San Antonio Water System
Rate Study

Technical Memorandum
WATER AND WASTEWATER COST OF SERVICE

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INTRODUCTION

The San Antonio Water System (SAWS) provides 1.9 million people with water and wastewater services throughout portions of Bexar, Comal, Kendall, Medina, and Atascosa counties. SAWS funds its operations and capital requirements primarily from user charge revenues and impact fees, a revenue source designed to ensure new development "pays its own way" rather than being subsidized by existing customers. SAWS does not receive any tax revenue.

In September 2021, SAWS Board of Trustees (Board) engaged Carollo Engineers, Inc. (Carollo) to conduct a comprehensive study to update water supply, water delivery, recycled water, and wastewater rates charged by SAWS to support the utility. The study does not include the chilled water system. The last completed rate study was conducted in 2015 by an outside consultant company. In 2019, SAWS initiated a new rate study by an outside consultant, but that study was suspended in March 2020 due to the COVID-19 pandemic. The initial cost of service findings were reviewed by the SAWS Rate Advisory Committee (RAC), an advisory group appointed by the Board.

A new RAC will be convened in February 2022 to provide recommendations to the Board regarding changes to the existing rate structures. The Board will review and approve the cost-of-service results which will serve as the foundation for revenues to be collected from each customer class. This technical memo is intended to provide the Board with clarity and insight to Carollo's process and calculations for the cost-of-service prior to taking further action on rate design.

The objectives of the rate study are to:

- Identify appropriate allocation methods for allocating costs.
- Determine cost-of-service by customer class compared to existing revenue generated by each class.
- Develop a rate structure to equitably recover costs from customers based on their use of the system.
- Consider alternative approaches to address affordability.

1.1 Background and System Overview

To meet the demands from steady population growth, SAWS has needed to expand its water supplies in recent years. Historically, the Edwards Aquifer was the primary source of water, but regulations and increased demand have led to the expansion of SAWS water portfolio and source diversification. To augment potable supplies, SAWS provides recycled water for landscaping, golf courses, cooling towers, and industrial processes, in addition to providing recycled water to maintain flows in the San Antonio River. In 2001, SAWS implemented a Water Supply Fee to cover the necessary funds for water supplies developed moving forward. For the purposes of Carollo's cost-of-service analysis, recycled water was assessed separately from potable water in order to later establish rates tied directly to the services provided.

In June 2013, SAWS and the United States Environmental Protection Agency (EPA) agreed to a consent decree governing sewer overflows. The decree is forecasted to be in effect until 2025. The decree lays out remedial actions that SAWS must undertake with the goal of reducing the number of sanitary sewer overflows, with an estimated cost of $1.3 billion dollars. The fiscal year ending (FYE) 2022 costs are provided for in the cost-of-service.

1.2 Cost-of-Service Approach

The cost-of-service analysis provides a quantitative and defensible basis for distributing the costs of SAWS' water and wastewater systems to each customer class, including wholesale, in proportion to the demands they place on the systems. Figure 1.1 provides an overview of the rate study process.

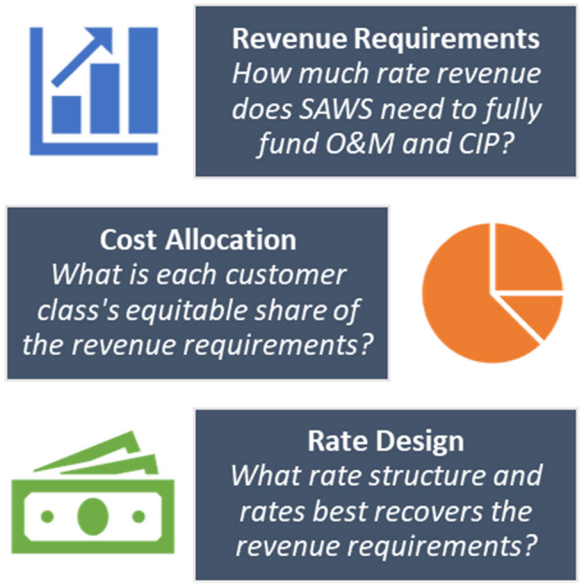

Figure 1.1 Rate Study Process

SAWS provided Carollo with its 2022 budgeted revenue requirements for each system. Carollo's revenue requirements analysis was primarily a quality control check to ensure accurate inputs for setting class rates. Carollo developed a detailed cost allocation for both the water and wastewater systems based on the unique attributes of each system to determine the portion of rate revenue requirements that should be recovered from each customer class. This calculated cost-of-service was then compared to the budgeted revenue and presented here as initial findings.

The methods presented within this report adhere to cost-of-service principles, as well as industry standards set by the American Water Works Association (AWWA) and the Water Environment Federation (WEF). SAWS should continue to perform a cost-of-service study at least every five years to ensure that revenues from rates adequately fund utility operations, maintenance, and ongoing capital needs, and equitably recover costs from system users.

1.3 Revenue Requirement Analysis

The purpose of the Revenue Requirement Analysis is to determine the adequate and appropriate funding for the Utility. Revenue requirements are the summation of expenses or costs for providing safe drinking water and handling wastewater to return clean water to the environment. They are determined on an annual basis, and they include:

- **Operations & Maintenance** – salaries and benefits, chemicals, power, equipment, supplies, etc. Some costs vary by the volume of water produced or wastewater treated such as chemicals and power, but other costs are fixed and independent of volume such as salaries.
- **Capital Improvements** – design and construction of new and replacement infrastructure, including labor for SAWS employees and fees for consultants and contractors that perform this work.
- **Financing** – debt service payments, bond issuance costs, commercial paper fees, etc.
- **Transfers to the City** – 4 percent of gross revenues are transferred to the City, as prescribed by City ordinance.

- **Transfers to R&R Fund** – supports debt service coverage metrics and provides cash funding for future repair and replacement capital projects.

For the purpose of this study, the revenue requirement analysis used SAWS' FYE 2022 budget.

1.4 Cost-of-Service Analysis

The cost-of-service analysis serves as a rational basis for distributing the full costs of SAWS' services to each customer class in proportion to the demands placed on the system. The analysis is typically completed in three steps:

1. Allocate costs to functional categories (e.g., water production, pumping, collection system).
2. Allocate functionalized costs to rate components:
   a. Water – base, extra capacity, customer.
   b. Wastewater – flow, loadings, customer.
3. Allocate costs to customer classes using rate component unit costs.

The study followed this approach to develop a detailed cost allocation that serves as the basis for any changes to the rates. This analysis yields an appropriate method for allocating costs, which could be sustained unless substantial changes in cost drivers or customer consumption patterns occur.

1.4.1 Water System

The cost-of-service analysis is consistent with the AWWA M1 Manual Principles of Water Rates, Fees and Charges, Seventh Edition (M1 Manual), standard methods to allocate the revenue requirements among the various customer classes based on their usage characteristics.

1.4.1.1 Water Supply

Table 1.1 summarizes the results of the water supply cost-of-service analysis.

Table 1.1 Water Supply Cost-of-Service by Customer Class

Customer Class	Cost-of-Service [3]	Budgeted Revenue	Difference ($)	Difference (%)
Residential	$149,047,658	$149,519,614	$(471,956)	(0.3%)
General [2]	87,838,263	84,156,240	3,682,023	4.4%
Irrigation	28,008,472	31,124,898	(3,116,426)	(10.0%)
Wholesale	1,364,168	1,457,810	(93,642)	(6.4%)
Recycled Water	2,985,000	2,985,000	0	0.0%
TOTAL [1]	**$269,243,562**	**$269,243,562**	$0	**0.0%**

Notes:
(1) Totals may not sum due to rounding.
(2) General includes Multi-family, Commercial, and Industrial.
(3) Cost-of-service shown includes beneficial reallocation, which is discussed in Section 3.4.

1.4.1.2 Water Delivery

Table 1.2 summarizes the results of the water delivery cost-of-service analysis.

Table 1.2 Water Delivery Cost-of-Service by Customer Class

Customer Class	Cost-of-Service	Budgeted Revenue	Difference ($)	Difference (%)
Residential	$135,419,110	$137,929,509	$(2,510,399)	(1.8%)
General [2]	66,510,256	67,324,487	(814,231)	(1.2%)
Irrigation	28,423,107	25,306,681	3,116,426	12.3%
Wholesale	1,059,080	850,875	208,205	24.5%
TOTAL [1]	**$231,411,552**	**$231,411,552**	**$0**	**0.0%**

Notes:
(1) Totals may not sum due to rounding.
(2) General includes Multi-family, Commercial, and Industrial.

1.4.1.3 Total Water System

Table 1.3 summarizes the results of the total water system cost-of-service analysis, combining water supply and water delivery.

Table 1.3 Total Water Cost-of-Service by Customer Class

Customer Class	Cost-of-Service [3]	Budgeted Revenue	Difference ($)	Difference (%)
Residential	$284,466,768	$287,449,123	$(2,982,355)	(1.0%)
General [2]	154,348,519	151,480,727	2,867,792	1.9%
Irrigation	56,431,579	56,431,579	-	0.0%
Wholesale	2,423,247	2,308,685	114,562	5.0%
Recycled Water	2,985,000	2,985,000	-	0.0%
TOTAL [1]	**$500,655,114**	**$500,655,114**	**$0**	**0.0%**

Notes:
(1) Totals may not sum due to rounding.
(2) General includes Multi-family, Commercial, and Industrial.
(3) Cost-of-service shown includes beneficial reallocation, as discussed in Section 3.4.

1.4.2 Wastewater System

The cost-of-service analysis is consistent with the WEF Manual of Practice No. 27, Financing and Charges for Wastewater Systems (MOP 27), standard methods to allocate the revenue requirements among the various customer classes based on their wastewater contributions. The results of the wastewater cost-of-service analysis are summarized in Table 1.4.

Table 1.4 Wastewater Cost-of-Service by Customer Class

Customer Class	Cost-of-Service	Budgeted Revenue	Difference ($)	Difference (%)
Residential	$155,707,457	$166,575,425	$(10,867,968)	(6.5%)
General [2]	111,840,459	100,233,298	11,607,162	11.6%
Wholesale	11,777,843	12,107,016	(329,173)	(2.7%)
Surcharge	5,475,687	5,885,707	(410,020)	(7.0%)
TOTAL [1]	**$284,801,446**	**$284,801,446**	**$0**	**0.0%**

Notes:
(1) Totals may not sum due to rounding.
(2) General includes Multi-family, Commercial, and Industrial.

Section 2

REVENUE REQUIREMENTS

2.1 Overview

Carollo used the FYE 2022 budget prepared by SAWS staff to identify and organize the revenue requirements for allocation to customer classes. The FYE 2022 budget assumes no revenue increase is needed from rates.

2.2 Revenue Requirement Purpose and Components

The purpose of the Revenue Requirements Analysis is to determine the adequate and appropriate funding that should be recovered from water and wastewater rates. Revenue requirements are the summation of expenses or costs for providing safe drinking water and handling wastewater to return clean water to the environment. They are determined on an annual basis, and they include:

- **Operations & Maintenance** – salaries and benefits, chemicals, power, equipment, supplies, etc. Some costs vary by the volume of water provided and wastewater treated such as chemicals and power, but other costs are fixed and independent of volume such as salaries.
- **Capital Improvements** – design and construction of new and replacement infrastructure, including labor for SAWS employees and fees for consultants and contractors that perform this work.
- **Financing** – debt service payments, bond issuance costs, commercial paper fees, etc.
- **Transfers to the City** – 4 percent of gross revenues are transferred to the City, as prescribed by City ordinance.
- **Transfers to R&R Fund** – supports debt service coverage metrics and provides cash funding for future repair and replacement capital projects.

SAWS staff develop an annual budget that projects revenue from rates and fees and other sources, operating and maintenance expenses, debt service payments, and transfers to and from other funds. During the budget process, SAWS staff determines if a revenue increase is necessary to fully fund the projected expenses. For the budget year, fiscal year 2022, no revenue increase is required. As such, the recommendations resulting from this study are revenue neutral, utilizing the assumptions in the FYE 2022 budget.

2.3 Revenue Requirement Methodologies

There are three industry-accepted methodologies to determine the net revenue requirement from rates:

- **Cash Basis** – typically used by municipal utilities; determines the revenue that must be generated from rates to fully fund all cash requirements.
- **Utility Basis** – typically used by investor-owned utilities or by municipal utilities to allocate costs to outside city customers; provides the utility with a means to recover a reasonable return on its investment from non-owner customers.
- **Utility Basis with Cash Residual** – combines the two primary methodologies to determine the difference in revenue requirements for owners and non-owners of a system.

SAWS uses the cash basis to develop its annual budget. The revenue requirement analysis calculated the rate revenue requirements for each business unit using the cash basis and the utility basis. Then the analysis used the utility basis revenue requirements to allocate costs among customer classes, as detailed in Section 3.

Carollo also used the utility basis with cash residual method to confirm that the current differential charged by SAWS to outside city customers is within a reasonable range that can be supported by the analysis. The calculated differential can increase or decrease from year to year based on the projected contributions to the Renewal and Replacement (R&R) Fund.

2.4 Water System

SAWS' total revenue requirements are comprised of operating expenses and capital expenses, which are described in detail in this section.

2.4.1 Water Supply

SAWS' FYE 2022 O&M budget for the water supply business unit is organized into cost centers The water supply budget includes costs associated with recycled water, stormwater, and conservation. Appendix A summarizes the O&M budget by cost center for water supply.

Capital expenses include debt service payments, transfers to the R&R Fund, and capital outlay. Debt service consists of annual payments on outstanding and proposed debt. Transfers to the R&R Fund will cash-fund a portion of the capital improvement program. Additional details about the capital expenses for FYE 2022 are included in Appendix A.

Operating revenues for SAWS' water supply business unit are primarily derived from water supply fees and recycled water rates. Other operating revenues include special services fees and customer penalties, EAA fee revenue, and stormwater revenues. Non-operating revenues include capital recovery fees (impact fees) and interest income.

Table 2.1 summarizes the revenue requirements for the water supply business unit, excluding recycled water, under both the cash basis and the utility basis methodologies.

Table 2.1 Water Supply Revenue Requirements

Description	Operating	Capital	Total
Cash Basis Methodology			
O&M Expenses	$237,244,935	$0	$237,244,935
Debt Service	0	38,792,939	38,792,939
Other Expenses:			
Other Debt	0	445,471	445,471
Operating Reserve	660,730	0	660,730
Transfers	10,775,595	41,294,594	52,070,189
Capital Outlay	0	1,491,769	1,491,769
Total Revenue Requirements (1)	**$248,681,260**	**$82,024,773**	**$330,706,033**
Adjustments:			
Capital Recovery Fees	0	(38,362,962)	(38,362,962)
Interest Earned	0	(2,075,303)	(2,075,303)
Other Revenue	(30,264,121)	72,000	(30,192,121)
Rate Revenue Requirements (1)	**$218,417,139**	**$41,658,508**	**$260,075,647**
Utility Basis Methodology			
O&M Expenses	$218,417,139	$0	$218,417,139
Depreciation Expense	0	28,162,166	28,162,166
Return on Investment	0	13,496,342	13,496,342
Rate Revenue Requirements (1)	**$218,417,139**	**$41,658,508**	**$260,075,647**

Note:
(1) Totals may not sum due to rounding.

Table 2.2 summarizes the revenue requirements for the recycled water component of the water supply business unit under both the cash basis and the utility basis methodologies.

Table 2.2 Recycled Water Revenue Requirements

Description	Operating	Capital	Total
Cash Basis Methodology			
O&M Expenses	$2,562,071	$0	$2,562,071
Debt Service	0	6,173,209	6,173,209
Other Expenses:			
Other Debt	0	17,432	17,432
Operating Reserve	4,805	0	4,805
Transfers	119,400	256,678	376,078
Capital Outlay	0	34,320	34,320
Total Revenue Requirements (1)	**$2,686,276**	**$6,481,639**	**$9,167,915**
Adjustments:			
Capital Recovery Fees	0	0	0
Interest Earned	0	0	0
Other Revenue	0	0	0
Rate Revenue Requirements (1)	**$2,686,276**	**$6,481,639**	**$9,167,915**
Utility Basis Methodology			
O&M Expenses	$2,686,276	$0	$2,686,276
Depreciation Expense	0	3,360,033	3,360,033
Return on Investment	0	3,121,606	3,121,606
Rate Revenue Requirements (1)	**$2,686,276**	**$6,481,639**	**$9,167,915**

Note:
(1) Totals may not sum due to rounding.

2.4.2 Water Delivery

SAWS' FYE 2022 O&M budget for the water delivery business unit is also organized into cost centers. The detailed water delivery O&M budget by cost center is provided in Appendix A.

Capital expenses include debt service payments, transfers to the R&R Fund, and capital outlay. Debt service consists of annual payments on outstanding and proposed debt. Transfers to the R&R Fund will cash-fund a portion of the capital improvement program. Additional details about the capital expenses for FYE 2022 are included in Appendix A.

Operating revenues for SAWS' water delivery business unit are primarily derived from metered water sales. Other operating revenues include special services fees and customer penalties and TCEQ fees. Non-operating revenues include capital recovery fees (impact fees) and interest income.

Table 2.3 summarizes the revenue requirements for the water delivery business unit under both the cash basis and the utility basis methodologies.

Table 2.3 Water Delivery Revenue Requirements

Description	Operating	Capital	Total
Cash Basis Methodology			
O&M Expenses	$99,577,703	$0	$99,577,703
Debt Service	0	79,769,428	79,769,428
Other Expenses:			
Other Debt	0	1,348,146	1,348,146
Operating Reserve	401,215	0	401,215
Transfers	9,424,799	71,123,036	80,547,835
Capital Outlay	0	4,654,051	4,654,051
Total Revenue Requirements (1)	**$109,403,717**	**$156,894,661**	**$266,298,378**
Adjustments:			
Capital Recovery Fees	0	(30,099,817)	(30,099,817)
Interest Earned	0	(2,018,578)	(2,018,578)
Other Revenue	(2,840,431)	72,000	(2,768,431)
Rate Revenue Requirements (1)	**$106,563,286**	**$124,848,266**	**$231,411,552**
Utility Basis Methodology			
O&M Expenses	$106,563,286	$0	$106,563,286
Depreciation Expense	0	55,050,679	55,050,679
Return on Investment	0	69,797,587	69,797,587
Rate Revenue Requirements (1)	**$106,563,286**	**$124,848,266**	**$231,411,552**

Note:
(1) Totals may not sum due to rounding.

2.5 Wastewater System

SAWS' total revenue requirements are comprised of operating expenses and capital expenses, which are described in detail in this section.

SAWS' FYE 2022 O&M budget for the wastewater business unit is organized into cost centers. Appendix B summarizes the O&M budget by cost center for wastewater.

Capital expenses include debt service payments, transfers to the R&R Fund, and capital outlay. Debt service consists of annual payments on outstanding and proposed debt. Transfers to the R&R Fund will cash-fund a portion of the capital improvement program. Additional details about the capital expenses for FYE 2022 are included in Appendix B.

Operating revenues for SAWS' wastewater business unit are primarily derived from sewer service charges and industrial waste surcharges. Other operating revenues include special services fees and customer penalties and TCEQ fees. Non-operating revenues include capital recovery fees (impact fees) and interest income.

Table 2.4 summarizes the revenue requirements for the wastewater business unit under both the cash basis and the utility basis methodologies.

Table 2.4 Wastewater Revenue Requirements

Description	Operating	Capital	Total
Cash Basis Methodology			
O&M Expenses	$124,464,394	$0	$124,464,394
Debt Service	0	95,706,627	95,706,627
Other Expenses:			
Other Debt	0	1,511,253	1,511,253
Operating Reserve	87,898	0	87,898
Transfers	11,466,381	80,224,167	91,690,548
Capital Outlay	0	5,619,098	5,619,098
Total Revenue Requirements (1)	**$136,018,673**	**$183,061,145**	**$319,079,818**
Adjustments:			
Capital Recovery Fees	0	(31,611,446)	(31,611,446)
Interest Earned	0	(2,728,860)	(2,728,860)
Other Revenue	(34,066)	96,000	61,934
Rate Revenue Requirements (1)	**$135,984,607**	**$148,816,839**	**$284,801,446**
Utility Basis Methodology			
O&M Expenses	$135,984,607	$0	$135,984,607
Depreciation Expense	0	53,456,289	53,456,289
Return on Investment	0	95,360,550	95,360,550
Rate Revenue Requirements (1)	**$135,984,607**	**$148,816,839**	**$284,801,446**

Note:
(1) Totals may not sum due to rounding.

Section 3

COST OF SERVICE ANALYSIS

3.1 Cost-of-Service Approach

The cost-of-service analysis employs a tailored allocation of costs with a three-step approach, shown in Figure 3.1. Based on the revenue requirement analysis outlined in Section 2, the functional allocation designates each budget item to a set of functional categories specific to SAWS, which are then translated into the appropriate rate components based on the operation and/or design of each function. The functional categories and their associated costs are allocated to the customer classes based on each customer class's unique account, meter, and water demand or wastewater discharge characteristics. A customer class consists of users that commonly create or share responsibility for certain costs incurred by the utility, which is determined by customer data to combine similar groups of customers.

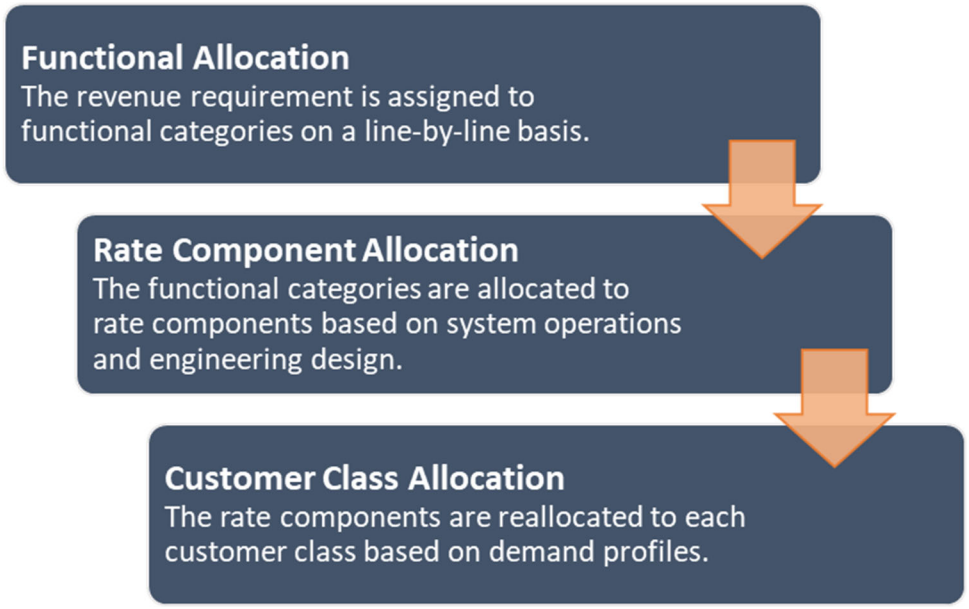

Figure 3.1 Three-step Cost Allocation Approach

The study evaluated the existing customer classes for SAWS and determined them to be appropriate based upon customer demand and discharge characteristics. The rate design process establishes a rate structure that equitably recovers costs from customer classes and customers within each customer class. The final rate structure and rate recommendations are designed to (1) fund the utility's projected costs of providing service, (2) consider affordability of customers' bills, and (3) provide a reasonable balance of revenue stability while encouraging conservation.

3.2 Water System

The water system cost-of-service analysis is consistent with the AWWA M1 Manual standard methods to allocate the revenue requirements among the various customer classes based on their usage characteristics.

The M1 Manual outlines the most widely used method for allocation of functionalized costs to rate components, the Base-Extra Capacity Method. The Base-Extra Capacity Method allocates costs among: (1) a base category to provide baseline water service or average day demand; (2) an extra capacity category to provide peak demand service, often split into maximum day and maximum hour components; and (3) a customer category to provide services that do not vary with water usage, such as customer service and billing.

The Base-Extra Capacity Method recognizes that cost-of-service "depends not only on the total volume of water used, but also on the rate of use, or peak demand requirements." Costs incurred by SAWS are not incurred uniformly, or simply based on the total volume of water used. The cost-of-service changes based on when water is used. The Base-Extra Capacity Method accounts for this by including an extra capacity category to recover costs associated with capacity that is not used consistently and that impacts operating costs and capital asset related costs to accommodate peak demands.

The following subsections discuss how costs are allocated to the water system's functional categories, rate components, and customer classes using the Base-Extra Capacity Method.

3.2.1 Functional Cost Allocation

The functional cost allocation assigns the revenue requirement for the test year by major function. The study developed a list of functions specific to the water system. Each functional category is allocated to specific rate components, which can easily be assigned to rates. The water functional categories listed below are used to allocate water supply and water delivery costs unless otherwise noted:

Source of Supply: Costs associated with raw water to be used for non-potable or potable purposes.

Production: Costs associated with production of treated water.

Transmission and Distribution: Costs associated with conveyance of treated water.

Customer Service and Billing: Costs associated with calculating, preparing, and sending a customer's bill, as well as costs associated with customer service.

Meters: Costs associated with water meters, including routine maintenance and regular replacement.

Stormwater (Water Supply only): Costs associated with City stormwater drainage. These costs are offset with stormwater fee revenue.

Conservation (Water Supply only): Costs associated with conservation efforts and City requirements.

General (Water Delivery only): Costs associated with other treatment and administrative services that do not fit any of the other categories. Examples include GIS services, IT, finance, electrical and mechanical equipment, lands not associated with a specific asset, etc.

SAWS' budget was analyzed line by line to allocate each line item to one or more functional categories. This detailed allocation is provided in Appendix A.

3.2.2 Rate Component Allocation

Water system costs consist of both volumetric components and non-volumetric components. The volumetric components include source of supply, base, and extra capacity (maximum day and maximum hour). The non-volumetric components include costs associated with meters and customer service and billing costs. These non-volumetric components will be considered for development of the monthly service availability fee.

The following describes each of the water rate components for SAWS:

Source of Supply: Operating and capital costs associated with acquiring raw water.

Base: Operating and capital costs incurred by the water system to provide a basic level of service to each customer. These costs include portions of treatment, distribution, pumping, and storage, up to a level that meets the water system's baseline (average day) demands throughout the year.

Extra Capacity: Costs incurred to meet maximum day and maximum hour demands for water in excess of base, or average day, demand. This cost includes capital costs related to oversizing the system to meet excess demand.

System peaking factors are used to determine the appropriate allocations to the Extra Capacity rate components. For this study, the maximum day peaking factor is 1.74, and the maximum hour peaking factor is 3.23. This means that the maximum day demand is assumed to be 1.74 times the average day demand, and the maximum hour demand is assumed to be 3.23 times the average day demand (or 1.86 times the maximum day demand based on data provided by SAWS planning staff from the most recent master plan).

Customer Service and Billing: Costs related to administrative support activities, including accounting, billing, and customer service. These costs are common to all customers and are reasonably uniform across the different customer classes.

Meters and Services: Costs associated with customer meters and the associated capacity that is required to meet the demand put on the system by each meter based on the meter's hydraulic capacity.

Carollo reviewed the operating budget and fixed asset registry for the water system and allocated each line item and asset to the appropriate functional category based on direction from SAWS staff. The functionalized asset value, depreciation expense, and O&M are then allocated to the appropriate rate components according to the Base Extra Capacity methodology. This multi-step allocation process provides a reasonable, appropriate basis for proportionately distributing costs to customer classes based on their usage patterns and is grounded in cost-of-service principles and standards.

3.2.2.1 O&M Allocation

Carollo collaborated with SAWS staff to allocate the water system operating expenses to functional categories and then to rate components. The allocation percentages used to functionalize the operating budget are estimates based on discussions with and data provided by SAWS staff. Appendix A provides the allocation of the O&M budget to functional categories. Table 3.1 summarizes the allocation of the functionalized water supply O&M expenses to the rate components for FYE 2022. Similarly, Table 3.2 summarizes the allocation of the functionalized water delivery O&M expenses to the rate components for FYE 2022.

Table 3.1 Allocation of Water Supply O&M Budget to Rate Components ($ millions)

Functional Category	Total Value	Source of Supply	Base	Extra Capacity		Customer		Stormwater
				Max Day	Max Hour	Cust. Svc. & Billing	Meters & Services	
Source of Supply	$188.7	100%						
Production [2]	24.4		58%	42%				
Customer Svc. & Billing	9.2					100%		
Meter Costs	0.4						100%	
Stormwater	4.5							100%
Conservation [3]	10.1		31%	23%	46%			
TOTAL ($) [1]	**$237.2**	**$188.7**	**$17.2**	**$12.6**	**$4.7**	**$9.2**	**$0.4**	**$4.5**
TOTAL (%)		**79.5%**	**7.2%**	**5.3%**	**2.0%**	**3.9%**	**0.2%**	**1.9%**
ADJUSTED (%) [4]		**81.1%**	**7.4%**	**5.4%**	**2.0%**	**3.9%**	**0.2%**	**N/A**

Notes:
(1) Totals may not sum due to rounding.
(2) Costs associated with production are allocated between Base and Maximum Day Extra Capacity based on the system maximum day peaking factor of 1.74.
(3) Costs associated with conservation are allocated between Base, Maximum Day Extra Capacity, and Maximum Hour Extra Capacity based on the system maximum hour peaking factor of 3.23.
(4) Allocation percentages are adjusted to exclude Stormwater because stormwater costs are offset by stormwater fee revenues.

Table 3.2 Allocation of Water Delivery O&M Budget to Rate Components ($ millions)

Functional Category	Total Value	Source of Supply	Base	Extra Capacity		Customer	
				Max Day	Max Hour	Cust. Svc. & Billing	Meters & Services
Source of Supply	$9.9	100%					
Production [2]	41.6		58%	42%			
Distribution System [3]	32.3		31%	23%	46%		
Customer Svc. & Billing	12.5					100%	
Meter Costs	3.2						100%
TOTAL ($) [1]	**$99.6**	**$9.9**	**$34.0**	**$25.0**	**$14.9**	**$12.5**	**$3.2**
TOTAL (%)		**10.0%**	**34.1%**	**25.1%**	**15.0%**	**12.6%**	**3.2%**

Notes:
(1) Totals may not sum due to rounding.
(2) Costs associated with production are allocated between Base and Maximum Day Extra Capacity based on the system maximum day peaking factor of 1.74.
(3) Costs associated with the distribution system are allocated between Base, Maximum Day Extra Capacity, and Maximum Hour Extra Capacity based on the system maximum hour peaking factor of 3.23.

3.2.2.2 Fixed Asset Allocation

Carollo reviewed the fixed asset registry provided by SAWS staff and collaborated to allocate each asset to a specific functional category. The analysis then allocated the functionalized assets to rate components. The overall results of this allocation are used as a proxy to allocate capital-related costs. This minimizes large shifts in the allocation of capital costs, which can vary significantly from year to year.

Table 3.3 summarizes the allocation of the functionalized water supply assets to the rate components to determine the allocation factors applied to the water supply capital costs. Similarly, Table 3.4 summarizes the allocation of the functionalized water delivery assets to the rate components to determine the allocation factors applied to the water delivery capital costs.

Table 3.3 Allocation of Water Supply Fixed Assets to Rate Components ($ millions)

Functional Category	Total Value	Source of Supply	Base	Extra Capacity		Customer	
				Max Day	Max Hour	Cust. Svc. & Billing	Meters & Services
Source of Supply	$648.6	100%					
Transmission Mains	449.0		100%				
TOTAL ($) [1]	**$1,097.6**	**$648.6**	**$449.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**
TOTAL (%)		**59.1%**	**40.9%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**

Note:
(1) Totals may not sum due to rounding.

Table 3.4 Allocation of Water Delivery Fixed Assets to Rate Components ($ millions)

Functional Category	Total Value	Source of Supply	Base	Extra Capacity		Customer	
				Max Day	Max Hour	Cust. Svc. & Billing	Meters & Services
Source of Supply	$34.8		100%				
Production [2]	77.2		58%	42%			
Pumping [2]	128.4		58%	42%			
Distribution System [3]	1,115.9		31%	23%	46%		
Storage Tanks [3]	64.4		31%	23%	46%		
Meters & Services	35.1						100%
General Plant [4]	115.4		36%	24%	38%		2%
TOTAL ($) [1]	**$1,571.3**	**$0.0**	**$559.6**	**$384.7**	**$589.0**	**$0.0**	**$37.9**
TOTAL (%)		**0.0%**	**35.6%**	**24.5%**	**37.5%**	**0.0%**	**2.4%**

Notes:
(1) Totals may not sum due to rounding.
(2) Costs associated with production and pumping are allocated between Base and Maximum Day Extra Capacity based on the system maximum day peaking factor of 1.74.
(3) Costs associated with the distribution system and storage tanks are allocated among Base, Maximum Day Extra Capacity, and Maximum Hour Extra Capacity based on the system maximum hour peaking factor of 3.23.
(4) General Plant is allocated to rate components based on direct allocation of other functional categories.

3.2.2.3 Depreciation Expense Allocation

The water supply fixed assets' 2020 depreciation expense is allocated in this analysis using the same approach as for the fixed assets, as shown in Table 3.5. The water delivery fixed assets' 2020 depreciation expense is similarly allocated, as shown in Table 3.6.

Table 3.5 Allocation of 2020 Water Supply Depreciation Expense to Rate Components ($ millions)

Functional Category	Total Value	Source of Supply	Base	Extra Capacity		Customer	
				Max Day	Max Hour	Cust. Svc. & Billing	Meters & Services
Source of Supply	$10.2	100%					
Transmission Mains	13.0		100%				
TOTAL ($) [1]	**$23.1**	**$10.2**	**$13.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**
TOTAL (%)		**44.0%**	**56.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**

Note:
(1) Totals may not sum due to rounding.

Table 3.6 Allocation of 2020 Water Delivery Depreciation Expense to Rate Components ($ millions)

Functional Category	Total Value	Source of Supply	Base	Extra Capacity		Customer	
				Max Day	Max Hour	Cust. Svc. & Billing	Meters & Services
Source of Supply	$0.8		100%				
Production [2]	4.1		58%	42%			
Pumping [2]	6.7		58%	42%			
Distribution System [3]	21.3		31%	23%	46%		
Storage Tanks [3]	2.4		31%	23%	46%		
Meters & Services	3.8						100%
General Plant [4]	11.3		37%	26%	28%		10%
TOTAL ($) [1]	**$50.3**	**$0.0**	**$18.5**	**$12.9**	**$14.1**	**$0.0**	**$4.9**
TOTAL (%)		**0.0%**	**36.7%**	**25.6%**	**28.0%**	**0.0%**	**9.7%**

Notes:
(1) Totals may not sum due to rounding.
(2) Costs associated with production and pumping are allocated between Base and Maximum Day Extra Capacity based on the system maximum day peaking factor of 1.74.
(3) Costs associated with the distribution system and storage tanks are allocated among Base, Maximum Day Extra Capacity, and Maximum Hour Extra Capacity based on the system maximum hour peaking factor of 3.23.
(4) General Plant is allocated to rate components based on direct allocation of other functional categories.

3.2.2.4 Adjustments to Revenue Requirements

Special services fees and customer penalties, capital recovery fees (impact fees), interest income, and other non-rate revenue sources are used to offset and reduce the rate revenue requirements. These offsetting revenues are allocated to the rate components based on the direct allocation of the total rate revenue requirements. The exception to this is the allocation of Edwards Aquifer Authority fee and stormwater fee revenues directly to Source of Supply (after allocating a portion of stormwater fee revenue to offset stormwater costs). A second exception is to allocate capital recovery fees based on the allocation of the fixed assets.

Additional adjustments are made for the affordability program discount, bill adjustments and uncollectible accounts, and project fund interest, all of which result in an increase to the rate revenue requirements. The affordability program discount is allocated entirely to Source of Supply. Bill adjustments and uncollectible accounts and project fund interest are allocated to the rate components based on the direct allocation of the total rate revenue requirements. These adjustments are illustrated in Appendix A.

3.2.2.5 Allocation of Utility Basis Revenue Requirements

The utility basis revenue requirements are comprised of operating expenses, annual depreciation expense, and return on investment, as discussed in Section 2. These revenue requirements are allocated using the allocation percentages determined previously in this section to calculate the rate revenue requirements for each rate component, as shown in Table 3.7 for water supply and Table 3.8 for water delivery.

Table 3.7 Allocation of Water Supply Rate Revenue Requirements to Rate Components ($ millions)

Description	Total Value	Source of Supply	Base	Extra Capacity		Customer	
				Max Day	Max Hour	Cust. Svc. & Billing	Meters & Services
O&M Expenses [2]	$218.4	$177.1	$16.1	$11.9	$4.4	$8.6	$0.4
Depreciation [3]	28.2	12.4	15.8				
Return on Investment [4]	13.5	8.0	5.5				
TOTAL ($) [1]	**$260.1**	**$197.4**	**$37.4**	**$11.9**	**$4.4**	**$8.6**	**$0.4**
TOTAL (%)		**75.9%**	**14.4%**	**4.6%**	**1.7%**	**3.3%**	**0.1%**

Notes:
(1) Totals may not sum due to rounding.
(2) O&M expenses shown are from the utility basis revenue requirements in Table 2.1 and are allocated based on the allocation of the cash basis O&M Expenses developed in Table 3.1.
(3) FYE 2022 depreciation expense is allocated based on the allocation of the 2020 depreciation expense developed in Table 3.5.
(4) Return on investment is allocated based on the allocation of water supply fixed assets developed in Table 3.3.

Table 3.8 Allocation of Water Delivery Rate Revenue Requirements to Rate Components ($ millions)

Description	Total Value	Source of Supply	Base	Extra Capacity		Customer	
				Max Day	Max Hour	Cust. Svc. & Billing	Meters & Services
O&M Expenses [2]	$106.6	$10.6	$36.4	$26.8	$16.0	$13.4	$3.4
Depreciation [3]	55.1		20.2	14.1	15.4		5.3
Return on Investment [4]	69.8		24.9	17.1	26.2		1.7
TOTAL ($) [1]	**$231.4**	**$10.6**	**$81.4**	**$58.0**	**$57.6**	**$13.4**	**$10.4**
TOTAL (%)		**4.6%**	**35.2%**	**25.0%**	**24.9%**	**5.8%**	**4.5%**

Notes:
(1) Totals may not sum due to rounding.
(2) O&M expenses shown are from the utility basis revenue requirements in Table 2.3 and are allocated based on the allocation of the cash basis O&M Expenses developed in Table 3.2.
(3) FYE 2022 depreciation expense is allocated based on the allocation of the 2020 depreciation expense developed in Table 3.6.
(4) Return on investment is allocated based on the allocation of water supply fixed assets developed in Table 3.4.

3.2.3 Allocation to Customer Classes

3.2.3.1 Customer Characteristics Analysis

Carollo analyzed customer billing data for the three-year period 2018 through 2020 to understand how different types of customers use the water and wastewater systems, including how COVID-19 has impacted customer usage patterns. This analysis drives the allocation of costs to improve equity among customers. Figure 3.2 illustrates the findings of this analysis for residential, general, irrigation, and wholesale customers. General class customers include multi-family, commercial, and industrial customers.

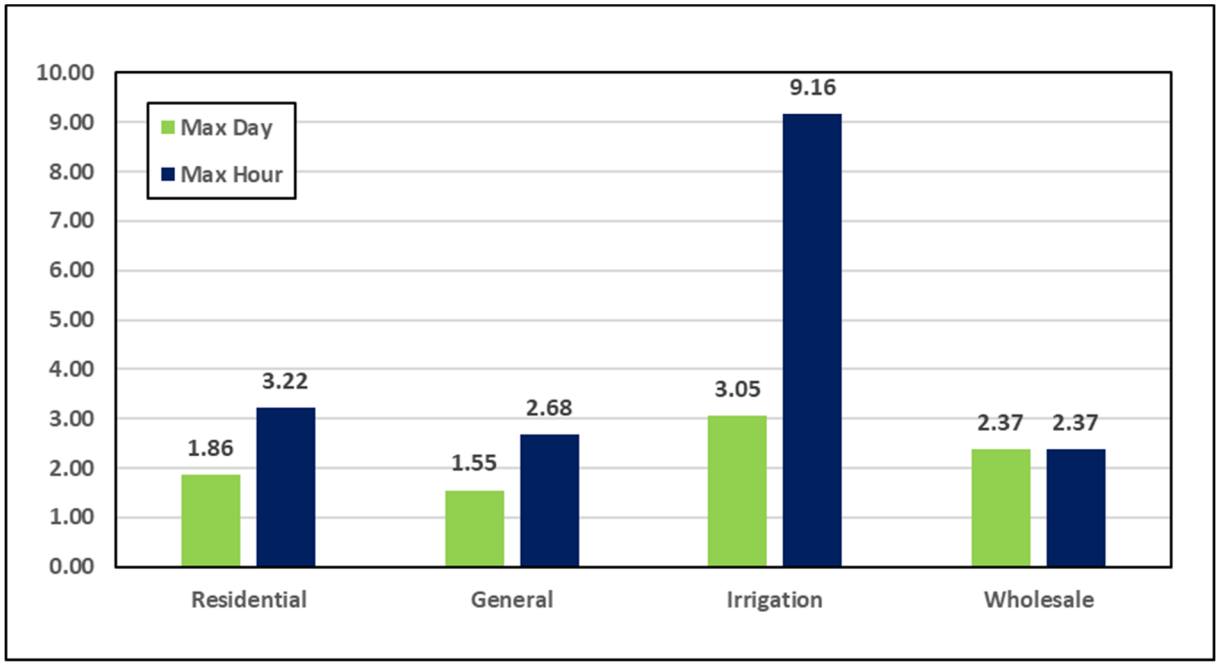

Figure 3.2 Peaking Factors by Customer Class

The results of the customer usage analysis were applied to the FYE 2022 projected water consumption, which is the basis for the budgeted rate revenue, to develop the service units by customer class.

3.2.3.2 Unit Costs

The unit costs of service are developed by dividing the total annual costs allocated to each of the rate components by the total annual service units of the respective component.

Units of Service

Based on the rate components for the water system, the units of service are annual potable water consumption, incremental demand (max day and max hour extra capacity), annual bills, and meter equivalents.

The following describes the quantifiable analysis of the units of service:

Source of Supply: Allocated by total annual potable water consumption in gallons.

Base Costs: Allocated by total annual potable water consumption in gallons.

Extra Capacity Costs: Allocated based on each customer class's extra capacity demand developed from the incremental amounts between max day demand and average day demand and between max hour demand and max day demand. Extra capacity units are based on the incremental capacity, in gallons per day, needed to serve demands in excess of the baseline or average day demand.

Customer Service and Billing: Allocated based on the annual number of bills.

Meters and Services: Allocated based on meter equivalent units (MEU). Larger meters are assigned more meter equivalents than smaller meters.

The service units for the extra capacity rate components are developed using the peaking factors from the customer characteristics analysis. SAWS designs and constructs its water system infrastructure to provide sufficient capacity to meet customer demands. If all customers used water consistently throughout the day, the system would only require capacity to meet the average day demand. However, most customers do not use water consistently. Their usage peaks on hot days when they are irrigating their lawns. Usage can also peak at specific times of day, such as a weekday morning when most households are showering before school and work. These peaking behaviors drive the maximum day and maximum hour demands, as demonstrated by the peaking factors shown in Figure 3.2.

Some of SAWS' costs are driven by the customer peaking characteristics. The water system would be much smaller if it was only required to meet the average day demand (Base). However, some of the water infrastructure must be sized to meet the maximum day or maximum hour demand, which increases the operating and capital costs. Figure 3.3 illustrates the extra capacity required in a pipe to meet the maximum day and maximum hour demands.

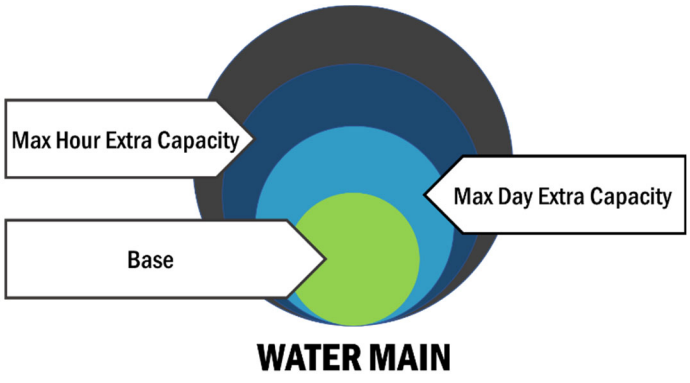

Figure 3.3 Base-Extra Capacity Method

The costs associated with providing additional capacity to meet these peak demands are allocated to the extra capacity rate components. Table 3.9 calculates the maximum day and maximum hour extra capacity service units for each customer class using the peaking factors from Figure 3.2.

Table 3.9 Development of Maximum Day and Maximum Hour Extra Capacity Units of Service

Customer Class	Average Day Demand (2)	Max Day Peaking Factor	Max Day Demand (3)	Max Day Extra Capacity (4)	Max Hour Peaking Factor	Max Hour Demand (3)	Max Hour Extra Capacity (4)
Units	*1,000 gpd*		*1,000 gpd*	*1,000 gpd*		*1,000 gpd*	*1,000 gpd*
Residential	105,051	1.86	194,981	89,929	3.22	338,412	143,432
General (1)	68,030	1.55	105,184	37,154	2.68	182,560	77,376
Irrigation	10,976	3.05	33,531	22,555	9.16	100,593	67,062
Wholesale	1,026	2.37	2,435	1,409	2.37	2,435	0

Notes:
(1) General includes Multi-family, Commercial, and Industrial.
(2) Average day demand is calculated by dividing the annual consumption by 365 days.
(3) Max day demand is calculated by multiplying the average day demand by the max day peaking factor. Max hour demand is calculated by multiplying the average day demand by the max hour peaking factor.
(4) Max day extra capacity is the difference between the max day demand and the average day demand. Max hour extra capacity is the difference between the max hour demand and the max day demand.

For the meters and services rate component, equivalent meters are used, as opposed to accounts or bills, to recognize the fact that larger meters have a higher water flow potential and utilize greater system capacity. Additionally, it is more expensive to install, maintain, and replace larger meters. Meter equivalents are derived based on the hydraulic capacity (gallons per minute) respective to the size of the meter. Meter equivalents are set relative to the hydraulic flow of a 5/8-inch meter.

The units of service for each customer class are shown in Table 3.10.

Table 3.10 Water Units of Service by Customer Class

Description	Source of Supply	Base	Max Day Extra Capacity	Max Hour Extra Capacity	Cust. Svc. & Billing	Meters & Services
Units	*1,000 gal*	*1,000 gal*	*1,000 gpd*	*1,000 gpd*	*Bills*	*MEUs*
Residential	38,343,652	38,343,652	89,929	143,432	6,213,672	552,269
General (2)	24,831,049	24,831,049	37,154	77,376	358,656	163,938
Irrigation	4,006,218	4,006,218	22,555	67,062	117,576	48,420
Wholesale	374,566	374,566	1,409	0	120	590
TOTAL (1)	**67,555,485**	**67,555,485**	**151,047**	**287,869**	**6,690,024**	**765,217**

Notes:
(1) Totals may not sum due to rounding.
(2) General includes Multi-family, Commercial, and Industrial.

Unit Cost Development

In order to allocate the cost-of-service to various customer classes, unit costs of service are developed for each rate component. As shown in Table 3.7 and Table 3.8, the total rate revenue requirements for water supply and water delivery, respectively, are allocated to each rate component. The total cost for each rate component is then divided by the total number of associated units of service to determine appropriate unit costs for the water system. Table 3.11 shows the calculation of the unit costs for each rate component, which are then applied to the units of service for each customer class from Table 3.10 to derive customer class allocations. Projected FYE 2022 units of service are based on customer usage characteristics for the three-year period 2018 through 2020. As such, costs are allocated to each customer class based on their respective units of service to reflect their proportionate use of the overall system.

Table 3.11 Development of Water Unit Costs

Description	Source of Supply	Base	Max Day Extra Capacity	Max Hour Extra Capacity	Cust. Svc. & Billing	Meters & Services
Units	*1,000 gal*	*1,000 gal*	*1,000 gpd*	*1,000 gpd*	*Bills*	*MEUs*
Water Supply:						
Allocated Revenue Requirements [1]	$197.4	$37.4	$11.9	$4.4	$8.6	$0.4
Total Units [2]	67,555,485	67,555,485	151,047	287,869	6,690,024	765,217
UNIT COST	**$2.92**	**$0.55**	**$78.53**	**$15.20**	**$1.29**	**$0.52**
Water Delivery:						
Allocated Revenue Requirements [3]	$10.6	$81.4	$58.0	$57.6	$13.4	$10.4
Total Units [2]	67,555,485	67,555,485	151,047	287,869	6,690,024	765,217
UNIT COST	**$0.16**	**$1.21**	**$383.73**	**$200.06**	**$2.01**	**$13.61**

Notes:
(1) From Table 3.7. Values are in millions of dollars and are rounded.
(2) From Table 3.10.
(3) From Table 3.8. Values are in millions of dollars and are rounded.

Customer Class Allocation

Carollo multiplied the units of service in Table 3.10 by the unit costs developed in Table 3.11 to allocate the rate revenue requirements among the customer classes. Table 3.12 details the allocated water supply revenue requirements for each customer class and rate component, which are then summed to determine the rate revenue requirements by customer class.

Table 3.12 Allocation of Water Supply Rate Revenue Requirements to Customer Classes ($ millions)

Customer Class	Total Value	Source of Supply	Base	Extra Capacity		Customer	
				Max Day	Max Hour	Cust. Svc. & Billing	Meters & Services
Residential	$150.8	$112.1	$21.2	$7.1	$2.2	$8.0	$0.3
General [2]	91.0	72.6	13.7	2.9	1.2	0.5	0.1
Irrigation	16.9	11.7	2.2	1.8	1.0	0.2	0.0
Wholesale	1.4	1.1	0.2	0.1	0.0	0.0	0.0
TOTAL [1]	**$260.1**	**$197.4**	**$37.4**	**$11.9**	**$4.4**	**$8.6**	**$0.4**

Notes:
(1) Totals may not sum due to rounding.
(2) General includes Multi-family, Commercial, and Industrial.

Table 3.13 details the allocated water delivery revenue requirements for each customer class and rate component, which are then summed to determine the rate revenue requirements by customer class.

Table 3.13 Allocation of Water Delivery Rate Revenue Requirements to Customer Classes ($ millions)

Customer Class	Total Value	Source of Supply	Base	Extra Capacity		Customer	
				Max Day	Max Hour	Cust. Svc. & Billing	Meters & Services
Residential	$135.4	$6.0	$46.2	$34.5	$28.7	$12.5	$7.5
General [2]	66.5	3.9	29.9	14.3	15.5	0.7	2.2
Irrigation	28.4	0.6	4.8	8.7	13.4	0.2	0.7
Wholesale	1.1	0.1	0.5	0.5	0.0	0.0	0.0
TOTAL [1]	**$231.4**	**$10.6**	**$81.4**	**$58.0**	**$57.6**	**$13.4**	**$10.4**

Notes:
(1) Totals may not sum due to rounding.
(2) General includes Multi-family, Commercial, and Industrial.

3.3 Wastewater System

The wastewater system cost-of-service analysis is consistent with the WEF MOP 27 standard methods to allocate the revenue requirements among the various customer classes based on their discharge characteristics. The following sections discuss how costs are allocated to the system's functions, rate components, and customer classes using the methodology outlined in MOP 27.

3.3.1 Functional Cost Allocation

The functional cost allocation assigns the revenue requirements for the test year by major function. The study developed a list of functions specific to the wastewater system. Each functional category is allocated to specific rate components, which can easily be assigned to rates. The wastewater functional categories used for SAWS are listed below. Note that the functional categories include wastewater treatment processes for allocating fixed assets and depreciation. However, the treatment-related O&M expenses are not allocated by process. There are also some functional categories that are only used to allocate O&M expenses.

Preliminary Treatment: Costs associated with pumping wastewater influent through the headworks facility where it is screened to remove grit, rags, and solids.

Primary Treatment: Costs associated with the primary clarifiers used to remove suspended solids from the wastewater.

Secondary Treatment: Costs associated with the aeration process, where air is added to the wastewater to remove contaminants, and the secondary clarifiers.

Tertiary Treatment: Costs associated with nutrient removal.

Digesters: Costs associated with breaking down organic matter and producing energy from methane gas.

Dewatering: Costs associated with increasing the solids concentration by separating wastewater solids from liquid.

Odor Control: Costs associated with managing and controlling odors associated with wastewater throughout the treatment process.

Chlorination/Dechlorination: Costs associated with the introduction of chlorine as a disinfectant and its subsequent removal.

Laboratory: Costs associated with the laboratory and testing of wastewater samples at various points in the treatment process for reporting purposes.

Treatment: Costs associated with treating wastewater that cannot be directly allocated to specific processes.

Lift Stations: Costs associated with pumping wastewater within the system.

Collection System: Costs associated with collection system infrastructure that carries all wastewater generated by customers to the treatment plant.

Collection System – Retail Only: Costs associated with small diameter pipes within the collection system that carry wastewater from retail customers to larger trunk sewer mains.

Surcharge Sampling: Costs associated with the collecting and testing wastewater samples from surcharge customers.

Customer Service & Billing: Costs associated with calculating, preparing, and sending a customer's bill, as well as costs associated with customer service.

General: Costs associated with other treatment and administrative services that do not fit any of the other categories. Examples include GIS services, IT, finance, electrical and mechanical equipment, lands not associated with a specific asset, etc.

SAWS' budget was analyzed line by line to allocate each line item to one or more functional categories. This detailed allocation is provided in Appendix B.

3.3.2 Rate Component Allocation

Wastewater costs consist of both volumetric components and non-volumetric components. The volumetric components include flow and strength – biochemical oxygen demand (BOD) and total suspended solids (TSS). Another volumetric rate component allocates a portion of the collection system costs directly to retail customers. The non-volumetric components include costs associated with meters and services and customer service and billing. These non-volumetric rate components will be considered for development of the monthly service availability fee. Finally, the surcharge sampling rate component allocates the costs of sampling directly to the surcharge customers.

The following describes each of the wastewater rate components for SAWS:

Flow: Operating and capital costs incurred by the wastewater system to handle the quantity of flows discharged to or collected by the system.

Biochemical Oxygen Demand (BOD): During treatment, microbial organisms consume dissolved oxygen while oxidizing the organic matter present in wastewater. BOD measures the quantity of oxygen required for that process. Expenses include costs incurred to remove and dispose of organic compounds.

Total Suspended Solids (TSS): TSS measures the quantity of suspended solids or non-filterable residue in the wastewater. Costs include those associated with removing and disposing of small particles in the wastewater.

Collection System – Retail Only: Costs associated with small diameter pipes within the collection system that carry wastewater from retail customers to larger trunk sewer mains. This rate component separates these costs so they are not allocated to wholesale customers.

Surcharge Sampling: Costs associated with managing the program that issues and oversees wastewater permits for industrial customers.

Customer Service and Billing: Costs related to administrative support activities, including accounting, billing, and customer service. These costs are common to all customers and are reasonably uniform across the different customer classes.

Meters and Services: Costs associated with the customer's connection to the sewer main and the capacity that is required by each customer based on their water meter size.

Carollo reviewed the operating budget and fixed asset registry for the wastewater system and allocated each line item and asset to the appropriate functional category based on direction from SAWS staff. The functionalized asset value, depreciation expense, and O&M are then allocated to the appropriate rate components. This multi-step allocation process provides a reasonable, appropriate basis for proportionately distributing costs to customer classes based on their wastewater discharge and is grounded in cost-of-service principles and standards.

3.3.2.1 O&M Allocation

Carollo collaborated with SAWS staff to allocate the wastewater system operating expenses to functional categories and then to rate components. The allocation percentages used to functionalize the operating budget are estimates based on discussions with and data provided by SAWS staff. Appendix B provides the allocation of the O&M budget to functional categories. Table 3.14 summarizes the allocation of the functionalized O&M expenses to the rate components for FYE 2022.

Table 3.14 Allocation of Wastewater System O&M Budget to Rate Components ($ millions)

Functional Category	Total Value	Flow	BOD	TSS	Collection – Retail Only	Customer	
						Surcharge Sampling	Cust. Svc. & Billing
Treatment [2]	$64.5	37%	14%	49%			
Collection System	$36.0	100%					
Collection System – Retail Only	10.2				100%		
Surcharge Sampling	0.9					100%	
Customer Service	10.2						100%
Billing	2.6						100%
TOTAL ($) [1]	**$124.5**	**$59.6**	**$9.0**	**$31.9**	**$10.2**	**$0.9**	**$12.8**
TOTAL (%)		**47.9%**	**7.3%**	**25.6%**	**8.2%**	**0.7%**	**10.3%**

Notes:
(1) Totals may not sum due to rounding.
(2) Treatment costs are allocated based on the allocation of treatment assets to preliminary, primary, secondary, and tertiary treatment, as developed in Table 3.15.

3.3.2.2 Fixed Asset Allocation

Carollo reviewed the fixed asset registry provided by SAWS staff and collaborated to allocate each asset to a specific functional category. The analysis then allocated the functionalized assets to rate components. The overall results of this allocation are used as a proxy to allocate capital-related costs. This minimizes large shifts in the allocation of capital costs, which can vary significantly from year to year.

Table 3.15 summarizes the allocation of the functionalized assets to the rate components to determine the allocation factors applied to the capital-related costs.

Table 3.15 Allocation of Wastewater System Fixed Assets to Rate Components ($ millions)

Functional Category	Total Value	Flow	BOD	TSS	Collection – Retail Only	Customer	
						Cust. Svc. & Billing	Meters & Services
Treatment:							
Preliminary	$23.6	70%		30%			
Primary	8.4	70%	10%	20%			
Secondary	7.7		100%				
Tertiary	21.5			100%			
Digesters (2)	4.4		42%	58%			
Dewatering (2)	1.7		42%	58%			
Odor Control (2)	0.9		21%	29%		50%	
Chlorination/ Dechlorination	2.6	100%					
Laboratory (2)	0.5		42%	58%			
Treatment (3)	222.8	37%	14%	49%			
Lift Stations	65.8	100%					
Collection System	1,353.8	70%			20%		10%
General Plant (4)	53.9	65%	2%	8%	16%		8%
TOTAL ($) (1)	**$1,767.7**	**$1,155.2**	**$44.0**	**$149.0**	**$279.3**	**$0.5**	**$139.6**
TOTAL (%)		**65.4%**	**2.5%**	**8.4%**	**15.8%**	**0.0%**	**7.9%**

Notes:
(1) Totals may not sum due to rounding.
(2) Assets associated with digesters, dewatering, and laboratory are allocated between BOD and TSS based on the mass of BOD and TSS within the treatment plant influent for the three-year period 2018 through 2020. Odor control assets are allocated 50 percent to Customer Service and Billing, since they help address customer complaints associated with odors, and 50 percent to BOD and TSS based on the influent into the treatment plants.
(3) Treatment assets not directly linked to a specific process are allocated based on the allocation of assets to preliminary, primary, secondary, and tertiary treatment.
(4) General Plant assets are allocated to rate components based on direct allocation of other functional categories.

3.3.2.3 Depreciation Expense Allocation

The fixed assets' 2020 depreciation expense is allocated in this analysis using the same approach as for the fixed assets, as shown in Table 3.16.

Table 3.16 Allocation of 2020 Wastewater Depreciation Expense to Rate Components ($ millions)

Functional Category	Total Value	Flow	BOD	TSS	Collection – Retail Only	Customer	
						Cust. Svc. & Billing	Meters & Services
Treatment:							
Preliminary	$2.9	70%		30%			
Primary	0.9	70%	10%	20%			
Secondary	1.5		100%				
Tertiary	1.5			100%			
Digesters (2)	0.9		42%	58%			
Dewatering (2)	0.5		42%	58%			
Odor Control (2)	0.1		21%	29%		50%	
Chlorination/ Dechlorination	0.5	100%					
Laboratory (2)	0.1		42%	58%			
Treatment (3)	10.1	37%	14%	49%			
Lift Station	2.6	100%					
Collection System	22.5	70%			20%		10%
General Plant (4)	5.4	65%	2%	8%	16%		8%
TOTAL ($) (1)	**$49.5**	**$28.6**	**$3.8**	**$9.0**	**$5.3**	**$0.0**	**$2.7**
TOTAL (%)		**57.9%**	**7.7%**	**18.1%**	**10.8%**	**0.1%**	**5.4%**

Notes:
(1) Totals may not sum due to rounding.
(2) Assets associated with digesters, dewatering, and laboratory are allocated between BOD and TSS based on the mass of BOD and TSS within the treatment plant influent for the three-year period 2018 through 2020. Odor control assets are allocated 50 percent to Customer Service and Billing and 50 percent to BOD and TSS based on the influent into the treatment plants.
(3) Treatment assets not directly linked to a specific process are allocated based on the allocation of assets to preliminary, primary, secondary, and tertiary treatment.
(4) General Plant assets are allocated to rate components based on direct allocation of other functional categories.

3.3.2.4 Adjustments to Revenue Requirements

Special services fees and customer penalties, capital recovery fees (impact fees), interest, and other non-rate revenue sources are used to offset and reduce the rate revenue requirements. These offsetting revenues are allocated to the rate components based on the direct allocation of the total rate revenue requirements. The exception to this is the allocation of the recovery of the TCEQ fee directly to Flow. A second exception is to allocate capital recovery fees based on the allocation of the fixed assets.

Additional adjustments are made for the affordability program discount, bill adjustments and uncollectible accounts, and project fund interest, all of which result in an increase to the rate revenue requirements. The affordability program discount is allocated entirely to Flow. Bill adjustments and uncollectible accounts and project fund interest are allocated to the rate components based on the direct allocation of the total rate revenue requirements. These adjustments are illustrated in Appendix B.

3.3.2.5 Allocation of Utility Basis Revenue Requirements

The utility basis revenue requirements are comprised of operating expenses, annual depreciation expense, and return on investment, as discussed in Section 2. These revenue requirements are allocated using the allocation percentages determined previously in this section to calculate the rate revenue requirements for each rate component, as shown in Table 3.17.

Table 3.17 Allocation of Wastewater Rate Revenue Requirements to Rate Components ($ millions)

Description	Total Value	Flow	BOD	TSS	Collection – Retail Only	Customer		
						Surcharge Sampling	Cust. Svc. & Billing	Meters & Services
O&M Expenses [2]	$136.0	$65.1	$9.8	$34.9	$11.2	$1.0	$14.0	$0.0
Depreciation [3]	53.5	31.0	4.1	9.7	5.8	0.0	0.0	2.9
Return on Investment [4]	95.4	62.3	2.4	8.0	15.1	0.0	0.0	7.5
TOTAL ($) [1]	**$284.8**	**$158.4**	**$16.3**	**$52.6**	**$32.0**	**$1.0**	**$14.1**	**$10.4**
TOTAL (%)		**55.6%**	**5.7%**	**18.5%**	**11.2%**	**0.4%**	**4.9%**	**3.7%**

Notes:
(1) Totals may not sum due to rounding.
(2) O&M expenses shown are from the utility basis revenue requirements in Table 2.4 and are allocated based on the allocation of the cash basis O&M Expenses developed in Table 3.14.
(3) FYE 2022 depreciation expense is allocated based on the allocation of the 2020 depreciation expense developed in Table 3.16.
(4) Return on investment is allocated based on the allocation of wastewater fixed assets developed in Table 3.15.

3.3.3 Allocation to Customer Classes

3.3.3.1 Customer Characteristics Analysis

Carollo analyzed wastewater treatment plant influent data and surcharge customer billing data for the three-year period 2018 through 2020 to estimate the wastewater flows and loadings by customer class. This analysis drives the allocation of costs to improve equity among customers.

3.3.3.2 Unit Costs

The unit costs of service are developed by dividing the total annual costs allocated to each of the rate components by the total annual service units of the respective component.

Units of Service

Based on the rate components for the wastewater system, the units of service are annual wastewater flow, loadings (BOD and TSS), meter equivalents, and annual bills.

The following describes the quantifiable analysis of the units of service:

Flow: Allocated based on the estimated wastewater flow for each customer class.

BOD: Allocated based on estimated pounds of BOD returned to the system.

TSS: Allocated based on estimated pounds of TSS returned to the system.

Collection System – Retail Only: Allocated based on the estimated wastewater flow for each retail customer class.

Surcharge Sampling: Allocated to surcharge customers based on the number of bills.

Customer Service and Billing: Allocated based on the annual number of bills.

Meters and Services: Allocated based on MEUs, which are based on water meter size. Larger meters are assigned more meter equivalents than smaller meters.

Unit Cost Development

In order to allocate the cost-of-service to various customer classes, unit costs of service are developed for each rate component. As shown in Table 3.17, the total rate revenue requirements for wastewater are allocated to each rate component. The total cost for each rate component is then divided by the total number of associated units of service to determine appropriate unit costs for the wastewater system. The units of service for each customer class are shown in Table 3.18.

Table 3.18 Wastewater Units of Service by Customer Class

Customer Class	Flow	BOD	TSS	Collection – Retail	Surcharge Sampling	Cust Svc & Billing	Meters & Services
Units	*1,000 gal*	*lbs*	*lbs*	*1,000 gal*	*Bills*	*Bills*	*MEUs*
Residential	26,932,557	42,083,735	72,419,440	26,932,557		5,549,518	500,495
General [2]	21,802,435	34,067,612	58,624,962	21,802,435		314,489	145,018
Wholesale	2,717,000	4,245,475	7,305,791			12	600
Surcharge		21,027,937	2,925,999		44,868		
TOTAL [1]	**51,451,991**	**101,424,759**	**141,276,191**	**48,734,991**	**44,868**	**5,864,019**	**646,112**

Note:
(1) Totals may not sum due to rounding.
(2) General includes Multi-family, Commercial, and Industrial.

Table 3.19 shows the calculation of the unit costs for each rate component, which are then applied to the units of service for each customer class from Table 3.18 to derive customer class allocations. Projected FYE 2022 units of service are based on customer usage characteristics for the three-year period 2018 through 2020. As such, costs are allocated to each customer class based on their respective units of service to reflect their proportionate use of the overall system.

Table 3.19 Development of Wastewater Unit Costs

Description	Flow	BOD	TSS	Collection – Retail	Surcharge Sampling	Cust Svc & Billing	Meters & Services
Units	*1,000 gal*	*lbs*	*lbs*	*1,000 gal*	*Bills*	*Bills*	*MEUs*
Allocated Revenue Requirements [1]	$158.4	$16.3	$52.6	$32.0	$1.0	$14.1	$10.4
Total Units [2]	51,451,991	101,424,759	141,276,191	48,734,991	44,868	5,864,019	646,112
UNIT COST	**$3.08**	**$0.1608**	**$0.3722**	**$0.66**	**$22.40**	**$2.40**	**$16.13**

Notes:
(1) From Table 3.17. Values are in millions of dollars and are rounded.
(2) From Table 3.18.

Customer Class Allocation

Carollo multiplied the units of service in Table 3.18 by the unit costs developed in Table 3.19 to allocate the rate revenue requirements among the customer classes. Table 3.20 details the allocated wastewater revenue requirements for each customer class and rate component, which are then summed to determine the rate revenue requirements by customer class.

Table 3.20 Allocation of Wastewater Rate Revenue Requirements to Customer Classes ($ millions)

Customer Class	Total Value	Flow	BOD	TSS	Collection – Retail Only	Customer		
						Surcharge Sampling	Cust. Svc. & Billing	Meters & Services
Residential	$155.7	$82.9	$6.8	$27.0	$17.7	$0.0	$13.3	$8.1
General [2]	111.8	67.1	5.5	21.8	14.3	0.0	0.8	2.3
Wholesale	11.8	8.4	0.7	2.7	0.0	0.0	0.0	0.0
Surcharge	5.5	0.0	3.4	1.1	0.0	1.0	0.0	0.0
TOTAL [1]	**$284.8**	**$158.4**	**$16.3**	**$52.6**	**$32.0**	**$1.0**	**$14.1**	**$10.4**

Notes:
(1) Totals may not sum due to rounding.
(2) General includes Multi-family, Commercial, and Industrial.

3.4 Findings

3.4.1 Water System

3.4.1.1 Water Supply

Table 3.21 summarizes the cost-of-service findings for the water supply business unit. The cost-of-service by customer class calculated in Table 3.12 and recycled water costs from Table 2.2 are compared to the projected revenue under existing rates to determine the level of over- or underpayment.

Table 3.21 Water Supply Cost-of-Service Findings

Customer Class	2022 Cost of Service	2022 Budgeted Revenue	Difference ($)	Difference (%)
Residential	$150,820,016	$149,519,614	$1,300,402	0.9%
General [2]	90,950,290	84,156,240	6,794,050	8.1%
Irrigation	16,892,316	31,124,898	(14,232,582)	(45.7%)
Wholesale	1,413,026	1,457,810	(44,784)	(3.1%)
Recycled Water	9,167,915	2,985,000	6,182,915	207.1%
TOTAL [1]	**$269,243,562**	**$269,243,562**	**$0**	**0.0%**

Notes:
(1) Totals may not sum due to rounding.
(2) General includes Multi-family, Commercial, and Industrial.

Beneficial Reallocation of Recycled Water Costs

The recycled water system is a water supply source for SAWS, providing an alternative water supply for non-potable uses. This frees up potable water in the system, offsetting the need to identify new water supply sources that are costly to produce and transport into the service area. The calculated cost of service is significantly higher than the budgeted revenue from the current recycled water rates, indicating that the rates should more than triple to fully recover the costs related to recycled water. However, SAWS has historically set recycled water rates below cost of service to provide an incentive to customers to use recycled water for non-potable uses. SAWS will solicit input from the 2022 RAC regarding an appropriate level of cost recovery for recycled water. As such, Carollo recommends adjusting the recycled water cost of service to match the FYE 2022 budgeted revenue.

Before the 2019 rate study was suspended, the 2019 RAC recommended reallocating the recycled water revenue shortfall to the residential and irrigation customer classes based on the estimated irrigation usage since the development of the recycled water system was intended to augment existing potable water sources and prevent or delay the need to acquire more expensive potable water sources. . Table 3.22 shows the beneficial reallocation of recycled water costs.

Beneficial Reallocation of Costs to Irrigation Customer Class

The current water supply fee is based on the methodology utilized during the 2015 rate study, which allocated water supply costs to Base, Max Day Extra Capacity, and Max Hour Extra Capacity. However, because water supply sources are typically acquired to meet annual demand, not peak demand, SAWS staff recommended a change during the 2019 rate study to allocate water supply costs entirely to Base, which was supported by the 2019 RAC. Carollo also agrees with this recommendation, and our cost-of-service analysis reflects this change.

The result of the recommended change is to shift water supply costs away from customer classes with higher peaking factors. The irrigation customer class is most impacted by this shift, which greatly reduced its cost of service. The 2019 RAC identified Conservation as a high-priority pricing objective, and because outdoor irrigation is a discretionary use of water, the 2019 RAC recommended a beneficial reallocation of costs from the Residential, General, and Wholesale customer classes to the Irrigation customer class such that revenue from irrigation rates for water supply and water delivery combined would be unchanged. This beneficial reallocation is shown in Table 3.22.

Table 3.22 Water Supply Beneficial Reallocation

Customer Class	2022 Calculated Cost of Service	Recycled Water Reallocation	Irrigation Reallocation	2022 Adjusted Cost of Service
Residential	$150,820,016	$3,884,831	($5,657,187)	$149,047,659
General [2]	90,950,290	0	(3,112,027)	87,838,263
Irrigation	16,892,316	2,298,084	8,818,072	28,008,472
Wholesale	1,413,026	0	(48,858)	1,364,168
Recycled Water	9,167,915	(6,182,915)		2,985,000
TOTAL [1]	**$269,243,562**	**$0**	**$0**	**$269,243,562**

Notes:
(1) Totals may not sum due to rounding.
(2) General includes Multi-family, Commercial, and Industrial.

3.4.1.2 Water Delivery

Table 3.23 summarizes the cost-of-service findings for the water delivery business unit. The cost-of-service by customer class calculated in Table 3.13 is compared to the projected revenue under existing rates to determine the level of over- or underpayment.

Table 3.23 Water Delivery Cost-of-Service Findings

Customer Class	2022 Cost of Service	2022 Budgeted Revenue	Difference ($)	Difference (%)
Residential	$135,419,110	$137,929,509	($2,510,399)	(1.8%)
General [2]	66,510,256	$67,324,487	(814,231)	(1.2%)
Irrigation	28,423,107	$25,306,681	3,116,426	12.3%
Wholesale	1,059,080	$850,875	208,205	24.5%
TOTAL [1]	**$231,411,552**	**$231,411,552**	**$0**	**0.0%**

Notes:
(1) Totals may not sum due to rounding.
(2) General includes Multi-family, Commercial, and Industrial.

Table 3.24 combines water supply and water delivery and summarizes the cost-of-service findings for the total water system.

Table 3.24 Water System Cost-of-Service Findings

Customer Class	2022 Adjusted Cost of Service	2022 Budgeted Revenue	Difference ($)	Difference (%)	Unit Cost ($/kgal) [3]
Residential	$284,466,769	$287,449,123	($2,982,354)	(1.0%)	$7.42
General [2]	154,348,519	151,480,727	2,867,792	1.9%	6.22
Irrigation	56,431,579	56,431,579	0	0.0%	14.09
Wholesale	2,423,247	2,308,685	114,562	5.0%	6.47
Recycled Water	2,985,000	2,985,000	0	207.1%	1.57
TOTAL [1]	**$500,655,114**	**$500,655,114**	**$0**	**0.0%**	**$7.21**

Notes:
(1) Totals may not sum due to rounding.
(2) General includes Multi-family, Commercial, and Industrial.
(3) Unit Cost is the 2022 Adjusted Cost of Service divided by the annual sales (Base) from Table 3.10.

3.4.2 Wastewater System

Table 3.25 summarizes the cost-of-service findings for the wastewater system. The cost-of-service by customer class calculated in Table 3.20 is compared to the projected revenue under existing rates to determine the level of over- or underpayment.

Table 3.25 Wastewater Cost-of-Service Findings

Customer Class	2022 Cost of Service	2022 Budgeted Revenue	Difference ($)	Difference (%)	Unit Cost ($/kgal) [3][3]
Residential	$155,707,457	$166,575,425	($10,867,968)	(6.5%)	$5.78
General [2]	111,840,459	100,233,298	11,607,162	11.6%	5.13
Wholesale	11,777,843	12,107,016	(329,173)	(2.7%)	4.33
Surcharge	5,475,687	5,885,707	(410,020)	(7.0%)	0.25
TOTAL [1]	**$284,801,446**	**$284,801,446**	**$0**	**0.0%**	**$5.54**

Notes:
(1) Totals may not sum due to rounding.
(2) General includes Multi-family, Commercial, and Industrial.
(3) Unit Cost is the 2022 Cost of Service divided by the annual flow (Flow) from Table 3.18.

Appendix A

WATER SYSTEM ANALYSIS

SAN ANTONIO WATER SYSTEM
2022 Water and Wastewater Rate Study
Table A.1 - Water Supply Revenue Requirements

Description	Operating Expense	Capital Cost	FY 2022
(+) O&M			
TOTAL O&M	**$ 237,244,935**	**$ -**	**$ 237,244,935**
(+) Capital			
TOTAL CAPITAL	**$ 11,436,325**	**$ 82,024,773**	**$ 93,461,098**
EXISTING DEBT			
Senior Lien		$ 2,262,967	$ 2,262,967
Junior Lien		$ 24,435,737	$ 24,435,737
Subordinate Lien - Fixed Rate		$ 3,765,048	$ 3,765,048
TOTAL Existing Debt	**$ -**	**$ 30,463,752**	**$ 30,463,752**
FUTURE DEBT			
Senior Lien - Fixed (2022)		$ 8,329,188	$ 8,329,188
TOTAL Future Debt	**$ -**	**$ 8,329,188**	**$ 8,329,188**
OTHER EXPENDITURES AND TRANSFERS			
Other Debt and Debt Expenses		$ 445,471	$ 445,471
Operating Reserve	$ 660,730		$ 660,730
Transfer to City	$ 10,775,595		$ 10,775,595
Transfer to R&R		$ 2,931,632	$ 2,931,632
Transfer to R&R - Capital Recovery Fees		$ 38,362,962	$ 38,362,962
Capital Outlay		$ 1,491,769	$ 1,491,769
TOTAL Other Expenditures and Transfers	**$ 11,436,325**	**$ 43,231,834**	**$ 54,668,159**
(-) Adjustments			
TOTAL ADJUSTMENTS	**$ (30,264,121)**	**$ (40,366,265)**	**$ (70,630,386)**
(-) Impact Fee Revenue			
Capital Recovery Fees		$ (38,362,962)	$ (38,362,962)
(-) Investment Income			
Interest Earned & Misc.		$ (2,075,303)	$ (2,075,303)
(-) Other Revenue			

Description	Operating Expense	Capital Cost	FY 2022
Recovery Of EAA Fee	$ (22,773,072)		$ (22,773,072)
Special Services Fees and Customer Penalties	$ (3,685,551)		$ (3,685,551)
Stormwater Revenues	$ (5,727,739)		$ (5,727,739)
Affordability Program	$ 2,602,382		$ 2,602,382
Bill Adjustments & Uncollected Accounts	$ 5,325,171		$ 5,325,171
Intercompany Revenue Reallocation	$ (5,630,000)		$ (5,630,000)
Incremental AMI Revenue	$ (375,312)		$ (375,312)
Project Fund Interest		$ 72,000	$ 72,000
TOTAL Other Revenue	**$ (30,264,121)**	**$ 72,000**	**$ (30,192,121)**

(-) Total Rate Revenue Requirement

TOTAL RATE REVENUE REQUIREMENT	**$ 218,417,139**	**$ 41,658,508**	**$ 260,075,647**
Projected Rate Revenue			$ 266,258,562
Transfer from/(to) Recycled Water			$ (6,182,915)

Utility Basis

RATE REVENUE REQUIREMENT	**$ 218,417,139**	**$ 41,658,508**	**$ 260,075,647**
O&M Expenses	$ 218,417,139		$ 218,417,139
Depreciation Expense		$ 28,162,166	$ 28,162,166
Return (Cash Residual)		$ 13,496,342	$ 13,496,342

SAN ANTONIO WATER SYSTEM
2022 Water and Wastewater Rate Study
Table A.2 - Recycled Water Revenue Requirements

Description	Operating Expense	Capital Cost	FY 2022
(+) O&M			
TOTAL O&M	**$ 2,562,071**	**$ -**	**$ 2,562,071**
(+) Capital			
TOTAL CAPITAL	**$ 124,205**	**$ 6,481,639**	**$ 6,605,844**
EXISTING DEBT			
Junior Lien		$ 5,594,715	$ 5,594,715
Subordinate Lien - Fixed Rate		$ 395,456	$ 395,456
TOTAL Existing Debt	**$ -**	**$ 5,990,171**	**$ 5,990,171**
FUTURE DEBT			
Senior Lien - Fixed (2022)		$ 183,038	$ 183,038
TOTAL Future Debt	**$ -**	**$ 183,038**	**$ 183,038**
OTHER EXPENDITURES AND TRANSFERS			
Other Debt and Debt Expenses		$ 17,432	$ 17,432
Operating Reserve	$ 4,805		$ 4,805
Transfer to City	$ 119,400		$ 119,400
Transfer to R&R		$ 256,678	$ 256,678
Transfer to R&R - Capital Recovery Fees		$ -	$ -
Capital Outlay		$ 34,320	$ 34,320
TOTAL Other Expenditures and Transfers	**$ 124,205**	**$ 308,430**	**$ 432,635**
(-) Adjustments			
TOTAL ADJUSTMENTS	**$ -**	**$ -**	**$ -**
(-) Impact Fee Revenue			
Capital Recovery Fees		$ -	$ -
(-) Investment Income			
Interest Earned & Misc.		$ -	$ -
(-) Other Revenue			
Special Services Fees and Customer Penalties	$ -		$ -

Description	Operating Expense	Capital Cost	FY 2022
Affordability Program	$ -		$ -
Bill Adjustments & Uncollected Accounts	$ -		$ -
Intercompany Revenue Reallocation	$ -		$ -
Project Fund Interest		$ -	$ -
TOTAL Other Revenue	**$ -**	**$ -**	**$ -**
(+/-) Reserves			
Cash Flow (Surplus)/Shortfall		$ -	$ -

(-) Total Rate Revenue Requirement

TOTAL RATE REVENUE REQUIREMENT	**$ 2,686,276**	**$ 6,481,639**	**$ 9,167,915**
Projected Rate Revenue			$ 2,985,000
Transfer from/(to) Water Supply			$ 6,182,915

Utility Basis

RATE REVENUE REQUIREMENT	**$ 2,686,276**	**$ 6,481,639**	**$ 9,167,915**
O&M Expenses	$ 2,686,276		$ 2,686,276
Depreciation Expense		$ 3,360,033	$ 3,360,033
Return (Cash Residual)		$ 3,121,606	$ 3,121,606

SAN ANTONIO WATER SYSTEM
2022 Water and Wastewater Rate Study
Table A.3 - Water Delivery Revenue Requirements

Description	Operating Expense	Capital Cost	FY 2022
(+) O&M			
TOTAL O&M	**$ 99,577,703**	**$ -**	**$ 99,577,703**
(+) Capital			
TOTAL CAPITAL	**$ 9,826,014**	**$ 156,894,661**	**$ 166,720,675**
EXISTING DEBT			
Senior Lien		$ 14,218,794	$ 14,218,794
Junior Lien		$ 59,365,637	$ 59,365,637
Subordinate Lien - Fixed Rate		$ 653,397	$ 653,397
TOTAL Existing Debt	**$ -**	**$ 74,237,828**	**$ 74,237,828**
FUTURE DEBT			
Senior Lien - Fixed (2022)		$ 5,531,600	$ 5,531,600
TOTAL Future Debt	**$ -**	**$ 5,531,600**	**$ 5,531,600**
OTHER EXPENDITURES AND TRANSFERS			
Other Debt and Debt Expenses		$ 1,348,146	$ 1,348,146
Operating Reserve	$ 401,215		$ 401,215
Transfer to City	$ 9,424,799		$ 9,424,799
Transfer to R&R		$ 41,023,219	$ 41,023,219
Transfer to R&R - Capital Recovery Fees		$ 30,099,817	$ 30,099,817
Capital Outlay		$ 4,654,051	$ 4,654,051
TOTAL Other Expenditures and Transfers	**$ 9,826,014**	**$ 77,125,233**	**$ 86,951,247**
(-) Adjustments			
TOTAL ADJUSTMENTS	**$ (2,840,431)**	**$ (32,046,395)**	**$ (34,886,826)**
(-) Impact Fee Revenue			
Capital Recovery Fees		$ (30,099,817)	$ (30,099,817)
(-) Investment Income			
Interest Earned & Misc.		$ (2,018,578)	$ (2,018,578)
(-) Other Revenue			
Recovery of TCEQ Fee	$ (1,986,790)		$ (1,986,790)

Description	Operating Expense	Capital Cost	FY 2022
Special Services Fees and Customer Penalties	$ (12,361,826)		$ (12,361,826)
Affordability Program	$ 1,588,121		$ 1,588,121
Bill Adjustments & Uncollected Accounts	$ 4,628,231		$ 4,628,231
Intercompany Revenue Reallocation	$ 5,630,000		$ 5,630,000
Incremental AMI Revenue	$ (338,167)		$ (338,167)
Project Fund Interest		$ 72,000	$ 72,000
TOTAL Other Revenue	**$ (2,840,431)**	**$ 72,000**	**$ (2,768,431)**

(-) Total Rate Revenue Requirement

TOTAL RATE REVENUE REQUIREMENT	**$ 106,563,286**	**$ 124,848,266**	**$ 231,411,552**

Utility Basis

RATE REVENUE REQUIREMENT	**$ 106,563,286**	**$ 124,848,266**	**$ 231,411,552**
O&M Expenses	$ 106,563,286		$ 106,563,286
Depreciation Expense		$ 55,050,679	$ 55,050,679
Return (Cash Residual)		$ 69,797,587	$ 69,797,587

SAN ANTONIO WATER SYSTEM

2022 Water and Wastewater Rate Study

Table A.4 - Allocation of Water Supply O&M Budget to Functional Categories

	Cost Centers	2022 Total	Water Supply	Source of Supply	Production	Cust. Svc. & Billing	Meter Costs	Recycled	Stormwater	Conservation	Fire Protection	As All Others
1	**Allocation of Cost Centers**											
2	5000000-Board of Trustees	$41,371	$ 23,532					2%	2%	4%		92%
3	5000100-Office of the President-CEO	$813,167	$ 462,537					2%	2%	4%		92%
4	5000200-Office of Energy Management	$462,025	$ 266,171					5%	0%	0%		95%
5	5000300-Board of Trustees Support	$220,762	$ 125,571					2%	2%	4%		92%
6	5000400-Legal	$1,852,785	$ 1,011,584					2%	1%	4%		93%
7	5000500-Water Law	$664,227	$ 664,226	75%				2%	7%	16%		0%
8	5002300-Communications Administration	$372,748	$ 212,022					2%	2%	4%		92%
9	5002400-Creative Services	$470,283	$ 267,501					2%	2%	4%		92%
10	5002500-Communications	$607,438	$ 345,516					2%	2%	4%		92%
11	5002600-Regional and Federal Outreach	$232,806	$ 132,422					2%	2%	4%		92%
12	5002700-Community Outreach	$414,718	$ 235,895					2%	2%	4%		92%
13	5002800-Education Outreach	$264,393	$ 150,389					2%	2%	4%		92%
14	5002900-Internal Audit	$461,422	$ 262,461					2%	2%	4%		92%
15	5003100-Purchasing	$456,727	$ 165,834					2%	6%	15%		77%
16	5003200-Contract Administration	$269,793	$ 117,614					2%	7%	16%		75%
17	5003300-Office of the VP - Engineering and Construction	$291,415	$ 132,742	79%				3%	6%	12%		0%
18	5003400-Laboratory - Wastewater	$1,124,016	$ 59,900						100%			0%
19	5003500-Laboratory - Water	$150,036	$ -	100%								0%
20	5003800-Safety and Environmental Health	$539,089	$ 243,103					13%	6%	3%		79%
21	5004100-Desalination	$4,843,628	$ 4,843,627	36%	64%							0%
22	5004400-Conservation - Office of the Director	$754,175	$ 754,174							100%		0%
23	5004600-Outdoor Conservation Administration	$1,415,110	$ 1,415,109							100%		0%
24	5004700-Resource Protection and Compliance	$359,238	$ 359,237	94%					6%			0%
25	5004800-Water Quality and Environmental Ed. (WQEE)	$36,001	$ 36,000	100%								0%
26	5004900-PGA Monitoring	$101,281	$ 101,280	100%								0%
27	5005000-Aquifer Protection and Evaluation	$580,835	$ 580,834	100%								0%
28	5005100-Groundwater Resource Protection	$1,122,984	$ 1,122,983	100%								0%
29	5005600-Industrial Compliance	$376,770	$ 376,769						100%			0%
30	5005700-Construction Monitoring	$395,157	$ 395,156						100%			0%
31	5005800-Wastewater Compliance	$158,251	$ 158,250						100%			0%
32	5005900-Industrial Waste	$33,388	$ 33,387						100%			0%
33	5006000-Water Resources	$1,341,078	$ 1,341,077	100%								0%
34	5006600-Oliver Ranch	$1,572,064	$ 1,572,063	100%								0%
35	5006800-Western Canyon Proj w GBRA	$7,429,465	$ 7,429,464	100%								0%
36	5007000-Regional Carrizo Program	$7,820,607	$ 7,820,606	100%								0%
37	5007500-WECo	$12,662,044	$ 12,662,043	100%								0%
38	5008100-Edwards Aquifer	$26,225,271	$ 26,225,270	100%								0%
39	5008300-Critical Period	$122,856	$ 122,855							100%		0%
40	5009200-Plumbers to People	$500,001	$ 500,000							100%		0%
41	5009500-Watersaver	$2,005,582	$ 2,005,581							100%		0%
42	5010000-Public Education	$1,136,573	$ 1,136,572							100%		0%
43	5013400-Pipelines	$226,703	$ 130,473	95%				5%				0%
44	5014000-Plants and Major Projects	$222,432	$ 128,015	95%				5%				0%
45	5014100-Treatment Engineering	$1,174	$ 1,173					100%				0%
46	5014200-Production Engineering	($102,259)	$ -	100%								0%

	Cost Centers	2022 Total	Water Supply	Source of Supply	Production	Cust. Svc. & Billing	Meter Costs	Recycled	Stormwater	Conservation	Fire Protection	As All Others
47	5014600-Governmental	($116,368)	$ -	100%								0%
48	5014900-Sewer and Water Pipeline	($170,795)	$ -	100%								0%
49	5015100-Development	$156,099	$ 62,118	100%								0%
50	5015200-Master Planning	$1,166,120	$ 671,135	95%				5%				0%
51	5015500-Development Engineering	$96,764	$ 38,506	100%								0%
52	5015700-Geographic Information Systems	$828,002	$ 485,524					4%	4%			91%
53	5015800-Office of the CFO	$294,778	$ 167,672					2%	2%	4%		92%
54	5015900-Accounting	$1,462,699	$ 831,997					2%	2%	4%		92%
55	5016000-Business Planning	$554,405	$ 315,350					2%	2%	4%		92%
56	5016100-Treasury	$348,038	$ 197,967					2%	2%	4%		92%
57	5016200-Remittance Processing	$490,463	$ 315,040			56%		0%	40%	4%		0%
58	5016400-Data and Platform Services	$514,423	$ 224,258					2%	7%	16%		75%
59	5016800-Specialized Billing	$172,909	$ 95,557			81%		0%	13%	6%		0%
60	5016900-Telephone Collections	$41,725	$ 23,059			81%		0%	13%	6%		0%
61	5017100-Account Review	$430,108	$ 237,696			81%		0%	13%	6%		0%
62	5017200-Service Centers - ESSC	$275,476	$ 152,240			81%		0%	13%	6%		0%
63	5017400-Service Centers - WSSC	$381,080	$ 210,601			81%		0%	13%	6%		0%
64	5017500-Field Operations	$89,801	$ 49,628			81%		0%	13%	6%		0%
65	5017600-Meter Reading A	$3,536,008	$ 1,768,004			100%						0%
66	5017700-Field Services	$945,472	$ 522,509			81%		0%	13%	6%		0%
67	5017800-Investigators	$356,214	$ 196,859			81%		0%	13%	6%		0%
68	5018000-Customer Service Training	$199,880	$ 110,462			81%		0%	13%	6%		0%
69	5018200-Stormwater	$124,587	$ 99,975			25%		0%	73%	2%		0%
70	5018500-Affordability	$802,983	$ 416,721			93%		0%		7%		0%
71	5018700-Call Center	$3,080,424	$ 1,702,377			81%		0%	13%	6%		0%
72	5018800-Emergency Operations Center	$877,178	$ 399,563			79%		3%	6%	12%		0%
73	5019300-Supply	$693,321	$ 302,247					2%	7%	16%		75%
74	5019500-Equipment Maintenance	$4,085,560	$ 592,437					5%	8%	9%		78%
75	5019600-Enterprise Resource Planning	$2,632,682	$ 1,199,215					3%	6%	12%		79%
76	5019700-Human Resources	$2,695,062	$ 1,174,889					2%	7%	16%		75%
77	5020000-Corporate Real Estate	$93,006	$ 40,545					2%	7%	16%		75%
78	5020100-Risk Management	$1,685,598	$ 760,123					13%	6%	3%		79%
79	5020200-Facility Maintenance	$2,425,795	$ 1,104,975					3%	6%	12%		79%
80	5020400-Asset Management	$1,140,581	$ 1,140,580		100%							0%
81	5020600-Headquarters	$1,829,614	$ 797,605					2%	7%	16%		75%
82	5020700-Security	$2,123,778	$ 925,843					2%	7%	16%		75%
83	5020800-Office of the CIO	$1,012,241	$ 388,539					2%	9%	13%		75%
84	5020900-Shared Services	$1,540,197	$ 701,576					3%	6%	12%		79%
85	5021000-Innovative Systems	$1,073,387	$ 689,471					0%	40%	4%		56%
86	5021100-Information Security	$834,195	$ 320,197					2%	9%	13%		75%
87	5021300-Billing and Print Shop	$2,747,559	$ 1,764,846			56%		0%	40%	4%		0%
88	5021500-Infrastructure	$1,906,444	$ 731,770					2%	9%	13%		75%
89	5021600-Client Services	$560,025	$ 214,960					2%	9%	13%		75%
90	5021700-Engineering	$1,128,931	$ 433,329					2%	9%	13%		75%
91	5021800-Operations	$1,560,333	$ 598,918					2%	9%	13%		75%
92	5021900-Records Management	$215,983	$ 82,902					2%	9%	13%		75%
93	5022000-VP - Water Resources	$9,086	$ 9,085	93%						7%		0%
94	5022200-State Legislative Affairs	$279,860	$ 159,187					2%	2%	4%		92%
95	5022400-Mail Room	$83,268	$ 53,485					0%	40%	4%		56%
96	5022500-Manager Call Center	$272,701	$ 150,706			81%		0%	13%	6%		0%
97	5022600-Manager Field Data Services	$70,093	$ 38,736			81%		0%	13%	6%		0%
98	5022700-Revenue Protection	$241,774	$ 133,614			81%		0%	13%	6%		0%
99	5022900-Field Meter Repair	$453,801	$ 226,900				100%					0%
100	5023100-Reading Review	$543,433	$ 300,324			81%		0%	13%	6%		0%

	Cost Centers	2022 Total	Water Supply	Source of Supply	Production	Cust. Svc. & Billing	Meter Costs	Recycled	Stormwater	Conservation	Fire Protection	As All Others
101	5023200-Field Administration	$160,873	$ 88,905			81%		0%	13%	6%		0%
102	5023300-Key Accounts	$152,434	$ 84,241			81%		0%	13%	6%		0%
103	5023500-Billing Review	$250,584	$ 138,483			81%		0%	13%	6%		0%
104	5023800-Manager Customer Support	$2,991	$ 1,652			81%		0%	13%	6%		0%
105	5024300-Distr and Collection Support	$4,800,394	$ -	100%								0%
106	5024400-Customer Service Administration	$369,499	$ 204,201			81%		0%	13%	6%		0%
107	5024700-Business Process Analysis	$204,131	$ 112,811			81%		0%	13%	6%		0%
108	5025100-Office of the VP - Distribution and Collection	$752,294	$ -	100%								0%
109	5025200-Production Administration	$523,897	$ -	100%								0%
110	5025400-Instrumentation and Controls	$1,246,002	$ 506,590		96%			4%				0%
111	5025500-Control Center	$966,941	$ 556,502		95%			5%				0%
112	5025700-Meter Shop	$313,217	$ 156,608				100%					0%
113	5025900-ESSC Water Maintenance	$4,006,402	$ -	100%								0%
114	5026500-NESC Water Maintenance	$3,554,891	$ -	100%								0%
115	5026800-North Side DC Maintenance	$2,795,959	$ -	100%								0%
116	5027100-West Side DC Maintenance	$3,794,366	$ -	100%								0%
117	5027500-Tank Maintenance Section	$4,286,058	$ -	100%								0%
118	5027900-Mechanical Maintenance Section	$4,991,332	$ -	100%								0%
119	5028000-Production Recycle Maintenance	$1,187,798	$ 1,187,797					100%				0%
120	5028200-Water Supply - Oliver Ranch	$369,838	$ 369,837	14%	86%							0%
121	5028600-Water Supply - Artesia, Seale, Randolph	$1,759,622	$ 1,759,621	20%	80%							0%
122	5028900-Construction Inspection	($350,275)	$ (201,594)	95%				5%				0%
123	5029000-Concrete and Asphalt Svcs - Water	$1,734,527	$ -	100%								0%
124	5029400-Leak Detection Program	$1,233,921	$ 854,201							100%		0%
125	5030400-Office of the VP - Production and Treatment	$499,054	$ 287,219		95%			5%				0%
126	5031100-Operations - ASR	$3,763,447	$ 3,763,446	30%	70%							0%
127	5036700-Recycle Operations	$381,189	$ 381,188					100%				0%
128	5038000-Predictive Maintenance	$362,586	$ 147,417	96%				4%				0%
129	5038900-Small Minority Women Business	$6,993	$ 3,048					2%	7%	16%		75%
130	5039000-Growdon Rd Pump Station	$1,473	$ -	100%								0%
131	5039100-Ofc of Chief Operating Officer	$443,185	$ 201,875	79%				3%	6%	12%		0%
132	5039500-System Control	$134,805	$ 74,499			81%		0%	13%	6%		0%
133	5039700-Quality	$160,451	$ 88,672			81%		0%	13%	6%		0%
134	5039900-Desalination and Integration	($46,891)	$ (46,892)	100%								0%
135	5041000-Surface Water Permits	$9,522	$ 9,521	100%								0%
136	5041200-TCEQ Fees - Water	$1,910,376	$ -	100%								0%
137	5041700-Public Works and SSO Reduction	($69,600)	$ -	100%								0%
138	5042400-Ofc of Director - Production and Treatment Operation	$69,289	$ 39,877		95%			5%				0%
139	5042500-Centralized Electrical Maintenance	$4,791,335	$ 2,757,550		95%			5%				0%
140	5043000-Data Processes	$91,577	$ 91,576						100%			0%
141	5043100-Potable Water Quality	$840,538	$ 840,537	100%								0%
142	5043200-Edwards Aquifer and Watershed Protection	$212,886	$ 212,885	74%					26%			0%
143	5043400-Control System Programming	$642,772	$ 362,394	100%								0%
144	5043500-Backflow Prevention	$822,761	$ -	100%								0%
145	5045800-Continuous Improvement and Innovation	$243,394	$ 106,105					2%	7%	16%		75%
146	5046200-Fire Hydrant Maintenance	$375,605	$ -	100%								0%
147	5046300-Meter Maintenance	$1,772,033	$ -	100%								0%
148	5046500-Vista Ridge Regional Supply Proj	$100,240,139	$ 100,240,138	92%	8%							0%
149	5046800-Governmental Relations Administration	$215,842	$ 122,772					2%	2%	4%		92%
150	5046900-Primary Pumping Station - Operations	$14,922,514	$ -		100%							0%
151	5047000-Construction	$173,852	$ 100,056	95%				5%				0%
152	5047100-Construction Management	($141,583)	$ (81,486)	95%				5%				0%
153	5047200-Developer Inspections	($127,444)	$ (50,716)	100%								0%
154	5047300-Operations Support	$417,484	$ 166,134	100%								0%

	Cost Centers	2022 Total	Water Supply	Source of Supply	Production	Cust. Svc. & Billing	Meter Costs	Recycled	Stormwater	Conservation	Fire Protection	As All Others
155	5047400-Dead-End Main Flushing	$990,131	$ -	100%								0%
156	5047600-Water Point Repair	$415,445	$ -	100%								0%
157	5047800-Advanced Metering Infra. (AMI)	$1,803,301	$ 901,650			100%						0%
158	5048000-Regional Carrizo Utilities	$940,188	$ 940,187		100%							0%
159	5048100-Agua Vista Station	$3,333,028	$ 3,333,027	80%	20%							0%
160	5048500-Project Controls	$54,822	$ 24,972					3%	6%	12%		79%
161	8111100-Other Requirements Center	$6,401,232	$ 2,770,518					2%	7%	16%		75%
162	8111300-Other Requirements - COLA	$2,321,942	$ 1,012,231					2%	7%	16%		75%
163	8111500-Other Requirements - WC Claims	$488,048	$ 212,760					2%	7%	16%		75%
164	8111800-Other Requirements - AL/GL Contingent Liab.	$546,614	$ 238,291					2%	7%	16%		75%
165	8113000-Post Retirement Medical Benefits	$6,207,268	$ 2,827,476					3%	6%	12%		79%
166	8121200-Other Requirements - Vacant Positions	$289,633	$ 126,263					2%	7%	16%		75%
167	6008800-Canyon Regional (CRWA)	$8,103,616	$ 8,103,615	100%								0%
168	6008900-BMA	$3,135,919	$ 3,135,918	100%								0%
169	6010500-Other Requirements	$200,001	$ 79,589									100%
170	**Subtotal Allocated O&M Budget**	**$339,384,878**	**$239,807,006**	**$171,795,363**	**$22,186,425**	**$8,373,353**	**$383,508**	**$2,562,071**	**$4,451,388**	**$10,087,541**	**--**	**$19,967,358**
171	*Subtotal for Reallocation of As All Others*			*84.7%*	*10.9%*	*4.1%*	*0.2%*	*N/A*	*N/A*	*N/A*	*0.0%*	*TRUE*
172	*Reallocation of As All Others Category*			$ 16,919,811	$ 2,185,100	$ 824,676	$ 37,771				$ -	$ 19,967,358
173	**Total Allocated O&M Budget**		**$ 239,807,006**	**$ 188,715,173**	**$ 24,371,525**	**$ 9,198,030**	**$ 421,279**	**$ 2,562,071**	**$ 4,451,388**	**$ 10,087,541**	**$ -**	

SAN ANTONIO WATER SYSTEM

2022 Water and Wastewater Rate Study

Table A.5 - Allocation of Water Delivery O&M Budget to Function

	Cost Centers	2022 Total	Water Delivery	Source of Supply	Production	Distribution	Cust. Svc. & Billing	Meter Costs	As All Others
1	**Allocation of Cost Centers**								
2	5000000-Board of Trustees	$41,371	$ 17,838						100%
3	5000100-Office of the President-CEO	$813,167	$ 350,629						100%
4	5000200-Office of Energy Management	$462,025	$ 195,854						100%
5	5000300-Board of Trustees Support	$220,762	$ 95,190						100%
6	5000400-Legal	$1,852,785	$ 841,200						100%
7	5000500-Water Law	$664,227	$ -	100%					0%
8	5002300-Communications Administration	$372,748	$ 160,725						100%
9	5002400-Creative Services	$470,283	$ 202,781						100%
10	5002500-Communications	$607,438	$ 261,921						100%
11	5002600-Regional and Federal Outreach	$232,806	$ 100,383						100%
12	5002700-Community Outreach	$414,718	$ 178,822						100%
13	5002800-Education Outreach	$264,393	$ 114,003						100%
14	5002900-Internal Audit	$461,422	$ 198,960						100%
15	5003100-Purchasing	$456,727	$ 290,892						100%
16	5003200-Contract Administration	$269,793	$ 152,179						100%
17	5003300-Office of the VP - Engineering and Construction	$291,415	$ 158,672	100%					0%
18	5003400-Laboratory - Wastewater	$1,124,016	$ 1,064,115	100%					0%
19	5003500-Laboratory - Water	$150,036	$ 150,035	100%					0%
20	5003800-Safety and Environmental Health	$539,089	$ 295,985						100%
21	5004100-Desalination	$4,843,628	$ -	100%					0%
22	5004400-Conservation - Office of the Director	$754,175	$ -						100%
23	5004600-Outdoor Conservation Administration	$1,415,110	$ -						100%
24	5004700-Resource Protection and Compliance	$359,238	$ -	100%					0%
25	5004800-Water Quality and Environmental Ed. (WQEE)	$36,001	$ -	100%					0%
26	5004900-PGA Monitoring	$101,281	$ -	100%					0%
27	5005000-Aquifer Protection and Evaluation	$580,835	$ -	100%					0%
28	5005100-Groundwater Resource Protection	$1,122,984	$ -	100%					0%
29	5005600-Industrial Compliance	$376,770	$ -	100%					0%
30	5005700-Construction Monitoring	$395,157	$ -	100%					0%
31	5005800-Wastewater Compliance	$158,251	$ -	100%					0%
32	5005900-Industrial Waste	$33,388	$ -	100%					0%
33	5006000-Water Resources	$1,341,078	$ -	100%					0%

	Cost Centers	2022 Total	Water Delivery	Source of Supply	Production	Distribution	Cust. Svc. & Billing	Meter Costs	As All Others
34	5006600-Oliver Ranch	$1,572,064	$ -	100%					0%
35	5006800-Western Canyon Proj w GBRA	$7,429,465	$ -	100%					0%
36	5007000-Regional Carrizo Program	$7,820,607	$ -	100%					0%
37	5007500-WECo	$12,662,044	$ -	100%					0%
38	5008100-Edwards Aquifer	$26,225,271	$ -	100%					0%
39	5008300-Critical Period	$122,856	$ -						100%
40	5009200-Plumbers to People	$500,001	$ -						100%
41	5009500-Watersaver	$2,005,582	$ -						100%
42	5010000-Public Education	$1,136,573	$ -						100%
43	5013400-Pipelines	$226,703	$ 96,228			100%			0%
44	5014000-Plants and Major Projects	$222,432	$ 94,415		100%				0%
45	5014100-Treatment Engineering	$1,174	$ -		100%				0%
46	5014200-Production Engineering	($102,259)	$ (102,260)		100%				0%
47	5014600-Governmental	($116,368)	$ (116,369)			100%			0%
48	5014900-Sewer and Water Pipeline	($170,795)	$ (170,796)			100%			0%
49	5015100-Development	$156,099	$ 93,980	100%					0%
50	5015200-Master Planning	$1,166,120	$ 494,984	100%					0%
51	5015500-Development Engineering	$96,764	$ 58,257	100%					0%
52	5015700-Geographic Information Systems	$828,002	$ 342,477						100%
53	5015800-Office of the CFO	$294,778	$ 127,105						100%
54	5015900-Accounting	$1,462,699	$ 630,701						100%
55	5016000-Business Planning	$554,405	$ 239,053						100%
56	5016100-Treasury	$348,038	$ 150,070						100%
57	5016200-Remittance Processing	$490,463	$ 175,422				100%		0%
58	5016400-Data and Platform Services	$514,423	$ 290,164						100%
59	5016800-Specialized Billing	$172,909	$ 77,351				100%		0%
60	5016900-Telephone Collections	$41,725	$ 18,666				100%		0%
61	5017100-Account Review	$430,108	$ 192,411				100%		0%
62	5017200-Service Centers - ESSC	$275,476	$ 123,235				100%		0%
63	5017400-Service Centers - WSSC	$381,080	$ 170,478				100%		0%
64	5017500-Field Operations	$89,801	$ 40,173				100%		0%
65	5017600-Meter Reading A	$3,536,008	$ 1,768,004				100%		0%
66	5017700-Field Services	$945,472	$ 422,962				100%		0%
67	5017800-Investigators	$356,214	$ 159,354				100%		0%
68	5018000-Customer Service Training	$199,880	$ 89,417				100%		0%
69	5018200-Stormwater	$124,587	$ 24,612				100%		0%
70	5018500-Affordability	$802,983	$ 386,261				100%		0%
71	5018700-Call Center	$3,080,424	$ 1,378,045				100%		0%
72	5018800-Emergency Operations Center	$877,178	$ 477,613				100%		0%
73	5019300-Supply	$693,321	$ 391,073						100%
74	5019500-Equipment Maintenance	$4,085,560	$ 3,493,122						100%

	Cost Centers	2022 Total	Water Delivery	Source of Supply	Production	Distribution	Cust. Svc. & Billing	Meter Costs	As All Others
75	5019600-Enterprise Resource Planning	$2,632,682	$ 1,433,467						100%
76	5019700-Human Resources	$2,695,062	$ 1,520,172						100%
77	5020000-Corporate Real Estate	$93,006	$ 52,460						100%
78	5020100-Risk Management	$1,685,598	$ 925,474						100%
79	5020200-Facility Maintenance	$2,425,795	$ 1,320,819						100%
80	5020400-Asset Management	$1,140,581	$ -	100%					0%
81	5020600-Headquarters	$1,829,614	$ 1,032,009						100%
82	5020700-Security	$2,123,778	$ 1,197,934						100%
83	5020800-Office of the CIO	$1,012,241	$ 623,701						100%
84	5020900-Shared Services	$1,540,197	$ 838,620						100%
85	5021000-Innovative Systems	$1,073,387	$ 383,915						100%
86	5021100-Information Security	$834,195	$ 513,996						100%
87	5021300-Billing and Print Shop	$2,747,559	$ 982,712				100%		0%
88	5021500-Infrastructure	$1,906,444	$ 1,174,673						100%
89	5021600-Client Services	$560,025	$ 345,064						100%
90	5021700-Engineering	$1,128,931	$ 695,601						100%
91	5021800-Operations	$1,560,333	$ 961,413						100%
92	5021900-Records Management	$215,983	$ 133,079						100%
93	5022000-VP - Water Resources	$9,086	$ -	100%					0%
94	5022200-State Legislative Affairs	$279,860	$ 120,673						100%
95	5022400-Mail Room	$83,268	$ 29,782						100%
96	5022500-Manager Call Center	$272,701	$ 121,994				100%		0%
97	5022600-Manager Field Data Services	$70,093	$ 31,356				100%		0%
98	5022700-Revenue Protection	$241,774	$ 108,159				100%		0%
99	5022900-Field Meter Repair	$453,801	$ 226,900					100%	0%
100	5023100-Reading Review	$543,433	$ 243,107				100%		0%
101	5023200-Field Administration	$160,873	$ 71,967				100%		0%
102	5023300-Key Accounts	$152,434	$ 68,192				100%		0%
103	5023500-Billing Review	$250,584	$ 112,100				100%		0%
104	5023800-Manager Customer Support	$2,991	$ 1,337				100%		0%
105	5024300-Distr and Collection Support	$4,800,394	$ 4,800,393			100%			0%
106	5024400-Customer Service Administration	$369,499	$ 165,297				100%		0%
107	5024700-Business Process Analysis	$204,131	$ 91,319				100%		0%
108	5025100-Office of the VP - Distribution and Collection	$752,294	$ 752,293			100%			0%
109	5025200-Production Administration	$523,897	$ 523,896		100%				0%
110	5025400-Instrumentation and Controls	$1,246,002	$ 739,411		100%				0%
111	5025500-Control Center	$966,941	$ 410,438		100%				0%
112	5025700-Meter Shop	$313,217	$ 156,608					100%	0%
113	5025900-ESSC Water Maintenance	$4,006,402	$ 4,006,401			100%			0%
114	5026500-NESC Water Maintenance	$3,554,891	$ 3,554,890			100%			0%
115	5026800-North Side DC Maintenance	$2,795,959	$ 2,795,958			100%			0%

	Cost Centers	2022 Total	Water Delivery	Source of Supply	Production	Distribution	Cust. Svc. & Billing	Meter Costs	As All Others
116	5027100-West Side DC Maintenance	$3,794,366	$ 3,794,365			100%			0%
117	5027500-Tank Maintenance Section	$4,286,058	$ 4,286,057		100%				0%
118	5027900-Mechanical Maintenance Section	$4,991,332	$ 4,991,331		100%				0%
119	5028000-Production Recycle Maintenance	$1,187,798	$ -						100%
120	5028200-Water Supply - Oliver Ranch	$369,838	$ -		100%				0%
121	5028600-Water Supply - Artesia, Seale, Randolph	$1,759,622	$ -		100%				0%
122	5028900-Construction Inspection	($350,275)	$ (148,682)	100%					0%
123	5029000-Concrete and Asphalt Svcs - Water	$1,734,527	$ 1,734,526			100%			0%
124	5029400-Leak Detection Program	$1,233,921	$ 379,719			100%			0%
125	5030400-Office of the VP - Production and Treatment	$499,054	$ 211,834		100%				0%
126	5031100-Operations - ASR	$3,763,447	$ -						100%
127	5036700-Recycle Operations	$381,189	$ -						100%
128	5038000-Predictive Maintenance	$362,586	$ 215,168		100%				0%
129	5038900-Small Minority Women Business	$6,993	$ 3,944						100%
130	5039000-Growdon Rd Pump Station	$1,473	$ 1,472		100%				0%
131	5039100-Ofc of Chief Operating Officer	$443,185	$ 241,309	100%					0%
132	5039500-System Control	$134,805	$ 60,305				100%		0%
133	5039700-Quality	$160,451	$ 71,778				100%		0%
134	5039900-Desalination and Integration	($46,891)	$ -	100%					0%
135	5041000-Surface Water Permits	$9,522	$ -	100%					0%
136	5041200-TCEQ Fees - Water	$1,910,376	$ 1,910,375	100%					0%
137	5041700-Public Works and SSO Reduction	($69,600)	$ (69,601)			100%			0%
138	5042400-Ofc of Director - Production and Treatment Operation	$69,289	$ 29,411	100%					0%
139	5042500-Centralized Electrical Maintenance	$4,791,335	$ 2,033,783		100%				0%
140	5043000-Data Processes	$91,577	$ -	100%					0%
141	5043100-Potable Water Quality	$840,538	$ -	100%					0%
142	5043200-Edwards Aquifer and Watershed Protection	$212,886	$ -	100%					0%
143	5043400-Control System Programming	$642,772	$ 280,377	100%					0%
144	5043500-Backflow Prevention	$822,761	$ 822,760	100%					0%
145	5045800-Continuous Improvement and Innovation	$243,394	$ 137,288						100%
146	5046200-Fire Hydrant Maintenance	$375,605	$ 375,604	100%					0%
147	5046300-Meter Maintenance	$1,772,033	$ 1,772,032					100%	0%
148	5046500-Vista Ridge Regional Supply Proj	$100,240,139	$ -	100%					0%
149	5046800-Governmental Relations Administration	$215,842	$ 93,068						100%
150	5046900-Primary Pumping Station - Operations	$14,922,514	$ 14,922,513		100%				0%
151	5047000-Construction	$173,852	$ 73,795	100%					0%
152	5047100-Construction Management	($141,583)	$ (60,098)	100%					0%
153	5047200-Developer Inspections	($127,444)	$ (76,729)	100%					0%
154	5047300-Operations Support	$417,484	$ 251,349	100%					0%
155	5047400-Dead-End Main Flushing	$990,131	$ 990,130	100%					0%
156	5047600-Water Point Repair	$415,445	$ 415,444			100%			0%

	Cost Centers	2022 Total	Water Delivery	Source of Supply	Production	Distribution	Cust. Svc. & Billing	Meter Costs	As All Others
157	5047800-Advanced Metering Infra. (AMI)	$1,803,301	$ 901,650				100%		0%
158	5048000-Regional Carrizo Utilities	$940,188	$ -						100%
159	5048100-Agua Vista Station	$3,333,028	$ -						100%
160	5048500-Project Controls	$54,822	$ 29,850	100%					0%
161	8111100-Other Requirements Center	$6,401,232	$ 3,630,713						100%
162	8111300-Other Requirements - COLA	$2,321,942	$ 1,309,710						100%
163	8111500-Other Requirements - WC Claims	$488,048	$ 275,287						100%
164	8111800-Other Requirements - AL/GL Contingent Liab.	$546,614	$ 308,322						100%
165	8113000-Post Retirement Medical Benefits	$6,207,268	$ 3,379,790						100%
166	8121200-Other Requirements - Vacant Positions	$289,633	$ 163,370						100%
167	6008800-Canyon Regional (CRWA)	$8,103,616	$ -						100%
168	6008900-BMA	$3,135,919	$ -						100%
169	6010500-Other Requirements	$200,001	$ 120,411						100%
170	**Subtotal Allocated O&M Budget**	**$339,384,878**	**$99,577,703**	**$6,739,493**	**$28,328,057**	**$21,973,449**	**$8,535,278**	**$2,155,540**	**$31,845,885**
171	*Subtotal for Reallocation of As All Others*			*10.0%*	*41.8%*	*32.4%*	*12.6%*	*3.2%*	*TRUE*
172	*Reallocation of As All Others Category*			$ 3,168,749	$ 13,319,177	$ 10,331,392	$ 4,013,084	$ 1,013,483	$ 31,845,885
173	**Total Allocated O&M Budget**		**$ 99,577,703**	**$ 9,908,242**	**$ 41,647,234**	**$ 32,304,841**	**$ 12,548,362**	**$ 3,169,023**	

SAN ANTONIO WATER SYSTEM

2022 Water and Wastewater Rate Study

Table A.6 - Allocation of Water Supply Utility Basis Revenue Requirements to Rate Components

	Description	2022 Total	Source of Supply	Base	Extra Capacity		Customer		Recycled
					Maximum Day	Maximum Hour	Cust. Svc. & Billing	Meters & Services	
1	**Utility Basis Revenue Requirements**								
2	**System Units of Service**		*1,000 gallons*	*1,000 gallons*	*1,000 gpd*	*1,000 gpd*	*Bills*	*MEUs*	*1,000 gallons*
3	Total System		67,555,485	67,555,485	151,047	287,869	6,690,024	765,217	1,905,020
4	**Water Supply**								
5	**O&M Expenses**								
6	Total	$ 221,103,415	$ 177,060,871	$ 16,093,830	$ 11,861,086	$ 4,376,093	$ 8,629,996	$ 395,262	$ 2,686,276
7	Unit Cost $/unit		$ 2.62	$ 0.24	$ 78.53	$ 15.20	$ 1.29	$ 0.52	$ 1.41
8	**Depreciation Expenses**								
9	Total	$ 31,522,199	$ 12,402,683	$ 15,759,483	$ -	$ -	$ -	$ -	$ 3,360,033
10	Unit Cost $/unit		$ 0.18	$ 0.23	$ -	$ -	$ -	$ -	$ 1.76
11	**Total Return on Rate Base**								
12	Total	$ 16,617,947	$ 7,975,456	$ 5,520,886	$ -	$ -	$ -	$ -	$ 3,121,606
13	Unit Cost $/unit	1.4%	$ 0.12	$ 0.08	$ -	$ -	$ -	$ -	$ 1.64
14	**Total Unit Cost**		$ 2.92	$ 0.55	$ 78.53	$ 15.20	$ 1.29	$ 0.52	$ 4.81
15	**Total Water Supply Costs**	**$ 269,243,562**	**$ 197,439,010**	**$ 37,374,199**	**$ 11,861,086**	**$ 4,376,093**	**$ 8,629,996**	**$ 395,262**	**$ 9,167,915**
			75.9%	14.4%	4.6%	1.7%	3.3%	0.2%	

SAN ANTONIO WATER SYSTEM

2022 Water and Wastewater Rate Study

Table A.7 - Allocation of Water Delivery Utility Basis Revenue Requirements to Rate Components

	Description	2022 Total	Source of Supply	Base	Extra Capacity		Customer		Recycled
					Maximum Day	Maximum Hour	Cust. Svc. & Billing	Meters & Services	
1	**Utility Basis Revenue Requirements**								
2	**System Units of Service**		*1,000 gallons*	*1,000 gallons*	*1,000 gpd*	*1,000 gpd*	*Bills*	*MEUs*	*1,000 gallons*
3	Total System		67,555,485	67,555,485	151,047	287,869	6,690,024	765,217	1,905,020
			75.9%	14.4%	4.6%	1.7%	3.3%	0.2%	
4	Water Delivery								
5	**O&M Expenses**								
6	Total	$ 106,563,286	$ 10,603,326	$ 36,359,029	$ 26,796,454	$ 15,984,484	$ 13,428,656	$ 3,391,337	$ -
7	Unit Cost $/unit		$ 0.16	$ 0.54	$ 177.40	$ 55.53	$ 2.01	$ 4.43	$ -
8	**Depreciation Expenses**								
9	Total	$ 55,050,679	$ -	$ 20,197,112	$ 14,073,605	$ 15,442,960	$ -	$ 5,337,002	$ -
10	Unit Cost $/unit		$ -	$ 0.30	$ 93.17	$ 53.65	$ -	$ 6.97	$ -
11	**Total Return on Rate Base**								
12	Total	$ 69,797,587	$ -	$ 24,859,644	$ 17,090,735	$ 26,163,713	$ -	$ 1,683,495	$ -
13	Unit Cost $/unit	4.4%	$ -	$ 0.37	$ 113.15	$ 90.89	$ -	$ 2.20	$ -
14	**Total Unit Cost**		$ 0.16	$ 1.21	$ 383.73	$ 200.06	$ 2.01	$ 13.61	$ -
15	**Total Water Delivery Costs**	**$ 231,411,552**	**$ 10,603,326**	**$ 81,415,785**	**$ 57,960,794**	**$ 57,591,157**	**$ 13,428,656**	**$ 10,411,834**	**$ -**
			4.6%	35.2%	25.0%	24.9%	5.8%	4.5%	0.0%

SAN ANTONIO WATER SYSTEM

2022 Water and Wastewater Rate Study

Table A.8 - Water System Units of Service

	Customer Class	Base Annual Usage (1,000 gal)	Base Annual Usage (1,000 gal)	Max Day Extra Capacity (1,000 gpd)	Max Hour Extra Capacity (1,000 gpd)	Number of Bills	Meter Equivalent Units (MEUs)	Recycled Water Usage (1,000 gal)
1	**Units of Service**							
2	Residential	38,343,652	38,343,652	89,929	143,432	6,213,672	552,269	-
3	General	24,831,049	24,831,049	37,154	77,376	358,656	163,938	-
4	Irrigation	4,006,218	4,006,218	22,555	67,062	117,576	48,420	-
5	Wholesale	374,566	374,566	1,409	-	120	590	-
6	Recycled	-	-	-	-	-	-	1,905,020
7	**TOTAL**	**67,555,485**	**67,555,485**	**151,047**	**287,869**	**6,690,024**	**765,217**	**1,905,020**

SAN ANTONIO WATER SYSTEM

2022 Water and Wastewater Rate Study

Table A.9 - Allocation of Water Supply Revenue Requirements to Customer Classes

	Customer Class	2022 Total	Source of Supply	Base	Extra Capacity: Maximum Day	Extra Capacity: Maximum Hour	Customer: Cust. Svc. & Billing	Customer: Meters & Services	Recycled
1	**Customer Class Cost of Service**								
2	**Total Unit Cost $/unit**		$ 2.92	$ 0.55	$ 78.53	$ 15.20	$ 1.29	$ 0.52	$ 4.81
3	**General**								
4	Units of Service		24,831,049	24,831,049	37,154	77,376	358,656	163,938	0
5	Total Cost	$ 90,950,290	$ 72,571,720	$ 13,737,457	$ 2,917,534	$ 1,176,240	$ 462,659	$ 84,680	$ -
6	**Single Family**								
7	Units of Service		38,343,652	38,343,652	89,929	143,432	6,213,672	552,269	0
8	Total Cost	$ 150,820,016	$ 112,063,924	$ 21,213,130	$ 7,061,779	$ 2,180,404	$ 8,015,511	$ 285,267	$ -
9	**Wholesale**								
10	Units of Service		374,566	374,566	1,409	0	120	590	0
11	Total Cost	$ 1,413,026	$ 1,094,713	$ 207,224	$ 110,629	$ -	$ 155	$ 305	$ -
12	**Irrigation**								
13	Units of Service		4,006,218	4,006,218	22,555	67,062	117,576	48,420	0
14	Total Cost	$ 16,892,316	$ 11,708,653	$ 2,216,388	$ 1,771,143	$ 1,019,450	$ 151,671	$ 25,011	$ -
15	**Recycled Water**								
16	Units of Service		0	0	0	0	0	0	1,905,020
17	Total Cost	$ 9,167,915	$ -	$ -	$ -	$ -	$ -	$ -	$ 9,167,915

SAN ANTONIO WATER SYSTEM

2022 Water and Wastewater Rate Study

Table A.10 - Allocation of Water Delivery Revenue Requirements to Customer Classes

	Customer Class	2022 Total	Source of Supply	Base	Extra Capacity		Customer		Recycled
					Maximum Day	Maximum Hour	Cust. Svc. & Billing	Meters & Services	
1	**Customer Class Cost of Service**								
2	**Total Unit Cost $/unit**		$ 0.16	$ 1.21	$ 383.73	$ 200.06	$ 2.01	$ 13.61	$ -
3	**General**								
4	Units of Service		24,831,049	24,831,049	37,154	77,376	358,656	163,938	0
5	Total Cost	$ 66,510,256	$ 3,897,414	$ 29,925,614	$ 14,256,924	$ 15,479,789	$ 719,918	$ 2,230,598	$ -
6	**Single Family**								
7	Units of Service		38,343,652	38,343,652	89,929	143,432	6,213,672	552,269	0
8	Total Cost	$ 135,419,110	$ 6,018,316	$ 46,210,586	$ 34,508,335	$ 28,694,994	$ 12,472,491	$ 7,514,387	$ -
9	**Wholesale**								
10	Units of Service		374,566	374,566	1,409	0	120	590	0
11	Total Cost	$ 1,059,080	$ 58,791	$ 451,415	$ 540,605	$ -	$ 241	$ 8,028	$ -
12	**Irrigation**								
13	Units of Service		4,006,218	4,006,218	22,555	67,062	117,576	48,420	0
14	Total Cost	$ 28,423,107	$ 628,805	$ 4,828,170	$ 8,654,930	$ 13,416,374	$ 236,006	$ 658,821	$ -
15	**Recycled Water**								
16	Units of Service		0	0	0	0	0	0	1,905,020
17	Total Cost	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

Appendix B

WASTEWATER SYSTEM ANALYSIS

SAN ANTONIO WATER SYSTEM
2022 Water and Wastewater Rate Study
Table B.1 - Wastewater Revenue Requirements

Description	Operating Expense	Capital Cost	FY 2022
(+) O&M			
TOTAL O&M	**$ 124,464,394**	**$ -**	**$ 124,464,394**
(+) Capital			
TOTAL CAPITAL	**$ 11,554,279**	**$ 183,061,145**	**$ 194,615,424**
EXISTING DEBT			
Senior Lien		$ 4,887,161	$ 4,887,161
Junior Lien		$ 85,282,248	$ 85,282,248
Subordinate Lien - Fixed Rate		$ 1,537,356	$ 1,537,356
TOTAL Existing Debt	**$ -**	**$ 91,706,765**	**$ 91,706,765**
FUTURE DEBT			
Senior Lien - Fixed (2022)		$ 3,999,863	$ 3,999,863
TOTAL Future Debt	**$ -**	**$ 3,999,863**	**$ 3,999,863**
OTHER EXPENDITURES AND TRANSFERS			
Other Debt and Debt Expenses		$ 1,511,253	$ 1,511,253
Operating Reserve	$ 87,898		$ 87,898
Transfer to City	$ 11,466,381		$ 11,466,381
Transfer to R&R		$ 48,612,721	$ 48,612,721
Transfer to R&R - Capital Recovery Fees		$ 31,611,446	$ 31,611,446
Capital Outlay		$ 5,619,098	$ 5,619,098
TOTAL Other Expenditures and Transfers	**$ 11,554,279**	**$ 87,354,518**	**$ 98,908,797**
(-) Adjustments			
TOTAL ADJUSTMENTS	**$ (34,066)**	**$ (34,244,306)**	**$ (34,278,372)**
(-) Impact Fee Revenue			
Capital Recovery Fees		$ (31,611,446)	$ (31,611,446)
(-) Investment Income			
Interest Earned & Misc.		$ (2,728,860)	$ (2,728,860)
(-) Other Revenue			

Description	Operating Expense	Capital Cost	FY 2022
Recovery of TCEQ Fee	$ (622,925)		$ (622,925)
Special Services Fees and Customer Penalties	$ (6,611,642)		$ (6,611,642)
Affordability Program	$ 4,002,638		$ 4,002,638
Bill Adjustments & Uncollected Accounts	$ 3,625,905		$ 3,625,905
Intercompany Revenue Reallocation	$ -		$ -
Incremental AMI Revenue	$ (428,042)		$ (428,042)
Project Fund Interest		$ 96,000	$ 96,000
TOTAL Other Revenue	**$ (34,066)**	**$ 96,000**	**$ 61,934**

(-) Total Rate Revenue Requirement

TOTAL RATE REVENUE REQUIREMENT	**$ 135,984,607**	**$ 148,816,839**	**$ 284,801,446**

Utility Basis

RATE REVENUE REQUIREMENT	**$ 135,984,606.87**	**$ 148,816,839.13**	**$ 284,801,446**
O&M Expenses	$ 135,984,607		$ 135,984,607
Depreciation Expense		$ 53,456,289	$ 53,456,289
Return (Cash Residual)		$ 95,360,550	$ 95,360,550

SAN ANTONIO WATER SYSTEM

2022 Water and Wastewater Rate Study

Table B.2 - Allocation of Wastewater O&M Budget to Functional Categories

	Cost Centers	2022	Treatment	Collection System	CS - Retail Only	Surcharge Sampling	Customer Service	Billing	As All Others
1	**Allocation of Cost Centers**								
2	5000000-Board of Trustees	$ 22,030							100%
3	5000100-Office of the President-CEO	$ 433,017							100%
4	5000200-Office of Energy Management	$ 93,914	100%						0%
5	5000300-Board of Trustees Support	$ 117,557							100%
6	5000400-Legal	$ 1,038,859							100%
7	5002300-Communications Administration	$ 198,491					100%		0%
8	5002400-Creative Services	$ 250,429					100%		0%
9	5002500-Communications	$ 323,465					100%		0%
10	5002600-Regional and Federal Outreach	$ 123,970	100%						0%
11	5002700-Community Outreach	$ 220,840					100%		0%
12	5002800-Education Outreach	$ 140,791					100%		0%
13	5002900-Internal Audit	$ 245,710							100%
14	5003100-Purchasing	$ 351,887					100%		0%
15	5003200-Contract Administration	$ 208,559							100%
16	5003300-Office of the VP - Engineering and Construction	$ 197,957							100%
17	5003400-Laboratory - Wastewater	$ 1,327,576	100%						0%
18	5003600-Laboratory - Biomonitoring	$ 16,000	100%						0%
19	5003800-Safety and Environmental Health	$ 365,089							100%
20	5004700-Resource Protection and Compliance	$ 420,684				3%			97%
21	5005600-Industrial Compliance	$ 311,310	100%						0%
22	5005800-Wastewater Compliance	$ 226,295	12%			88%			0%
23	5005900-Industrial Waste	$ 707,555				100%			0%
24	5013400-Pipelines	$ 46,143		100%					0%
25	5014000-Plants and Major Projects	$ 45,273							100%
26	5014100-Treatment Engineering	$ 60,562	100%						0%
27	5014600-Governmental	$ (89,725)							100%
28	5014900-Sewer and Water Pipelline	$ (131,691)		100%					0%
29	5015100-Development	$ 117,248							100%
30	5015200-Master Planning	$ 237,350							100%
31	5015500-Development Engineering	$ 72,681							100%

	Cost Centers	2022	Treatment	Collection System	CS - Retail Only	Surcharge Sampling	Customer Service	Billing	As All Others
32	5015700-Geographic Information Systems	$ 164,221					100%		0%
33	5015800-Office of the CFO	$ 156,971					100%		0%
34	5015900-Accounting	$ 778,898					100%		0%
35	5016000-Business Planning	$ 295,224					100%		0%
36	5016100-Treasury	$ 185,332					100%		0%
37	5016200-Remittance Processing	$ 156,940					100%		0%
38	5016400-Data and Platform Services	$ 397,666					100%		0%
39	5016800-Specialized Billing	$ 69,202						100%	0%
40	5016900-Telephone Collections	$ 16,699						100%	0%
41	5017100-Account Review	$ 172,138						100%	0%
42	5017200-Service Centers - ESSC	$ 110,251					100%		0%
43	5017400-Service Centers - WSSC	$ 152,516					100%		0%
44	5017500-Field Operations	$ 35,940					100%		0%
45	5017600-Meter Reading A	$ 501,293						100%	0%
46	5017700-Field Services	$ 378,398		100%					0%
47	5017800-Investigators	$ 142,564					100%		0%
48	5018000-Customer Service Training	$ 79,996					100%		0%
49	5018200-Stormwater	$ 22,019							100%
50	5018500-Affordability	$ 345,564							100%
51	5018700-Call Center	$ 1,232,852					100%		0%
52	5018800-Emergency Operations Center	$ 595,864					100%		0%
53	5019300-Supply	$ 535,960							100%
54	5019500-Equipment Maintenance	$ 4,243,681	100%						0%
55	5019600-Enterprise Resource Planning	$ 1,788,375							100%
56	5019700-Human Resources	$ 2,083,375							100%
57	5020000-Corporate Real Estate	$ 71,896							100%
58	5020100-Risk Management	$ 1,141,544							100%
59	5020200-Facility Maintenance	$ 1,647,836	100%						0%
60	5020600-Headquarters	$ 1,414,354							100%
61	5020700-Security	$ 1,641,753							100%
62	5020800-Office of the CIO	$ 661,124							100%
63	5020900-Shared Services	$ 1,046,252							100%
64	5021000-Innovative Systems	$ 343,465							100%
65	5021100-Information Security	$ 544,836							100%
66	5021300-Billing and Print Shop	$ 879,172						100%	0%
67	5021500-Infrastructure	$ 1,245,154							100%
68	5021600-Client Services	$ 365,768							100%
69	5021700-Engineering	$ 737,337							100%
70	5021800-Operations	$ 1,019,099	100%						0%

	Cost Centers	2022	Treatment	Collection System	CS - Retail Only	Surcharge Sampling	Customer Service	Billing	As All Others
71	5021900-Records Management	$ 141,064							100%
72	5022200-State Legislative Affairs	$ 149,027							100%
73	5022400-Mail Room	$ 26,644					100%		0%
74	5022500-Manager Call Center	$ 109,141					100%		0%
75	5022600-Manager Field Data Services	$ 28,052					100%		0%
76	5022700-Revenue Protection	$ 96,763					100%		0%
77	5022900-Field Meter Repair	$ 64,334					100%		0%
78	5023100-Reading Review	$ 217,493						100%	0%
79	5023200-Field Administration	$ 64,384					100%		0%
80	5023300-Key Accounts	$ 61,007					100%		0%
81	5023500-Billing Review	$ 100,289						100%	0%
82	5023800-Manager Customer Support	$ 1,197					100%		0%
83	5024200-Construction	$ 2,418,398		100%					0%
84	5024300-Distr and Collection Support	$ 3,701,312		100%					0%
85	5024400-Customer Service Administration	$ 147,881					100%		0%
86	5024700-Business Process Analysis	$ 81,697							100%
87	5025100-Office of the VP - Distribution and Collection	$ 580,051		100%					0%
88	5025400-Instrumentation and Controls	$ 922,480	100%						0%
89	5025500-Control Center	$ 196,809	100%						0%
90	5025700-Meter Shop	$ 44,404					100%		0%
91	5025900-ESSC Water Maintenance	$ 1,177,515		100%					0%
92	5026500-NESC Water Maintenance	$ 1,044,812		100%					0%
93	5026800-North Side DC Maintenance	$ 821,756		100%					0%
94	5027100-West Side DC Maintenance	$ 1,115,196		100%					0%
95	5028800-Lift Station Maintenance and Operations	$ 2,440,960		100%					0%
96	5028900-Construction Inspection	$ (71,295)	100%						0%
97	5029000-Concrete and Asphalt Svcs - Water	$ 1,337,395		100%					0%
98	5029200-Collection PM Televising	$ 1,379,705		100%					0%
99	5029300-Collection PM Line Cleaning	$ 3,476,346		100%					0%
100	5030400-Office of the VP - Production and Treatment	$ 101,576	100%						0%
101	5030500-Operations - Steven M. Clouse WRC	$ 10,467,250	100%						0%
102	5030600-Operations - Salado Creek	$ 28,587	100%						0%
103	5030700-Operations - Leon Creek	$ 3,212,721	100%						0%
104	5030800-Operations - Medio Creek	$ 2,023,396	100%						0%
105	5030900-Operations - ML	$ 5,788	100%						0%
106	5031200-Operations - General	$ 60,112	100%						0%
107	5031300-Wastehauler Prog	$ 152,255	100%						0%
108	5031400-Maintenance - Steven M. Clouse WRC	$ 154,668	100%						0%
109	5033800-Mechanical Maintenance - Steven M. Clouse WRC	$ 9,577,692	100%						0%

	Cost Centers	2022	Treatment	Collection System	CS - Retail Only	Surcharge Sampling	Customer Service	Billing	As All Others
110	5034000-Mechanical Maintenance - Leon Creek	$ 702,483	100%						0%
111	5034100-Mechanical Maintenance - Medio	$ 314,736	100%						0%
112	5034600-Special Projects - Steven M. Clouse WRC	$ 1,774,702	100%						0%
113	5036000-Odor Control	$ 3,095,900	100%						0%
114	5037600-Biosolids - Steven M. Clouse WRC	$ 5,043,951	100%						0%
115	5038000-Predictive Maintenance	$ 268,441	100%						0%
116	5038900-Small Minority Women Business	$ 5,405							100%
117	5039100-Ofc of Chief Operating Officer	$ 301,054							100%
118	5039300-Proactive Maintenance	$ 1,808,472		100%					0%
119	5039400-Maintenance Planning	$ (29,516)		100%					0%
120	5039500-System Control	$ 53,952					100%		0%
121	5039700-Quality	$ 64,215					100%		0%
122	5041300-TCEQ - Wastewater	$ 598,966	100%						0%
123	5041500-Fats Oils and Grease (FOG) Program	$ 461,214		100%					0%
124	5041600-Sewer System Improvements	$ 97,838		100%					0%
125	5041700-Public Works and SSO Reduction	$ (86,834)		100%					0%
126	5042400-Ofc of Director - Production and Treatment Operations	$ 14,103	100%						0%
127	5042500-Centralized Electrical Maintenance	$ 975,221	100%						0%
128	5042900-CMOM-Capacity Management OM	$ 89,192		100%					0%
129	5043000-Data Processes	$ 411,278					100%		0%
130	5043400-Control System Programming	$ 134,444							100%
131	5043700-CCTV External (SD)	$ 1,035,000			100%				0%
132	5043800-CCTV External (LD)	$ 835,286		100%					0%
133	5043900-CCTV External (Siphons)	$ 640,148		100%					0%
134	5044500-Sewer Point Repair	$ 4,797,652			100%				0%
135	5044600-Flow Monitoring	$ 1,260,000		100%					0%
136	5044800-Line Cleaning (SD)	$ 1,010,000			100%				0%
137	5044900-Line Cleaning (LD)	$ 964,714		100%					0%
138	5045000-Line Cleaning (Siphons)	$ 859,852		100%					0%
139	5045600-Smart Cover Program	$ 824,020			100%				0%
140	5045800-Continuous Improvement and Innovation	$ 188,151							100%
141	5046100-EARZ Smoke Testing	$ 100,000		100%					0%
142	5046800-Governmental Relations Administration	$ 114,937					100%		0%
143	5047000-Construction	$ 35,385							100%
144	5047100-Construction Management	$ (28,818)							100%
145	5047200-Developer Inspections	$ (95,727)							100%
146	5047300-Operations Support	$ 313,579							100%
147	5047800-Advanced Metering Infra. (AMI)	$ 255,650					100%		0%
148	5047900-Mitchell Lake Expanded Wetlands	$ 60,000							100%

	Cost Centers	2022	Treatment	Collection System	CS - Retail Only	Surcharge Sampling	Customer Service	Billing	As All Others
149	5048200-Sewer Lateral Reimbursements	$ 140,000					100%		0%
150	5048400-Manhole Team	$ 253,327		100%					0%
151	5048500-Project Controls	$ 37,240							100%
152	8111100-Other Requirements Center	$ 4,969,311							100%
153	8111300-Other Requirements - COLA	$ 1,794,940							100%
154	8111500-Other Requirements - WC Claims	$ 377,277							100%
155	8111800-Other Requirements - AL/GL Contingent Liab.	$ 422,551							100%
156	8113000-Post Retirement Medical Benefits	$ 4,216,583							100%
157	8121200-Other Requirements - Vacant Positions	$ 223,896							100%
158	**Subtotal Allocated O&M Budget**	**$124,464,394**	**$ 48,490,596**	**$ 27,039,989**	**$ 7,666,672**	**$ 919,840**	**$ 7,654,979**	**$ 1,956,285**	**$ 30,736,034**
159	*Subtotal for Reallocation of As All Others*		*52.2%*	*29.1%*	*8.3%*	*N/A*	*8.2%*	*2.1%*	*TRUE*
160	*Reallocation of As All Others Category*		$ 16,058,963	$ 8,955,019	$ 2,539,024		$ 2,535,152	$ 647,876	$ 30,736,034
161	**Total Allocated O&M Budget**	**$124,464,394**	**$ 64,549,559**	**$ 35,995,007**	**$ 10,205,696**	**$ 919,840**	**$ 10,190,131**	**$ 2,604,161**	

SAN ANTONIO WATER SYSTEM

2022 Water and Wastewater Rate Study

Table B.3 - Allocation of Wastewater Utility Basis Revenue Requirements to Rate Components

	Description	2022 Total	Flow	BOD	TSS	CS - Retail Only	Customer Surcharge Sampling	Customer Cust. Svc. & Billing	Customer Meters & Services
1	**Utility Basis Revenue Requirements**								
2	**System Units of Service**		*1,000 gallons*	*lbs*	*lbs*	*1,000 gallons*	*Bills*	*Bills*	*EDUs*
3	Total System		51,451,991	101,424,759	141,276,191	48,734,991	44,868	5,864,019	646,112
4	Wastewater								
5	**O&M Expenses**								
6	Total	$ 135,984,607	$ 65,147,096	$ 9,847,287	$ 34,856,418	$ 11,150,318	$ 1,004,979	$ 13,978,510	$ -
7	Unit Cost $/unit		$ 1.27	$ 0.0971	$ 0.2467	$ 0.23	$ 22.40	$ 2.38	$ -
8	**Depreciation Expenses**								
9	Total	$ 53,456,289	$ 30,963,094	$ 4,090,486	$ 9,685,727	$ 5,780,471	$ -	$ 46,276	$ 2,890,235
10	Unit Cost $/unit		$ 0.60	$ 0.0403	$ 0.0686	$ 0.12	$ -	$ 0.01	$ 4.47
11	**Total Return on Rate Base**								
12	Total	$ 95,360,550	$ 62,321,693	$ 2,373,188	$ 8,039,581	$ 15,066,545	$ -	$ 26,271	$ 7,533,272
13	Unit Cost $/unit		$ 1.21	$ 0.0234	$ 0.0569	$ 0.31	$ -	$ 0.00	$ 11.66
14	**Total Unit Cost**		$ 3.08	$ 0.1608	$ 0.3722	$ 0.66	$ 22.40	$ 2.40	$ 16.13
15	**Total Wastewater Costs**	**$ 284,801,446**	**$ 158,431,883**	**$ 16,310,961**	**$ 52,581,726**	**$ 31,997,334**	**$ 1,004,979**	**$ 14,051,056**	**$ 10,423,508**
			55.6%	*5.7%*	*18.5%*	*11.2%*	*0.4%*	*4.9%*	*3.7%*

SAN ANTONIO WATER SYSTEM

2022 Water and Wastewater Rate Study

Table B.4 - Wastewater System Units of Service

	Customer Class	Billed Water (1,000 gal)	BOD (lbs)	TSS (lbs)	Retail Billed Water (1,000 gal)	Number of Bills	Number of Bills	Meter Equivalent Units (MEUs)
1	**Units of Service**							
2	General	21,802,435	34,067,612	58,624,962	21,802,435	-	314,489	145,018
3	Single-family	26,932,557	42,083,735	72,419,440	26,932,557		5,549,518	500,495
4	Wholesale	2,717,000	4,245,475	7,305,791	-		12	600
5	Surcharge	-	21,027,937	2,925,999	-	44,868	-	-
6	**TOTAL**	**51,451,991**	**101,424,759**	**141,276,191**	**48,734,991**	**44,868**	**5,864,019**	**646,112**

SAN ANTONIO WATER SYSTEM

2022 Water and Wastewater Rate Study

Table B.5 - Allocation of Wastewater Revenue Requirements to Customer Classes

	Customer Class	2022 Total	Flow	BOD	TSS	CS - Retail Only	Customer Surcharge Sampling	Customer Cust. Svc. & Billing	Customer Meters & Services
1	**Customer Class Cost of Service**								
2	**Total Unit Cost $/unit**		$ 3.08	$ 0.1608	$ 0.3722	$ 0.66	$ 22.40	$ 2.40	$ 16.13
3	**General**								
4	Units of Service		21,802,435	34,067,612	58,624,962	21,802,435	-	314,489	145,018
5	Total Cost	$ 111,840,459	$ 67,134,443	$ 5,478,697	$ 21,819,683	$ 14,314,556	$ -	$ 753,562	$ 2,339,519
6	**Single-family**								
7	Units of Service		26,932,557	42,083,735	72,419,440	26,932,557	-	5,549,518	500,495
8	Total Cost	$ 155,707,457	$ 82,931,205	$ 6,767,836	$ 26,953,863	$ 17,682,777	$ -	$ 13,297,466	$ 8,074,310
9	**Wholesale**								
10	Units of Service		2,717,000	4,245,475	7,305,791	-	-	12	600
11	Total Cost	$ 11,777,843	$ 8,366,235	$ 682,750	$ 2,719,149	$ -	$ -	$ 29	$ 9,680
12	**Surcharge**								
13	Units of Service		-	21,027,937	2,925,999	-	44,868	-	-
14	Total Cost	$ 5,475,687	$ -	$ 3,381,678	$ 1,089,030	$ -	$ 1,004,979	$ -	$ -