is based on stated assumptions and information provided by the City. Actual results may differ from the assumptions and information that the forecast is based on, so judgement must be utilized in making final rate recommendations.

Financial Plan under Proposed Rates (Combined System)

Line	Description	2022	2023	2024	2025	2026
1	Water Service - Existing Rates	\$ 16,224,660	\$ 16,346,345	\$ 16,468,943	\$ 16,592,460	\$ 16,716,903
2	Wastewater Service - Existing Rates	18,689,995	18,830,170	18,971,396	19,113,682	19,257,034
3	Total Service Revenue - Existing Rates	\$ 34,914,655	\$ 35,176,515	\$ 35,440,339	\$ 35,706,142	\$ 35,973,938
	Additional Revenue Required					
	<u>Fiscal Year</u>	<u>% Increase</u>				
4	2022	7.6%	2,655,579	2,675,496	2,695,562	2,715,779
5	2023	7.5%		2,854,890	2,876,301	2,897,874
6	2024	7.0%		2,870,854	2,892,386	2,914,078
7	2025	7.0%			3,094,853	3,118,064
8	2026	5.0%				2,383,092
9	Total Additional Revenue Required	\$ 2,655,579	\$ 5,530,386	\$ 8,442,718	\$ 11,600,891	\$ 14,070,989
10	Other Revenue	\$ 420,931	\$ 425,140	\$ 429,391	\$ 433,685	\$ 438,022
11	Total Revenues	\$ 37,991,165	\$ 41,132,041	\$ 44,312,448	\$ 47,740,718	\$ 50,482,949
12	Operating Expense	\$ 31,379,344	\$ 32,708,946	\$ 34,097,714	\$ 35,548,384	\$ 37,063,819
13	Net Revenues after Operations	\$ 6,611,821	\$ 8,423,095	\$ 10,214,734	\$ 12,192,333	\$ 13,419,130
14	Total Debt Service	\$ 619,804	\$ 619,222	\$ 877,566	\$ 2,583,299	\$ 2,583,298
15	Transfer to General Fund	\$ 3,244,438	\$ 3,341,771	\$ 3,442,024	\$ 3,545,285	\$ 3,651,644
16	Transfer to Pension Fund	\$ 213,932	\$ 213,932	\$ 213,932	\$ 213,932	\$ 213,932
17	Reserve for Employee Benefits	\$ 694,453	\$ 715,286	\$ 736,745	\$ 758,847	\$ 781,613
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20	Debt Service Coverage Ratio	✓ 10.67	✓ 13.60	✓ 11.64	✓ 4.72	✓ 5.19
21	Debt Service Coverage Ratio Target	1.30	1.30	1.30	1.30	1.30

➤ Proposed rate increases will produce sufficient revenues to meet financial obligations

➤ Financial metrics will be achieved

Disclaimer:
The Financial Plan presented herein is based on stated assumptions and information provided by the City. Actual results may differ from the assumptions and information that the forecast is based on, so judgement must be utilized in making final rate recommendations.

Customer Bill Impact

Water and Sewer Bill Impact (Residential)

		Water			Sewer			Total			
Usage	Existing	Proposed	Bill Diff	Existing	Proposed	Bill Diff	Existing	Proposed	Bill Diff	Bill Diff	
Gallons	\$	\$	%	\$	\$	%	\$	\$	%	\$	
0	\$ 13.01	\$ 13.79	6.00%	\$ 17.56	\$ 19.14	9.00%	\$ 30.57	\$ 32.93	7.72%	\$ 2.36	
1,000	\$ 14.98	\$ 15.88	6.00%	\$ 22.15	\$ 24.14	9.00%	\$ 37.13	\$ 40.02	7.79%	\$ 2.89	
2,000	\$ 16.95	\$ 17.97	6.00%	\$ 26.74	\$ 29.15	9.00%	\$ 43.69	\$ 47.11	7.83%	\$ 3.42	
3,000	\$ 18.92	\$ 20.05	6.00%	\$ 31.33	\$ 34.15	9.00%	\$ 50.25	\$ 54.20	7.87%	\$ 3.95	
4,000	\$ 20.89	\$ 22.14	6.00%	\$ 35.92	\$ 39.15	9.00%	\$ 56.81	\$ 61.30	7.90%	\$ 4.49	
5,000	\$ 22.86	\$ 24.23	6.00%	\$ 40.51	\$ 44.16	9.00%	\$ 63.37	\$ 68.39	7.92%	\$ 5.02	
6,000	\$ 25.62	\$ 27.16	6.00%	\$ 45.10	\$ 49.16	9.00%	\$ 70.72	\$ 76.32	7.91%	\$ 5.60	
7,000	\$ 28.38	\$ 30.08	6.00%	\$ 49.69	\$ 54.16	9.00%	\$ 78.07	\$ 84.24	7.91%	\$ 6.17	
Avg. Use 8,000	\$ 31.14	\$ 33.01	6.00%	\$ 54.28	\$ 59.17	9.00%	\$ 85.42	\$ 92.17	7.91%	\$ 6.75	
9,000	\$ 33.90	\$ 35.93	6.00%	\$ 58.87	\$ 64.17	9.00%	\$ 92.77	\$ 100.10	7.90%	\$ 7.33	
10,000	\$ 36.66	\$ 38.86	6.00%	\$ 63.46	\$ 69.17	9.00%	\$ 100.12	\$ 108.03	7.90%	\$ 7.91	
11,000	\$ 39.42	\$ 41.78	6.00%	\$ 68.05	\$ 74.17	9.00%	\$ 107.47	\$ 115.96	7.90%	\$ 8.49	
12,000	\$ 42.18	\$ 44.71	6.00%	\$ 72.64	\$ 79.18	9.00%	\$ 114.82	\$ 123.89	7.90%	\$ 9.07	
13,000	\$ 45.73	\$ 48.47	6.00%	\$ 77.23	\$ 84.18	9.00%	\$ 122.96	\$ 132.65	7.88%	\$ 9.69	
14,000	\$ 49.28	\$ 52.24	6.00%	\$ 81.82	\$ 89.18	9.00%	\$ 131.10	\$ 141.42	7.87%	\$ 10.32	
15,000	\$ 52.83	\$ 56.00	6.00%	\$ 86.41	\$ 94.19	9.00%	\$ 139.24	\$ 150.19	7.86%	\$ 10.95	
16,000	\$ 56.38	\$ 59.76	6.00%	\$ 91.00	\$ 99.19	9.00%	\$ 147.38	\$ 158.95	7.85%	\$ 11.57	
17,000	\$ 59.93	\$ 63.53	6.00%	\$ 95.59	\$ 104.19	9.00%	\$ 155.52	\$ 167.72	7.84%	\$ 12.20	
18,000	\$ 63.48	\$ 67.29	6.00%	\$ 100.18	\$ 109.20	9.00%	\$ 163.66	\$ 176.48	7.84%	\$ 12.82	
19,000	\$ 67.03	\$ 71.05	6.00%	\$ 104.77	\$ 114.20	9.00%	\$ 171.80	\$ 185.25	7.83%	\$ 13.45	
20,000	\$ 70.58	\$ 74.81	6.00%	\$ 109.36	\$ 119.20	9.00%	\$ 179.94	\$ 194.02	7.82%	\$ 14.08	

Summary and Consideration

In Summary, the Proposed Financial Plan Maintains and Continues to Develop North Miami's Water and Sewer Utilities' Path to:

- Funding 100% of Annual O&M Requirements for Service Delivery
- Funding 100% of Annual Capital Needs
- Achieving Financial Resilience
 - 120-Day Cash Balance
 - Minimum of 1.30 Debt Coverage ratio
- Supporting the City in producing "The Best Water in Florida"



Discussion