



**Jersey City Municipal Utilities Authority**  
**WATER AND WASTEWATER RATE STUDY**

**September 10, 2020**

Hoboken, New Jersey



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## **SECTION 1. PURPOSE AND OVERVIEW OF THE STUDY**

### **Background and Study Objectives**


The Jersey Authority Municipal Utilities Authority (“Authority”) supplies municipal water and wastewater service to the City of Jersey City and certain other bulk water customers.

In early 1998 the Jersey City Sewerage Authority was reorganized as the Jersey City Municipal Utilities Authority to operate both the sewer and water systems. As part of the agreement the JCMUA agreed to assume the existing operating agreement with Suez, assume the debt service then outstanding debt related to the water system which was previously issued by the city and agreed to pay the City an annual franchise fee in connection with its rights to derive revenue from water system rates.

### **Water System**

The water system is comprised of five major components:

- 1- Impoundment (Combined Storage Capacity 11.3 Billion Gallons)
  - i. Boonton Reservoir, primary water supply
  - ii. Split Rock Reservoir, emergency water supply
  - iii. Also has connections to water from:
    - a. New Jersey District Water Commission
    - b. Passaic Valley Water Commission
    - c. City of Newark
- 2- Water treatment facilities - Boonton treatment plant
  1. 80 MGD capacity
  2. 60 MGD peak use
  3. 50 MGD average usage
  4. 56.8 MGD safe yield
- 3- Water transmission lines
  - i. Gravity piping and tunnel
  - ii. 23 miles in length
- 4- Water distribution facilities
  - i. Troy street pump station
  - ii. Troy street reservoir tank
  - iii. In City piping infrastructure (9148 miles)
- 5- Land
  - i. 2500 acres of land in Morris County, NJ



The JCMUA has a long-term contract (expires April 30, 2027) with Suez to fully operate the water system and directly bill the customers of the water system.

JCMUA has agreed to a rate covenant in its water bond resolution that will be sufficient to:

- A- Water operating expenses in the fiscal year
- B- Debt service on the prior city water bonds
- C- City annual franchise fees
- D- Any other operating expenses
- E- Annual debt service on all JCMUA water bonds

## **Sewer System**

The JCMUA also directly manages and maintains the City's wastewater system. The sewer system consists of pumping stations on both the east and west side of the city and all sewage is pumped to the Passaic Valley Sewerage Authority's treatment plant in Newark, NJ. Under agreement the City also receives sewage from North Bergen at its west side treatment plant.

In addition to the two pump stations the system is comprised of:

- 1- Trunk line to Passaic Valley Sewerage Commission
- 2- Tide gates
- 3- Regulators
- 4- Netting facility intercepts
- 5- Outfall sewers
- 6- Collector sewers (230 miles; 5,000 catch basins)

Under law JCMUA must charge rates sufficient to pay:

- A- Operating and maintenance expenses
- B- Reserves
- C- Insurance
- D- Extensions and replacements
- E- Bond debt service
- F- Maintain required reserves

The Authority inspects and maintains 148 miles of water and sewer lines within City limits. The primary objectives in evaluating the Authority's rates included meeting broader rate design objectives, such as revenue sufficiency, providing adequate funding for rehabilitation and replacement of the Authority's aging water and sewer infrastructure.

## JCMUA Budget Summary

### Jersey City MUA Budgetary Summary

|                                    | 2019<br>Budget<br>SEWER | 2019<br>Budget<br>WATER | 2019<br>Budget<br>TOTAL |
|------------------------------------|-------------------------|-------------------------|-------------------------|
| <b>REVENUE:</b>                    |                         |                         |                         |
| USER FEES                          | \$ 54,675,000           | \$ 52,911,250           | \$ 107,586,250          |
| BULK WATER SALES                   |                         | \$ 9,836,733            | \$ 9,836,733            |
| SERVICE AGREEMENTS                 | \$ 1,028,054            | \$ -                    |                         |
| CONNECTION FEES                    | \$ 3,000,000            | \$ 1,000,000            | \$ 4,000,000            |
| FLAGGERS INCOME                    | \$ 2,244,000            | \$ -                    | \$ 2,244,000            |
| INTEREST ON DELINQUENT PAYMENTS    | \$ 390,000              | \$ 875,000              | \$ 1,265,000            |
| INTEREST ON INVESTMENTS            | \$ 78,206               | \$ 319,579              | \$ 397,785              |
| <b>TOTALS</b>                      | <b>\$ 61,415,260</b>    | <b>\$ 64,942,562</b>    | <b>\$ 126,357,822</b>   |
| <b>EXPENSES:</b>                   |                         |                         |                         |
| ADMINISTRATIVE                     | \$ 7,572,665            | \$ 2,893,627            | \$ 10,466,292           |
| SEWER OPERATIONS                   | \$ 17,067,068           |                         | \$ 17,067,068           |
| PVSC                               | \$ 21,202,113           |                         | \$ 21,202,113           |
| WATER OPERATIONS                   |                         | \$ 6,717,141            | \$ 6,717,141            |
| SUEZ OPERATING CONTRACT            |                         | \$ 13,845,000           | \$ 13,845,000           |
| CITY FRANCHISE FEE                 |                         | \$ 21,000,000           | \$ 21,000,000           |
| DEBT SERVICE                       | \$ 5,955,681            | \$ 12,143,361           | \$ 18,099,042           |
| RESERVE-PLANT RECON.\REPLACEMENT   | \$ 7,717,733            | \$ 5,420,000            | \$ 13,137,733           |
| OPERATING AND MAINTENANCE RESERVES | \$ 1,900,000            | \$ 2,923,433            | \$ 4,823,433            |
| <b>TOTALS</b>                      | <b>\$ 61,415,260</b>    | <b>\$ 64,942,562</b>    | <b>\$ 126,357,822</b>   |

#### A. PURPOSE OF THE STUDY

The Authority retained NWFG in 2019 to re-evaluate its water and sewer rates as a periodic follow up to the rate study it conducted in 2019, examination of funding options and timing for capital improvements and how much revenue is collected from fixed charges vs. volumetric rates are key components of this analysis. The rates developed in this study meet basic requirements and were developed based on industry standards affecting how water rates should be established. In developing proposed new water and sewer rates, NWFG and Authority Staff worked cooperatively in developing study results and rate alternatives. Based on input from the Authority Staff, NWFG recommends the Authority adopt the water and sewer rates summarized in this report.

## B. OVERVIEW OF THE STUDY

**Key Issues Addressed** – As part of the effort to meet the overall objectives summarized above, the specific elements addressed in this study included:

- **Overall Rate Design** – The impacts of rate increase on customer bills are significant concerns to the Authority and staff and, therefore were critical considerations in evaluating the overall rate design, including the amount of revenue collected from fixed charges vs. volumetric rates.
- **Financial Planning Alternatives** – The longer-range financial plans and capital improvement funding alternatives for the water and sewer utilities were closely examined and adjusted to best meet annual operating and longer-term capital improvement costs.


**Recommendations** – As a part of the long-range financial plan, NWFG evaluated projected revenues and expenditures and developed net revenue requirements. NWFG recommends the Authority adopt the proposed water and sewer service rates shown in the recommendations section.

## C. RATE STUDY METHODOLOGY

**Components of the Rate Study Methodology** – A comprehensive utility rate study, whether for water or sewer rates, typically encompasses three major components: (1) the utility's overall revenue requirements and financial plan, (2) the cost-of-service for each customer class, and (3) rate structure design. These three components were used in this study, and are summarized below:

- A- Revenue Requirements & Financial Plan
  - i. Compare current revenues and expenses
  - ii. Calculate total revenues needed from rates
  - iii. Project annual rate percentage increases needed
- B- Cost of Service Analysis
  - i. Allocate requirements to customer classes
- C- Rate Design
  - i. Determine rate structure by customer class
  - ii. Reflect JCMUA policies and rate objectives

These components reflect general industry standard cost-of-service methodologies and are intended to address general requirements for equity and fairness.



As a part of this rate study, NWFG projected revenues, expenditures, net revenue requirements, performed cost-of-service rate analyses, and evaluated rate design alternatives that resulted in the recommended new water and sewer rates. The following sections present an overview of the methodologies, assumptions, and data used along with the financial plans and rates developed during this study.

**Rate Design Criteria** – Several criteria are typically considered in setting rates and developing sound rate structures. The fundamentals of this process have been documented in a number of rate-setting manuals. The most commonly referenced industry standard is the AWWA Manual M1. The following is a simplified list of some of the broader attributes of a sound rate structure:

- Rates should be easy to understand from the customer’s perspective.
- Rates should be easy to administer from the utility’s perspective.
- Rates should promote the efficient allocation of the resource.
- Rates should be equitable and non-discriminating (that is, cost based).
- There should be continuity in the rate making philosophy over time.
- Other utility policies should also be considered (for example, encouraging conservation and economic development).
- Rates should provide month-to-month and year-to-year revenue stability.

The following section covers basic rate design criteria that NWFG and Authority staff considered as a part of their review of the rate structure alternatives.


**Rate Structure Issues** – One of the most fundamental components in rate design is the relationship between fixed and variable costs; many rate structures contain a fixed charge in combination with a volumetric charge. Fixed costs typically do not vary with the amount of water consumed; debt service and personnel are examples of a fixed cost. In contrast, variable costs tend to change with the quantity of water sold, such as chemicals and electricity.

## **Key Financial Assumptions**

Following are the key assumptions used in the water and sewer rate analyses:

- **Funding of Capital Projects** – Review of the planned five-year capital improvement projects plan (CIP) and develop a funding plan.
- **Reserve Targets** – Target reserves for both Water and Sewer Utilities operations and maintenance (O&M) and capital rehabilitation and replacement (R&R), reflect typical industry practices for utility reserve fund management:



- 
- Operating & Maintenance Reserve target levels – 90 days of O&M expenses.
  - Capital Rehabilitation and Replacement Reserve levels – approximately 3% of utility assets.
  - Emergency Reserve – 30 days of budget

- **Inflation and Growth Projection Assumptions**

- No annual customer growth.
- General costs (such as professional and contractual services, fuel, vehicle maintenance, electricity) are inflated between 2 percent annually.
- Operating expenses are inflated at a rate of 2 percent annually, and include chemicals purchased, energy, raw water purchases, etc.
- Labor costs are inflated at 2 percent annually and include retirement and benefits.
- No inflation is added to other budget items, such as fixed meter charges and investment income.

## SECTION 2. WATER RATE STUDY

### A. KEY WATER RATE STUDY OBJECTIVES

A few of the more specific objectives for the water rate study included:

- Evaluating volumetric rates in a manner that is incorporating the Authority's need to ensure adequate revenues to pay for the costs of the annual operation of the system as well as to fund required capital improvements over time and prudent reserve requirements.
- Finding an acceptable plan for generating sufficient revenue, without creating spikes in rates, to meet projected future funding requirements.

### B. WATER UTILITY REVENUE REQUIREMENTS

It is important for municipal utilities to maintain reasonable reserves to handle emergencies, fund working capital, maintain a good credit rating, and generally follow sound financial management practices.

Water revenues for 2019 as provided by Suez, who serves as the billing agent, were as follows:

#### WATER

| Bill            | Revenue | Consumption - | Revenues    | Facility        | Total           |
|-----------------|---------|---------------|-------------|-----------------|-----------------|
| D               | COM     | 0             | \$ -        | \$ 2,599        | \$ 2,599        |
|                 | RES     | 0             | \$ -        | \$ 6,851        | \$ 6,851        |
| <b>Subtotal</b> |         | <b>0</b>      | <b>\$ -</b> | <b>\$ 9,450</b> | <b>\$ 9,450</b> |

|                 |     |                  |                      |                     |                      |
|-----------------|-----|------------------|----------------------|---------------------|----------------------|
| M               | COM | 3,329,943        | \$ 17,297,061        | \$ 4,295,605        | \$ 21,592,666        |
|                 | IND | 4,883,449        | \$ 12,073,362        | \$ 763,356          | \$ 12,836,718        |
|                 | RES | 655,504          | \$ 3,651,468         | \$ 993,449          | \$ 4,644,917         |
| <b>Subtotal</b> |     | <b>8,868,896</b> | <b>\$ 33,021,891</b> | <b>\$ 6,052,410</b> | <b>\$ 39,074,301</b> |

|                 |     |                  |                      |                     |                      |
|-----------------|-----|------------------|----------------------|---------------------|----------------------|
| Q               | COM | 1,057,460        | \$ 5,884,289         | \$ 752,942          | \$ 6,637,231         |
|                 | IND | 19,943           | \$ 111,075           | \$ 36,753           | \$ 147,828           |
|                 | RES | 2,367,015        | \$ 13,168,520        | \$ 2,815,999        | \$ 15,984,519        |
| <b>Subtotal</b> |     | <b>3,444,419</b> | <b>\$ 19,163,884</b> | <b>\$ 3,605,694</b> | <b>\$ 22,769,577</b> |

|                        |  |                   |                      |                     |                      |
|------------------------|--|-------------------|----------------------|---------------------|----------------------|
| <b>Total for Water</b> |  | <b>12,313,315</b> | <b>\$ 52,185,775</b> | <b>\$ 9,667,554</b> | <b>\$ 61,853,329</b> |
|------------------------|--|-------------------|----------------------|---------------------|----------------------|

Rate increases are governed by the need to meet operating and capital costs, maintain adequate debt coverage, and maintain reserve funds. The current state of the Authority's water utility, regarding these objectives is as follows:

- **Meeting Net Revenue Requirements:** The Authority's water utility is currently running a positive fund balance in 2019, if no rate increases are implemented. For FY 2020 through 2024, the projected net revenue requirement will rise by more than \$10 million due primarily to increased debt service obligations as the result of the implementation of the over \$500 million capital program.
- **Building and Maintaining Reserve Funds:** The Authority should maintain sufficient reserves; this analysis assumes reserves will be gradually built over time with the intent of reaching recommended target reserve fund target balances.
- **Operating Reserve** is intended to promote financial viability in the event of any short-term fluctuation in revenues and/or expenditures. Fluctuations might be caused by weather patterns, the natural inflow and outflow of cash during billing cycles, natural variability in demand-based revenue streams (for example, variable charges), and – particularly in periods of economic distress – changes or trends in age of receivables. Typical industry practices are to maintain 90 days (or 25 percent) of the Utility's budgeted annual operating expenses.
- **Capital Rehabilitation and Replacement (R&R) Reserve** should typically be equal to a minimum of 3 percent of utility capital assets, which equates to a 33-year replacement cycle for capital assets. This target serves as a starting point for addressing long-term capital repair and replacement needs.
- **Rate Stabilization Fund** is designed to further promote financial stability when there are fluctuations in rate revenue. The target fund balance is typically set to 30 days of the Utility's budgeted annual operating expenses.

### Capital Improvement Plan Funding Scenarios

The following table summarizes the net revenue requirements for the next 5 years. Any annual surpluses are used to meet pay-as-you-go capital needs or to build up reserves, with the intent of meeting target reserve-fund balances at some point in the future and to provide liquidity when needed.

## Summary of Water Revenue Requirements

### Cost of Service

| Water Revenue Requirement    | 2018                 | Budget<br>2019       | Budget<br>2020       | 2021                 | 2022                 | 2023                 |
|------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| <b>Operating Expenses</b>    |                      |                      |                      |                      |                      |                      |
| Administrative               | \$ 1,847,383         | \$ 2,923,694         | \$ 2,923,694         | \$ 2,982,168         | \$ 3,041,811         | \$ 3,102,647         |
| Non Administrative           | \$ 2,150,471         | \$ 4,425,730         | \$ 5,900,959         | \$ 6,018,978         | \$ 6,139,358         | \$ 6,262,145         |
| Franchise Fee                | \$ 21,000,000        | \$ 21,000,000        | \$ 21,000,000        | \$ 21,000,000        | \$ 21,000,000        | \$ 21,000,000        |
| Operating Contract - Suez    | \$ 15,594,944        | \$ 12,863,165        | \$ 13,120,428        | \$ 13,382,837        | \$ 13,650,493        | \$ 13,923,503        |
| Sewer Treatment RVSA         | \$ 3,143,943         | \$ 4,146,679         | \$ 4,229,613         | \$ 4,314,205         | \$ 4,400,489         | \$ 4,488,499         |
| <b>Debt Service</b>          |                      |                      |                      |                      |                      |                      |
| Existing                     | \$ 13,493,271        | \$ 12,143,361        | \$ 12,477,306        | \$ 11,739,516        | \$ 10,302,848        | \$ 9,080,098         |
| New                          | \$ -                 | \$ -                 | \$ 428,400           | \$ 1,713,600         | \$ 2,801,100         | \$ 4,100,100         |
| Reserves                     | \$ 8,343,433         | \$ 7,470,000         | \$ 7,470,000         | \$ 8,000,000         | \$ 8,500,000         | \$ 8,500,000         |
| Capital Expense              |                      |                      | \$ 250,000           | \$ 3,000,000         | \$ 4,000,000         | \$ 4,000,000         |
| <b>Total Cost of Service</b> | <b>\$ 65,573,445</b> | <b>\$ 64,972,629</b> | <b>\$ 67,800,400</b> | <b>\$ 72,151,304</b> | <b>\$ 73,836,099</b> | <b>\$ 74,456,992</b> |

### Meeting Net Revenue Requirement

| No Rate Increase Scenario                        | 2018                  | Budget<br>2019       | Budget<br>2020        | 2021                  | 2022                  | 2023                  |
|--|-----------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| <b>Revenues</b>                                  |                       |                      |                       |                       |                       |                       |
| Rate Revenue                                     | \$ 35,554,152         | \$ 43,243,696        | \$ 43,243,696         | \$ 43,243,696         | \$ 43,243,696         | \$ 43,243,696         |
| Facility Fee                                     | \$ 9,667,554          | \$ 9,667,554         | \$ 9,667,554          | \$ 9,667,554          | \$ 9,667,554          | \$ 9,667,554          |
| Connection Fees                                  | \$ 1,134,125          | \$ 1,000,000         | \$ 1,000,000          | \$ 1,000,000          | \$ 1,000,000          | \$ 1,000,000          |
| Meter Fines                                      | \$ 219,753            | \$ 1,000,000         | \$ 1,000,000          | \$ 1,000,000          | \$ 1,000,000          | \$ 1,000,000          |
| Delinquent Payment Interest                      | \$ 746,882            | \$ 875,000           | \$ 875,000            | \$ 875,000            | \$ 875,000            | \$ 875,000            |
| Interest Earnings                                | \$ 295,203            | \$ 329,579           | \$ 329,579            | \$ 400,000            | \$ 400,000            | \$ 400,000            |
| Bulk Water                                       | \$ 9,225,535          | \$ 9,826,733         | \$ 9,826,733          | \$ 9,900,000          | \$ 9,900,000          | \$ 9,900,000          |
| <b>Total Revenues</b>                            | <b>\$ 56,843,204</b>  | <b>\$ 65,942,562</b> | <b>\$ 65,942,562</b>  | <b>\$ 66,086,250</b>  | <b>\$ 66,086,250</b>  | <b>\$ 66,086,250</b>  |
| <b>Water Revenue Requirement</b>                 | <b>\$ 65,573,445</b>  | <b>\$ 64,972,629</b> | <b>\$ 67,800,400</b>  | <b>\$ 72,151,304</b>  | <b>\$ 73,836,099</b>  | <b>\$ 74,456,992</b>  |
| <b>Surplus (Deficiency) before rate increase</b> | <b>\$ (8,730,241)</b> | <b>\$ 969,933</b>    | <b>\$ (1,857,838)</b> | <b>\$ (6,065,054)</b> | <b>\$ (7,749,849)</b> | <b>\$ (8,370,742)</b> |

### Self-Supporting Rate Increase Scenario

| Rate Increase Scenario                          | 2018                  | Budget<br>2019       | Budget<br>2020       | 2021                 | 2022                 | 2023                 |
|---|-----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| <b>Annual Rate Increase</b>                     |                       |                      | 9.00%                | 0.00%                | 0.00%                | 0.00%                |
| <b>Rate Adjustment Date</b>                     |                       |                      | 1-Oct                | January 1            | January 1            | January 1            |
| <b>Revenues</b>                                 |                       |                      |                      |                      |                      |                      |
| Rate Revenue                                    | \$ 35,554,152         | \$ 43,243,696        | \$ 44,216,679        | \$ 47,135,629        | \$ 47,135,629        | \$ 47,135,629        |
| Facility Fee                                    | \$ 9,667,554          | \$ 9,667,554         | \$ 9,885,074         | \$ 10,537,634        | \$ 10,537,634        | \$ 10,537,634        |
| Connection Fees                                 | \$ 1,134,125          | \$ 1,000,000         | \$ 1,022,500         | \$ 1,090,000         | \$ 1,090,000         | \$ 1,090,000         |
| Meter Fines                                     | \$ 219,753            | \$ 1,000,000         | \$ 1,000,000         | \$ 1,000,000         | \$ 1,000,000         | \$ 1,000,000         |
| Delinquent Payment Interest                     | \$ 746,882            | \$ 875,000           | \$ 875,000           | \$ 875,000           | \$ 875,000           | \$ 875,000           |
| Interest Earnings                               | \$ 295,203            | \$ 329,579           | \$ 329,579           | \$ 329,579           | \$ 329,579           | \$ 329,579           |
| Bulk Water                                      | \$ 9,225,535          | \$ 9,826,733         | \$ 10,047,834        | \$ 10,711,139        | \$ 10,711,139        | \$ 10,711,139        |
| <b>Total Revenues</b>                           | <b>\$ 56,843,204</b>  | <b>\$ 65,942,562</b> | <b>\$ 67,376,667</b> | <b>\$ 71,678,980</b> | <b>\$ 71,678,980</b> | <b>\$ 71,678,980</b> |
| <b>Capitalized Interest</b>                     |                       |                      | \$ 428,400           | \$ 1,713,600         | \$ 2,801,100         | \$ 2,986,500         |
| <b>Water Revenue Requirement</b>                | <b>\$ 65,573,445</b>  | <b>\$ 64,972,629</b> | <b>\$ 67,800,400</b> | <b>\$ 72,151,304</b> | <b>\$ 73,836,099</b> | <b>\$ 74,456,992</b> |
| <b>Surplus (Deficiency) after rate increase</b> | <b>\$ (8,730,241)</b> | <b>\$ 969,933</b>    | <b>\$ 4,667</b>      | <b>\$ 1,241,277</b>  | <b>\$ 643,981</b>    | <b>\$ 208,488</b>    |

### c. COST-OF-SERVICE ANALYSIS

The second component of a water rate study is the cost-of-service analysis whereby annual revenue requirements are fairly and equitably allocated to customer classes.

A key component of any multi-user water system rate study is the development of the cost of the water commodity being delivered to assure a fair allocation of price on a per gallon of consumption basis.

In considering the commodity cost for the JCMUA and its customers the cost is determined by allocating both the operating cost and the capital cost for all expenses/investment related to the:

- 1- Impoundment
  - i. Boonton Reservoir, primary water supply
  - ii. Split Rock Reservoir, emergency water supply
- 2- Water treatment facilities
  - a. Boonton treatment plant
    - i. 80 MGD capacity
    - ii. 60 MGD peak use
    - iii. 45 MGD average usage
    - iv. 56.8 MGD safe yield
- 3- Water transmission lines
  - a. Gravity piping and tunnel
  - b. 23 miles in length

Based upon information provided by JCMUA and Suez the following represent the 2017 water commodity costs that should be allocated to water users:

| Water Commodity Cost                   | 2019<br>Gross Water<br>Costs | 2019<br>Water<br>Commodity<br>Cost | 2019<br>Water Distribution<br>Cost |
|--|------------------------------|------------------------------------|------------------------------------|
| Direct Suez Operating Costs            | \$ 14,077,237                | \$ 5,630,895                       | \$ 8,446,342                       |
| JCMUA Costs excluding debt service     | \$ 27,484,694                | \$ 10,993,878                      | \$ 16,490,816                      |
| Debt Service                           | \$ 12,477,306                | \$ 4,990,922                       | \$ 7,486,384                       |
| Gas and Electric Cost                  | \$ 575,000                   | \$ 575,000                         | \$ -                               |
| Sludge Removal Cost                    | \$ 350,000                   | \$ 350,000                         | \$ -                               |
| Real Estate Taxes                      | \$ 900,000                   | \$ 900,000                         | \$ -                               |
| Rockaway Valley Sewer Authority        | \$ 3,270,000                 | \$ 3,270,000                       | \$ -                               |
| Permits                                | \$ 20,000                    | \$ 20,000                          | \$ -                               |
| Annual Capital Costs                   | \$ 8,648,000                 | \$ 3,459,200                       | \$ 5,188,800                       |
| Total 2019 Water Commodity Costs       | \$ 67,802,237                | \$ 30,189,895                      | \$ 37,612,342                      |
| 1000 Gallons of Water Transmitted 2019 |                              | 12,313                             | 7,780                              |
| Water Commodity Cost per MG            |                              | \$ 2,451.81                        | \$ 2,451.81                        |
| Bulk Water Sales MG                    |                              | 4,533                              | \$ 7,780                           |
| Bulk Water Revenue                     |                              | \$ 10,325,021                      |                                    |
| In City Water Commodity Cost           |                              |                                    | \$ 19,075,080                      |
| In City Distribution Cost              |                              |                                    | \$ 37,612,342                      |
| Total in City Water Cost               |                              |                                    | \$ 56,687,422                      |
| Jersey City Cost per MG                |                              |                                    | \$ 7,286.30                        |

JCMUA currently charges only volumetric fees to its bulk water customers while charging a combination of volumetric fees and a fixed meter charge to its retail customers within the boundaries of the City of Jersey City.

Based upon the water commodity charge analysis shown above the cost of treated water transmitted to bulk customers would be \$2,451.81 per gallon. The current rate for bulk water is the same at \$2,248 per gallons.

## IMPACT OF CAPITAL IMPROVEMENT PROGRAM

The JCMUA water utility system is over 100 years old and in constant need of major capital improvement and repairs. JCMUA has recently updated its Capital Improvement program which projects expenditures in excess of \$521,000,000 in total needs over time, of which \$170,000,000 is over the five-year horizon as follows:

| Project                                       | Total Cost     | 2020          | 2021          | 2022          | 2023          | 2024         | 2025         |
|---|----------------|---------------|---------------|---------------|---------------|--------------|--------------|
| 1 Interconnection Upgrade                     | \$ 2,000,000   |               |               |               |               | \$ 1,000,000 | \$ 1,000,000 |
| 2 Boonton Plant Electric                      | \$ 10,000,000  |               | \$ 2,000,000  | \$ 4,000,000  | \$ 4,000,000  |              |              |
| 3 ASCO Valve Replacement                      | \$ 1,250,000   |               | \$ 1,250,000  |               |               |              |              |
| 4 Brookdale Gate House                        | \$ 1,750,000   |               |               |               |               | \$ 1,750,000 |              |
| 5 Boonton Dam Security                        | \$ 1,000,000   |               | \$ 1,000,000  |               |               |              |              |
| 6 Boonton Dam Bascule Gate                    | \$ 3,500,000   |               |               | \$ 3,500,000  |               |              |              |
| 7 Boonton Reservoir Survey                    | \$ 220,000     | \$ 220,000    |               |               |               |              |              |
| 8 Tonnelle Ave Main                           | \$ 5,000,000   |               | \$ 5,000,000  |               |               |              |              |
| 9 18th St. Main cut & cap                     | \$ 450,000     | \$ 450,000    |               |               |               |              |              |
| 10 Aqueduct air valve vaults                  | \$ 750,000     | \$ 750,000    |               |               |               |              |              |
| 11 Phase 1 & 2                                | \$ 22,000,000  | \$ 22,000,000 |               |               |               |              |              |
| 12 Intake Tower Sluice Gate                   | \$ 1,000,000   |               | \$ 1,000,000  |               |               |              |              |
| 13 Large Valve Replace Phase 2                | \$ 2,000,000   |               | \$ 2,000,000  |               |               |              |              |
| 14 Loop Study/Chemical Feed                   | \$ 1,500,000   | \$ 500,000    | \$ 1,000,000  |               |               |              |              |
| 15 Lead Service Replacement Program           | \$ 2,500,000   |               | \$ 500,000    | \$ 500,000    | \$ 500,000    | \$ 500,000   | \$ 500,000   |
| 16 New pressure reducing valve                | \$ 1,000,000   |               | \$ 1,000,000  |               |               |              |              |
| 17 SCADA upgrade                              | \$ 2,300,000   |               | \$ 1,000,000  | \$ 1,300,000  |               |              |              |
| 18 Rt. 7 River Crossing                       | \$ 15,000,000  |               |               | \$ 15,000,000 |               |              |              |
| 19 72-inch Steel Aqueduct Assessment          | \$ 3,000,000   |               | \$ 500,000    | \$ 2,500,000  |               |              |              |
| 20 Boonton Plant Upgrades                     | \$ 10,000,000  |               | \$ 2,500,000  | \$ 2,500,000  | \$ 2,500,000  | \$ 2,500,000 |              |
| 21 Nutley Emergency Interconnections          | \$ 1,500,000   |               | \$ 1,500,000  |               |               |              |              |
| 22 Downtown Water Project                     | \$ 5,000,000   |               |               |               |               |              | \$ 5,000,000 |
| 23 Large Cleaning & Lining                    | \$ 6,000,000   | \$ 1,000,000  | \$ 1,000,000  | \$ 1,000,000  | \$ 1,000,000  | \$ 1,000,000 | \$ 1,000,000 |
| 24 Rehab/Replace Service Mains                | \$ 40,000,000  | \$ 10,000,000 | \$ 10,000,000 | \$ 10,000,000 | \$ 10,000,000 |              |              |
| 25 Belleville Tpk. 36" Main                   | \$ 1,000,000   | \$ 1,000,000  |               |               |               |              |              |
| 26 Newark Ave Extension                       | \$ 1,500,000   | \$ 500,000    | \$ 1,000,000  |               |               |              |              |
| 27 New Route 1&9 Aqueduct Lining              | \$ 1,500,000   |               | \$ 1,500,000  |               |               |              |              |
| 28 Liberty Park Meter Facilities              | \$ 1,500,000   |               | \$ 500,000    | \$ 1,000,000  |               |              |              |
| 29 BOE - School Plumbing Fixture Replacements | \$ 12,000,000  | \$ 2,000,000  | \$ 2,000,000  | \$ 2,000,000  | \$ 2,000,000  | \$ 2,000,000 | \$ 2,000,000 |
| 30 East Burma Road Replacements               | \$ 3,800,000   | \$ 3,800,000  |               |               |               |              |              |
| 31 Phase 3&4 Water                            | \$ 4,900,000   | \$ 4,900,000  |               |               |               |              |              |
| 32 AMI-Remote Meters                          | \$ 10,000,000  | \$ 10,000,000 |               |               |               |              |              |
|   | \$ 174,920,000 | \$ 57,120,000 | \$ 36,250,000 | \$ 43,300,000 | \$ 20,000,000 | \$ 8,750,000 | \$ 9,500,000 |

The combination of the debt issuance would result in new annual debt service for the water utility system as follows:

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**Water System New Debt Service**

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|                           | <b>2020</b> | <b>2021</b>  | <b>2022</b>  | <b>2023</b>  | <b>2024</b>  | <b>2025</b>  |
|---------------------------|-------------|--------------|--------------|--------------|--------------|--------------|
| <b>Year 1 Projects</b>    | \$ 428,400  | \$ 1,713,600 | \$ 1,713,600 | \$ 1,713,600 | \$ 2,914,220 | \$ 2,914,220 |
| <b>Year 2 Projects</b>    |             |              | \$ 1,087,500 | \$ 1,087,500 | \$ 1,087,500 | \$ 2,436,569 |
| <b>Year 3 Projects</b>    |             |              |              | \$ 1,299,000 | \$ 1,299,000 | \$ 1,299,000 |
| <b>Year 4 Projects</b>    |             |              |              |              | \$ 600,000   | \$ 600,000   |
| <b>Year 5 Projects</b>    |             |              |              |              |              | \$ 262,500   |
| <b>Total Debt Service</b> | \$ 428,400  | \$ 1,713,600 | \$ 2,801,100 | \$ 4,100,100 | \$ 5,900,720 | \$ 7,512,289 |





## **BULK WATER RATE ANALYSIS**

Based upon our analysis of Water Commodity Cost the 2007 Wholesale Rate Study (See Appendix A) of \$2,248 per million gallons is lower than the commodity cost of water delivered to bulk water customers and needs to be increased to \$2,452 to direct cover costs of service.



## **WATER CONNECTION FEE ANALYSIS**

Reserved for future analysis

## SECTION 3. SEWER RATE STUDY

### A. KEY SEWER RATE STUDY OBJECTIVES

The specific objectives addressed in the sewer rate analysis included:

- Evaluating alternatives for generating the additional revenue needed to meet projected revenue requirements, which are primarily driven by the need to fund capital improvement costs.
- Increasing the volumetric-based charge.

As with the water rates, all rate structure alternatives reflect industry standards and cost-of-service principles.

The updated rates considered the net revenue requirements, number of customer accounts, number of equivalent dwelling units (EDUs), and water consumption.

JCMUA has determined to charge the same sewer rate to each class of customer as has been its historic practice.

**Rate Design:** The revenue collected from residential, commercial and industrial customers are based on their water meter readings. Billing based on water consumption provides a reasonable estimate of indoor water use that enters the sewer collection system and is ultimately processed at the wastewater treatment plant. The current rate for sewer is \$5.78 per ccf of water billed.

2019 Sewer Revenues as reported by Suez, who serves as billing agent, are as follows:

#### SEWER

| Bill Frequency         | Revenue Class | Consumption - MGL | Revenues               | Facility Charges        | Revenues and Facility  | Tax and Surcharges | Total                  |
|------------------------|---------------|-------------------|------------------------|-------------------------|------------------------|--------------------|------------------------|
| M                      | COM           | 3,547,053         | \$22,420,289.61        | (\$1,519,571.18)        | \$20,900,718.43        | \$0.00             | \$20,900,718.43        |
|                        | IND           | 307,661           | \$2,284,640.99         | (\$349,844.16)          | \$1,934,796.83         | \$0.00             | \$1,934,796.83         |
|                        | RES           | 616,549           | \$4,647,771.72         | (\$115,814.92)          | \$4,531,956.80         | \$0.00             | \$4,531,956.80         |
| <b>Subtotal</b>        |               | <b>4,471,262</b>  | <b>\$29,352,702.32</b> | <b>(\$1,985,230.26)</b> | <b>\$27,367,472.06</b> | <b>\$0.00</b>      | <b>\$27,367,472.06</b> |
| Q                      | COM           | 1,059,791         | \$7,990,989.17         | (\$490.68)              | \$7,990,498.49         | \$0.00             | \$7,990,498.49         |
|                        | IND           | 17,525            | \$132,139.56           | (\$28.20)               | \$132,111.36           | \$0.00             | \$132,111.36           |
|                        | RES           | 2,377,525         | \$17,926,723.71        | (\$1,009.56)            | \$17,925,714.15        | \$0.00             | \$17,925,714.15        |
| <b>Subtotal</b>        |               | <b>3,454,841</b>  | <b>\$26,049,852.44</b> | <b>(\$1,528.44)</b>     | <b>\$26,048,324.00</b> | <b>\$0.00</b>      | <b>\$26,048,324.00</b> |
| <b>Total for Sewer</b> |               | <b>7,926,104</b>  | <b>\$55,402,554.76</b> | <b>(\$1,986,758.70)</b> | <b>\$53,415,796.06</b> | <b>\$0.00</b>      | <b>\$53,415,796.06</b> |

## B. SEWER UTILITY REVENUE REQUIREMENTS

It is important for municipal utilities to maintain reasonable reserves to handle emergencies, fund working capital, maintain a good credit rating, and generally follow sound financial management practices.

Rate increases are governed by the need to meet operating and capital costs, maintain and build reserve funds.

- **Meeting Net Revenue Requirements:** The Authority's sewer utility is projecting running a small surplus in FY 2019. However, beginning in FY 2020 will begin to experience deficits due to increases in debt service related to the 5-year capital improvement program and operating costs, if no rate increases are implemented.

Recommended annual rate increases are needed to fund all O&M and the expected Capital Improvement Program funding scenario. If rate increases aren't implemented, the sewer utility will not be able meet its debt service obligations for its outstanding debt, and will begin running annual deficits, which will require even larger rate adjustments in later years.

### **Building and Maintaining Reserve Funds**

NWFG recommends that the Authority adopt and maintain the following reserve fund targets:

- ✓ **Operating Reserve** is intended to promote financial viability in the event of any short-term fluctuation in revenues and/or expenditures. This reserve should be set to equal 90 days of the Utility's budgeted annual operating expenses.\
- ✓ **Capital Rehabilitation and Replacement Reserve** equal to a minimum of 3% percent of utility capital assets. This reserve provides for capital repair and replacement needs.
- ✓ **Rate Stabilization Fund** is designed to further promote financial stability when there are fluctuations in rate revenue. The target fund balance is set to 30 days of the Utility's budgeted annual operating expenses.

## Summary of Sewer Revenue Requirements

### Cost of Service

| Sewer Revenue Requirement    | 2018                 | 2019                 | 2020                 | 2021                 | 2022                 | 2023                 | 2024                 |
|------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| <b>Operating Expenses</b>    |                      |                      |                      |                      |                      |                      |                      |
| Administrative               | \$ 2,889,828         | \$ 3,240,927         | \$ 3,424,925         | \$ 3,493,424         | \$ 3,563,292         | \$ 3,634,558         | \$ 3,707,249         |
| Non Administrative           | \$ 7,406,663         | \$ 12,342,758        | \$ 12,667,000        | \$ 12,920,340        | \$ 13,178,747        | \$ 13,442,322        | \$ 13,711,168        |
| Sewer Treatment PVSC         | \$ 20,969,247        | \$ 21,202,113        | \$ 21,626,156        | \$ 22,058,679        | \$ 22,499,852        | \$ 22,949,849        | \$ 23,408,846        |
| Debt Service                 |                      |                      |                      |                      |                      |                      |                      |
| Existing                     | \$ 12,896,139        | \$ 5,955,681         | \$ 6,440,575         | \$ 7,545,336         | \$ 6,861,539         | \$ 5,366,761         | \$ 5,366,761         |
| New                          |                      |                      |                      | \$ 3,243,000         | \$ 6,438,000         | \$ 6,687,000         | \$ 13,117,182        |
| Reserves                     |                      | \$ 7,717,733         | \$ 9,343,000         | \$ 9,500,000         | \$ 9,500,000         | \$ 9,500,000         | \$ 9,500,000         |
| Capital Expenses             | \$ 2,036,637         | \$ 10,571,300        | \$ 10,483,344        | \$ 10,693,011        | \$ 10,906,872        | \$ 11,125,009        | \$ 6,000,000         |
| <b>Total Cost of Service</b> | <b>\$ 46,198,514</b> | <b>\$ 61,030,512</b> | <b>\$ 63,985,000</b> | <b>\$ 69,453,790</b> | <b>\$ 72,948,302</b> | <b>\$ 72,705,499</b> | <b>\$ 74,811,206</b> |

### Net Revenue Need

| No Rate Increase Scenario                        | 2018                 | 2019                 | 2020                  | 2021                  | 2022                   | 2023                   | 2024                   |
|--|----------------------|----------------------|-----------------------|-----------------------|------------------------|------------------------|------------------------|
| <b>Revenues</b>                                  |                      |                      |                       |                       |                        |                        |                        |
| Rate Revenue                                     | \$ 54,638,405        | \$ 54,675,000        | \$ 54,675,000         | \$ 54,675,000         | \$ 54,675,000          | \$ 54,675,000          | \$ 54,675,000          |
| North Bergen                                     | \$ 517,381           | \$ 685,993           | \$ 685,993            | \$ 685,993            | \$ 685,993             | \$ 685,993             | \$ 685,993             |
| Service Agreements                               | \$ 71,000            | \$ 2,342,061         | \$ 2,342,061          | \$ 2,342,061          | \$ 2,342,061           | \$ 2,342,061           | \$ 2,342,061           |
| Non Budget Revenue                               | \$ 393,361           | \$ -                 | \$ -                  | \$ -                  | \$ -                   | \$ -                   | \$ -                   |
| Connection Fees                                  | \$ 5,794,480         | \$ 7,860,359         | \$ 2,000,000          | \$ 2,000,000          | \$ 2,000,000           | \$ 2,000,000           | \$ 2,000,000           |
| Flagger Service Income                           | \$ 341,843           | \$ 2,569,216         | \$ 2,200,000          | \$ 2,200,000          | \$ 2,200,000           | \$ 2,200,000           | \$ 2,200,000           |
| Delinquent Payment Interest                      | \$ 325,887           | \$ 452,479           | \$ 400,000            | \$ 400,000            | \$ 400,000             | \$ 400,000             | \$ 400,000             |
| Interest Earnings                                | \$ 67,904            | \$ 91,518            | \$ 85,000             | \$ 85,000             | \$ 85,000              | \$ 85,000              | \$ 85,000              |
| <b>Total Revenues</b>                            | <b>\$ 62,150,261</b> | <b>\$ 68,676,626</b> | <b>\$ 62,388,054</b>  | <b>\$ 62,388,054</b>  | <b>\$ 62,388,054</b>   | <b>\$ 62,388,054</b>   | <b>\$ 62,388,054</b>   |
| <b>Sewer Revenue Requirement</b>                 | <b>\$ 46,198,514</b> | <b>\$ 61,030,512</b> | <b>\$ 63,985,000</b>  | <b>\$ 69,453,790</b>  | <b>\$ 72,948,302</b>   | <b>\$ 72,705,499</b>   | <b>\$ 74,811,206</b>   |
| <b>Surplus (Deficiency) before rate increase</b> | <b>\$ 15,951,747</b> | <b>\$ 7,646,114</b>  | <b>\$ (1,596,946)</b> | <b>\$ (7,065,736)</b> | <b>\$ (10,560,248)</b> | <b>\$ (10,317,445)</b> | <b>\$ (12,423,153)</b> |

### Self-Supporting Rate Increase Scenario

| Rate Increase Scenario                           | 2018                 | Budget 2019          | Budget 2020          | 2021                 | 2022                 | 2023                 |
|--|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| <b>Annual Rate Increase</b>                      |                      |                      | 9.00%                | 0.00%                | 0.00%                | 0.00%                |
| <b>Rate Adjustment Date</b>                      |                      |                      | October 1            | January 1            | January 1            | January 1            |
| <b>Revenues</b>                                  |                      |                      |                      |                      |                      |                      |
| Rate Revenue                                     | \$ 54,638,405        | \$ 54,675,000        | \$ 56,339,750        | \$ 59,595,750        | \$ 59,595,750        | \$ 59,595,750        |
| North Bergen                                     | \$ 517,381           | \$ 685,993           | \$ 685,993           | \$ 685,993           | \$ 685,993           | \$ 685,993           |
| Service Agreements                               | \$ 71,000            | \$ 2,342,061         | \$ 3,200,000         | \$ 2,342,061         | \$ 2,342,061         | \$ 2,342,061         |
| Non Budget Revenue                               | \$ 393,361           | \$ -                 | \$ -                 | \$ -                 | \$ -                 | \$ -                 |
| Connection Fees                                  | \$ 5,794,480         | \$ 3,000,000         | \$ 3,000,000         | \$ 2,000,000         | \$ 2,000,000         | \$ 2,000,000         |
| Flagger Service Income                           | \$ 341,843           | \$ 2,244,000         | \$ 2,200,000         | \$ 2,200,000         | \$ 2,200,000         | \$ 2,200,000         |
| Delinquent Payment Interest                      | \$ 325,887           | \$ 390,000           | \$ 400,000           | \$ 400,000           | \$ 400,000           | \$ 400,000           |
| Interest Earnings                                | \$ 67,904            | \$ 78,206            | \$ 85,000            | \$ 85,000            | \$ 85,000            | \$ 85,000            |
| <b>Total Revenues</b>                            | <b>\$ 62,150,261</b> | <b>\$ 63,415,260</b> | <b>\$ 65,910,743</b> | <b>\$ 67,308,804</b> | <b>\$ 67,308,804</b> | <b>\$ 67,308,804</b> |
| <b>Capitalized Interest</b>                      |                      |                      |                      | \$ 3,243,000         | \$ 6,438,000         | \$ 6,687,000         |
| <b>Sewer Revenue Requirement</b>                 | <b>\$ 46,198,514</b> | <b>\$ 61,030,512</b> | <b>\$ 63,985,000</b> | <b>\$ 69,453,790</b> | <b>\$ 72,948,302</b> | <b>\$ 72,705,499</b> |
| <b>Surplus (Deficiency) before rate increase</b> | <b>\$ 15,951,747</b> | <b>\$ 2,384,748</b>  | <b>\$ 1,925,743</b>  | <b>\$ 1,098,014</b>  | <b>\$ 798,502</b>    | <b>\$ 1,290,305</b>  |

## IMPACT OF CAPITAL IMPROVEMENT PROGRAM

The JCMUA sewer utility system is also over 100 years old and in constant need of major capital improvement and repairs. JCMUA has recently updated its 5 Year Capital Improvement program which projects expenditures in excess of \$356,600,000 over the five-year horizon as follows:

| Project                                      | Total Cost     | 2020           | 2021           | 2022         | 2023           | 2024          | 2025          |
|--|----------------|----------------|----------------|--------------|----------------|---------------|---------------|
| 1 Flood Hardening PS 1,2,3B                  | \$ 1,500,000   |                | \$ 1,500,000   |              |                |               |               |
| 2 Phase 1&2 Sewer Rehab                      | \$ 80,000,000  | \$ 80,000,000  |                |              |                |               |               |
| 3 Phase 2A Sewer                             | \$ 20,000,000  |                | \$ 20,000,000  |              |                |               |               |
| 4 Phase 5 Sewer                              | \$ 18,000,000  | \$ 18,000,000  |                |              |                |               |               |
| 5 Phase 5A                                   | \$ 15,000,000  |                | \$ 15,000,000  |              |                |               |               |
| 6 Phase 5B                                   | \$ 25,000,000  |                | \$ 25,000,000  |              |                |               |               |
| 7 Phase 6A                                   | \$ 5,000,000   |                |                |              | \$ 5,000,000   |               |               |
| 8 Phase 6B                                   | \$ 5,000,000   |                |                |              | \$ 5,000,000   |               |               |
| 9 Phase 7A                                   | \$ 5,000,000   |                |                |              | \$ 5,000,000   |               |               |
| 10 Phase 7B                                  | \$ 5,000,000   |                |                |              | \$ 5,000,000   |               |               |
| 11 Phase 8                                   | \$ 10,000,000  |                |                |              | \$ 10,000,000  |               |               |
| 12 Carteret Ave Ph. 1                        | \$ 5,500,000   |                | \$ 5,500,000   |              |                |               |               |
| 13 Carteret Ave Ph. 2                        | \$ 10,000,000  |                | \$ 10,000,000  |              |                |               |               |
| 14 Clairmont/Carteret Tide Gate              | \$ 7,000,000   |                | \$ 7,000,000   |              |                |               |               |
| 15 18th St. Inline Netting                   | \$ 8,000,000   | \$ 2,000,000   | \$ 1,500,000   | \$ 1,500,000 | \$ 1,500,000   | \$ 1,500,000  |               |
| 16 Combined Sewer Relining                   | \$ 3,000,000   | \$ 3,000,000   |                |              |                |               |               |
| 17 Princeton Ave Sewer                       | \$ 6,000,000   |                |                | \$ 6,000,000 |                |               |               |
| 18 Replacement of Bar Screens                | \$ 5,000,000   | \$ 5,000,000   |                |              |                |               |               |
| 19 Long Term Control Plan                    | \$ 600,000     |                |                | \$ 600,000   |                |               |               |
| 20 Van Harn St                               | \$ 5,300,000   |                | \$ 5,300,000   |              |                |               |               |
| 21 Van Winkle Outfall                        | \$ 5,000,000   |                | \$ 5,000,000   |              |                |               |               |
| 22 Downtown Rehab                            | \$ 64,000,000  |                |                |              |                | \$ 4,000,000  | \$ 60,000,000 |
| 23 6th St. Outfall                           | \$ 4,000,000   |                | \$ 4,000,000   |              |                |               |               |
| 24 Newark St./Jones Park                     | \$ 10,000,000  |                |                |              | \$ 10,000,000  |               |               |
| 25 Light Rail Extension/Crosstown Force Main | \$ 30,000,000  |                |                |              | \$ 30,000,000  |               |               |
| 26 Whiton, Pine & Suydam Improvements        | \$ 10,000,000  |                |                |              | \$ 10,000,000  |               |               |
| 27 Waste Water Waste Plan                    | \$ 600,000     | \$ 100,000     | \$ 200,000     | \$ 200,000   | \$ 100,000     |               |               |
| 28 Mill Creek Sewer                          | \$ 35,000,000  |                |                |              | \$ 35,000,000  |               |               |
| 29 West Side CSO Storage                     | \$ 32,000,000  |                |                |              | \$ 32,000,000  |               |               |
| 30 MLK Blvd Green Infr.                      | \$ 500,000     |                | \$ 500,000     |              |                |               |               |
| 31 Bayfront Project                          | \$ 15,000,000  |                |                |              | \$ 5,000,000   | \$ 5,000,000  | \$ 5,000,000  |
| 32 Bates Street                              | \$ 40,000,000  |                |                |              | \$ 40,000,000  |               |               |
| 33 Upgrade SCADA                             | \$ 6,000,000   |                | \$ 6,000,000   |              |                |               |               |
|  | \$ 492,000,000 | \$ 108,100,000 | \$ 106,500,000 | \$ 8,300,000 | \$ 193,600,000 | \$ 10,500,000 | \$ 65,000,000 |

The combination of the debt issuance would result in new annual debt service for the water utility system as follows:

| Sewer System New Debt Service |              |              |              |               |               |               |
|-------------------------------|--------------|--------------|--------------|---------------|---------------|---------------|
|                               | 2021         | 2022         | 2023         | 2024          | 2025          | 2026          |
| <b>Year 1 Projects</b>        | \$ 3,243,000 | \$ 3,243,000 | \$ 3,243,000 | \$ 5,515,182  | \$ 5,515,182  | \$ 5,515,182  |
| <b>Year 2 Projects</b>        |              | \$ 3,195,000 | \$ 3,195,000 | \$ 3,195,000  | \$ 7,158,473  | \$ 7,158,473  |
| <b>Year 3 Projects</b>        |              |              | \$ 249,000   | \$ 249,000    | \$ 249,000    | \$ 423,460    |
| <b>Year 4 Projects</b>        |              |              |              | \$ 4,158,000  | \$ 4,158,000  | \$ 4,158,000  |
| <b>Year 5 Projects</b>        |              |              |              |               |               | \$ 1,965,000  |
| <b>Total Debt Service</b>     | \$ 3,243,000 | \$ 6,438,000 | \$ 6,687,000 | \$ 13,117,182 | \$ 17,080,655 | \$ 19,220,115 |

## SEWER CUSTOMER CHARACTERISTICS

JCMUA has determined not to charge customers by disposal strength characteristics and therefore only charges its sewer customers unified volumetric rate for disposal based upon the actual water meter readings of the customer.



## **SEWER CONNECTION FEE ANALYSIS**

Reserved for future analysis



## SECTION 4. RATE RECOMMENDATIONS

### JCMUA

#### Per Unit Rate Charges

|                          |                            | 2018     | 2019     | 2020     | 2021     | 2022     | 2023     |
|--------------------------|----------------------------|----------|----------|----------|----------|----------|----------|
| <b>Water</b>             | Charge/ccf                 | \$ 4.14  | \$ 4.20  | \$ 4.58  | \$ 4.58  | \$ 4.58  | \$ 4.58  |
|                          | percent increase           |          | 1.45%    | 9.00%    | 0.00%    | 0.00%    | 0.00%    |
|                          | Average Volume/ Month ccf  | 10       | 10       | 10       | 10       | 10       | 10       |
|                          | Average Volume Cost/ Month | \$ 41.40 | \$ 42.00 | \$ 45.78 | \$ 45.78 | \$ 45.78 | \$ 45.78 |
|                          | Meter Charge /Month        | \$ 6.07  | \$ 6.07  | \$ 6.62  | \$ 6.62  | \$ 6.62  | \$ 6.62  |
|                          | Residential Bill per Month | \$ 47.47 | \$ 48.07 | \$ 52.40 | \$ 52.40 | \$ 52.40 | \$ 52.40 |
|                          | Monthly Increase           |          | \$ 0.60  | \$ 4.33  | \$ -     | \$ -     | \$ -     |
| <b>Sewer</b>             | Charge/ccf                 | \$ 5.64  | \$ 5.78  | \$ 6.30  | \$ 6.30  | \$ 6.30  | \$ 6.30  |
|                          | Percent Increase           |          | 2.48%    | 9.00%    | 0.00%    | 0.00%    | 0.00%    |
|                          | Residential per Month      | \$ 56.40 | \$ 57.80 | \$ 63.00 | \$ 63.00 | \$ 63.00 | \$ 63.00 |
|                          | Monthly Increase           |          | \$ 1.40  | \$ 5.20  | \$ -     | \$ -     | \$ -     |
| <b>Connection Fees</b>   |                            |          |          |          |          |          |          |
| <b>Water</b>             | Per EDU                    | \$ 200   | \$ 200   | \$ 200   | \$ 200   | \$ 200   | \$ 200   |
| <b>Sewer</b>             | Per EDU                    | \$ 1,791 | \$ 1,791 | \$ 1,791 | \$ 1,791 | \$ 1,791 | \$ 1,791 |
| <b>Bulk Water Rate/G</b> |                            | \$ 2,248 | \$ 2,248 | \$ 2,450 | \$ 2,450 | \$ 2,450 | \$ 2,450 |