

# Olivenhain

MUNICIPAL WATER DISTRICT

## Wastewater Rate Study Report

Draft Report / March 12, 2024







March 12, 2024

Ms. Kimberly A. Thorner  
General Manager  
Olivenhain Municipal Water District  
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Encinitas, CA 92024

Subject: Wastewater Rate Study Report

Dear Ms. Thorner:

Raftelis is pleased to provide this 2024 Wastewater Rate Study Report (Report) to the Olivenhain Municipal Water District (District).

The major objectives of the study include the following:

- Develop a financial plan for the District Wastewater utility to ensure financial sufficiency, meet operation and maintenance (O&M) costs, and help ensure sufficient funding for capital refurbishment and replacement needs;
- Conduct a cost-of-service (COS) analysis;
- Develop fair and equitable 5-year wastewater rates which conform to Proposition 218 requirements based on the analysis and methodology set out in this Report.

This Report summarizes our key findings and recommendations. It has been a pleasure working with you and we appreciate your help and the support provided by Ms. Rainy Selamat, Ms. Lindsey Stephenson, and Mr. Jared Graffam during the course of the study.

Sincerely,  
**RAFTELIS FINANCIAL CONSULTANTS, INC.**

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Executive Vice President

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**Lindsay Roth**  
Consultant

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## Abbreviations

<b>Terms</b>	<b>Descriptions</b>
<b>4S</b>	4S Ranch (Sanitation District)
<b>4SWRF</b>	4S Water Reclamation Facility
<b>AF</b>	Acre foot / Acre feet
<b>AWWA</b>	American Water Works Association
<b>BOD</b>	Biochemical oxygen demand
<b>COS</b>	Cost of Service
<b>CIP</b>	Capital Improvement Plan
<b>EDU</b>	Equivalent dwelling unit
<b>FY</b>	Fiscal Year ending (July 1 – June 30)
<b>GPCD</b>	Gallons per capita per day
<b>GPM</b>	Gallons per minute
<b>HCF</b>	Hundred cubic feet = 100 cubic feet = 748 gallons
<b>Manual of Practice No. 27</b>	Water Environment Federation’s (WEF) Financing and Charges for Wastewater Systems (Manual of Practice No. 27)
<b>MFR</b>	Multi-family residential
<b>MGD</b>	Million gallons per day
<b>O&amp;M</b>	Operations and maintenance
<b>PAYGO</b>	PAYGO - Pay as you go - refers to annual fund transfers, collected from wastewater rates and charges, to pay for planned capital improvements
<b>RC</b>	Rancho Cielo (Sanitation District)
<b>R&amp;R</b>	Refurbishment and Replacement
<b>SCADA</b>	Supervisory control and data acquisition (system)
<b>SFR</b>	Single-family residential
<b>SL</b>	Santa Luz
<b>TSS</b>	Total suspended solids
<b>WEF</b>	Water Environment Federation

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# 1. Executive Summary

## 1.1. Background of the Study

In September 2023, Olivenhain Municipal Water District (District) engaged Raftelis Financial Consultants (Raftelis) to update the District’s last wastewater rate study based on increased costs to recover the full cost of providing wastewater collection services. The last wastewater rate study was completed in 2020. The District last increased its wastewater rates in July 2023. This Wastewater Rate Study (Study) includes the preparation of a ten-year financial plan, cost of service analysis, and five-year implementation of wastewater rates.

This Report summarizes the key findings and recommendations of the Study. For purposes of the analysis set out in this Report, the terms “Rate(s)” and “Charge(s)” may be used interchangeably.

The District’s Wastewater System is an interconnected system comprised of two sub-districts with a wide variety of commercial, industrial, and residential uses:

- Rancho Cielo Sanitation District – This includes the Rancho Cielo Estates development and adjacent areas. It is located just east of the covenant area of Rancho Santa Fe and north of Del Dios Highway. The District provides sewer service to approximately 310 single family homes in the Cielo Sanitation District.
- 4S Ranch Sanitation District – This area consists of the 4S Ranch master planned community and other minor surrounding areas in the City of San Diego. It is located just west of Rancho Bernardo. The District provides sewer service to approximately 3,680 single family homes in the 4S Ranch Sanitation District and 1,540 multi-family and non-residential accounts. Santa Luz Housing Development and Black Mountain East Clusters were annexed to the 4S Ranch Sanitation District for sewer service only. Both are outside District boundaries.

The wastewater service area spans approximately 5,550 acres. Wastewater is collected through approximately 65 miles of gravity sewers and 13 miles of force mains, and ultimately pumped to the 4S Ranch Water Reclamation Facility (4SWRF). There are 14 sewer lift stations monitored by the District’s supervisory control and data acquisition (SCADA) system.

## 1.2. Objectives of the Study

The major objectives of the study include the following:

- Develop financial plans for the Wastewater utility to ensure financial sufficiency, meet operation and maintenance (O&M) costs, ensure sufficient funding for capital replacement and refurbishment (R&R) needs, and provide for the financial health of the enterprises;
- Conduct a cost-of-service (COS) analysis;
- Develop fair and equitable 5-year wastewater rates which conform with Proposition 218 requirements based on the analysis and methodology set out in this Report.

## 1.3. Legal Requirements and Rate Setting Methodology

### 1.3.1. LEGAL REQUIREMENTS

In November 1996, California voters approved Proposition 218, which amended the California Constitution by adding Articles XIII C and Article XIII D. Article XIII D placed certain limitations on the use of revenue collected from property-related fees and charges and on the amount of the fee or charge that may be imposed on each parcel by governmental agencies. Additionally, it established procedural requirements for imposing new, or increasing existing, property-related fees and charges.

The substantive requirements in Article XIII D place limitations on (1) the use of the revenue collected from property-related fees and charges and (2) the allocation of costs recovered by such fees or charges to ensure that they are proportionate to the cost of providing the service(s) attributable to each parcel.

### 1.3.2. RATE SETTING METHODOLOGY

The wastewater rates were prepared using the principles established by the Water Environment Federation's (WEF) *Financing and Charges for Wastewater Systems* (Manual of Practice No. 27) which establishes commonly accepted professional standards for wastewater cost of service (COS) studies. The WEF Manual's general principles and the objectives of the Report are described below.

The first step in ratemaking is to determine the adequate funding of a utility. This is referred to as the "revenue requirement" analysis. This analysis considers the utility's short-term and long-term service requirements and objectives over a given planning horizon, including capital facilities and system operations and maintenance, to determine the adequacy of a utility's existing rates to recover its costs. A number of factors may affect these projections, including the number of customers served, water-use trends, nonrecurring sales, conservation, inflation, interest rates, capital finance needs, and other changes in operating and economic conditions.

After determining a utility's revenue requirement, the next step is a cost of service (COS) analysis. Utilizing approved expense and revenue budgets and capital improvement plans, we first functionalize a utility's costs and assets among major operating functions (collection, treatment, etc.). After cost functionalization, we allocate the "functionalized costs" to cost causation components. For wastewater these cost components include wastewater flow, strength, and general admin costs. Wastewater strength is further defined as the Biochemical Oxygen Demand (BOD) and Total Suspended Solid (TSS) loads contributed by each class. We then distribute these cost causation components to each customer class (e.g., single-family residential, multi-family residential and commercial) by determining the loadings of flow and strength of each class.

Once the cost-of-service analysis is complete, we design rates to collect the cost to serve each customer class calculated as part of the cost-of-service analysis.

## 1.4. Wastewater Utility Financial Plan

Raftelis has projected the operating and capital expenditures over the planning period and is recommending a revenue increase of 5.5 percent for FY 2025, starting July 1, 2024, followed by annual revenue increases of 5.5 percent for the next four years. The 5.5 percent increase is an increase in total revenue requirement from rates. The rate increases for different customer classes will be different based on the cost-of-service analysis.

The proposed financial plan is shown graphically in **Figure 1-1** with the columns representing the operating expense, debt, and capital expenditures. The red line shows the revenues with no revenue adjustments and the green line shows the revenues with the proposed revenue adjustments. Expenditures in excess of the proposed revenues in each year are funded from reserves shown by the yellow bars below the horizontal axis. **Figure 1-2** shows graphically the financing plan for the capital improvement plan (CIP). Capital expenditures in FY 2026 through FY 2028 will be funded by a debt issue of \$6.5 million in FY 2026. To ensure the capital reserve meets its minimum target there is a one-time withdrawal of \$1 million in FY 2025 from the rate stabilization reserve and that will be returned over the following three years.

**Figure 1-1: Wastewater Utility Proposed Financial Plan**

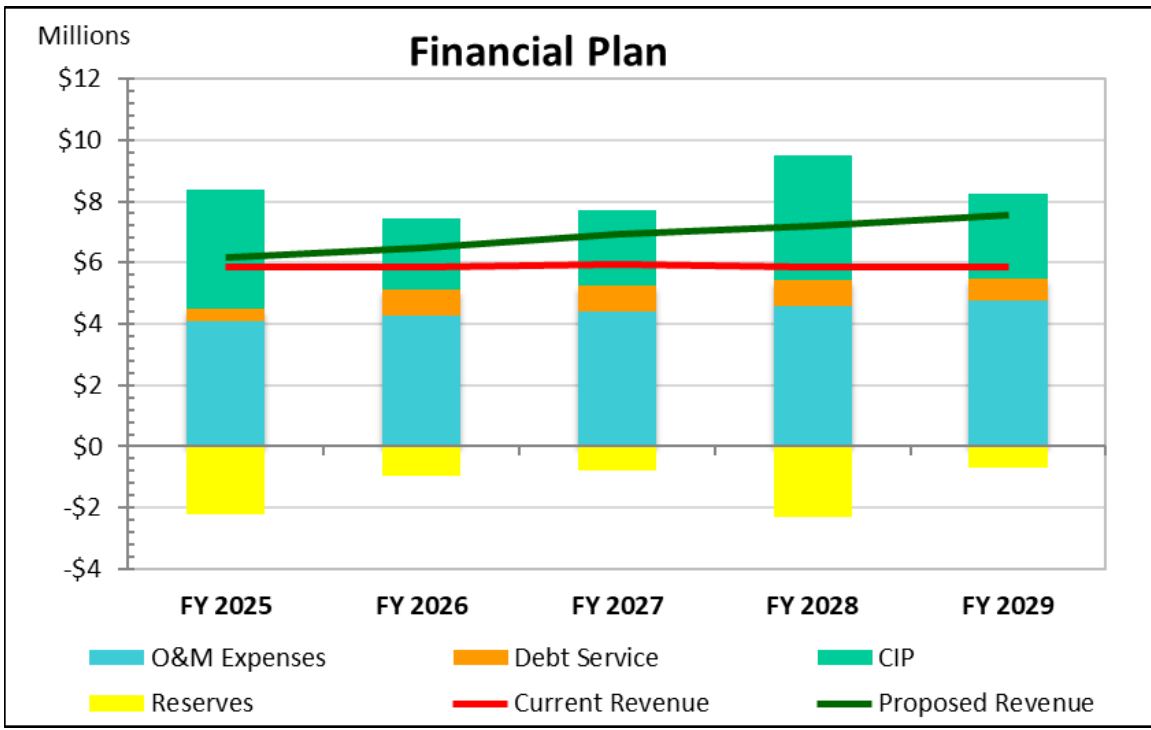
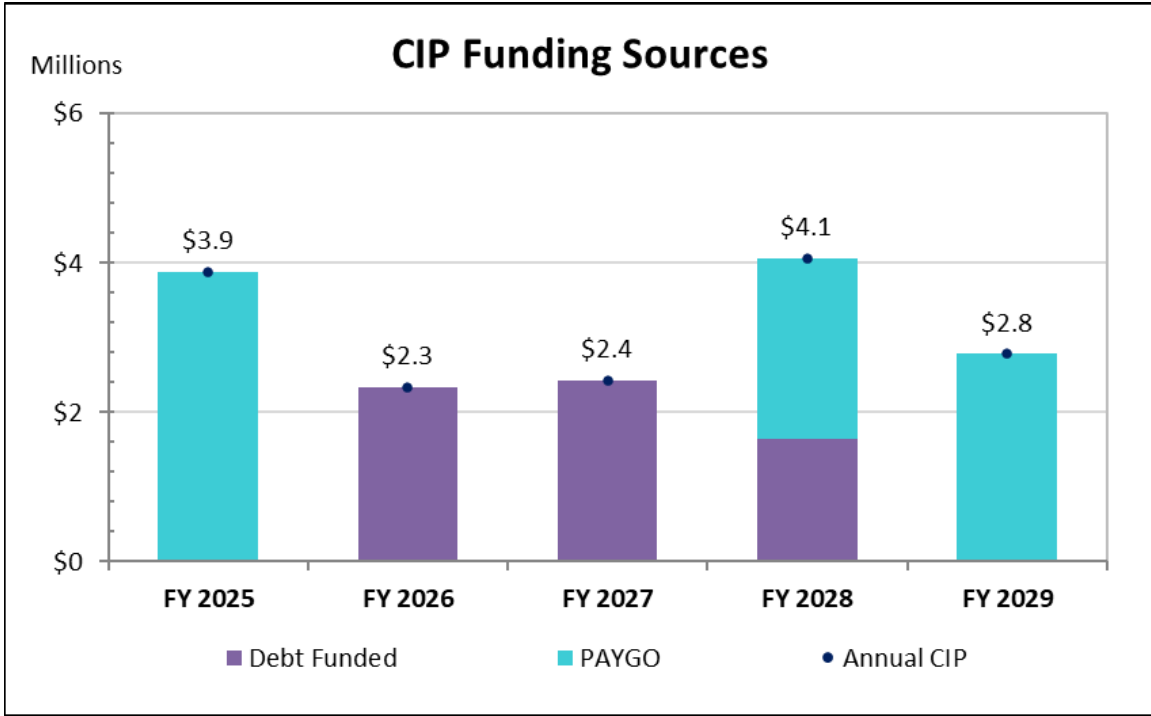


Figure 1-2: Capital Funding Sources



## 1.5. Proposed Wastewater Rates

The proposed rates across five years are presented for the annual service access charge in **Table 1-1** and the volumetric rate (\$/hcf) in **Table 1-2**.

Table 1-1: Five-Year Proposed Annual Fixed Charges

Customer Class	Current	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
<b>Single Family Residential</b>	\$197.52	\$217.59	\$229.56	\$242.19	\$255.52	\$269.58
<b>Other</b>						
Multi-Family	\$156.31	\$172.19	\$181.67	\$191.67	\$202.22	\$213.35
Commercial - Group I	\$197.52	\$217.59	\$229.56	\$242.19	\$255.52	\$269.58
Commercial - Group II	\$197.52	\$217.59	\$229.56	\$242.19	\$255.52	\$269.58

Table 1-2: Five-Year Proposed Volumetric Rates (\$/hcf)

Customer Class	Current	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
<b>Single Family Residential</b>	\$7.24	\$7.49	\$7.91	\$8.35	\$8.81	\$9.30
<b>Other</b>						
Multi-Family	\$7.24	\$7.49	\$7.91	\$8.35	\$8.81	\$9.30
Commercial - Group I	\$7.24	\$7.49	\$7.91	\$8.35	\$8.81	\$9.30
Commercial - Group II	\$10.02	\$10.72	\$11.31	\$11.94	\$12.60	\$13.30

# 2. Assumptions

This section summarizes the principal assumptions in this Study. Unless otherwise stated herein, these assumptions are used consistently in the Study.

## 2.1. Inflation

To develop a multi-year plan, we forecast future operating and capital expenditures and non-rate revenues. The Study Period includes cost projections from Fiscal Years (FY) 2025 to FY 2034. The inflationary assumptions to make projections for future years are based on input from District staff and averages of long-term expenditures. The inflationary assumptions are presented in **Table 2-1**. Note that the Study uses the District’s FY 2024 projected expenditures as the basis for future years’ projections based on these inflationary factors.

- General inflation is based on the change in the annual Consumer Price Index for all Urban Consumers for the San Diego-Carlsbad Region.
- Increases in certain wastewater Operations and Maintenance costs were supplied by the District based on discussions with District staff. Salaries, Benefits, and Utilities are projected to be higher than the General inflation factor.
- The District is using a 4% inflation adjustment for future wastewater CIP Projects.
- The reserve interest rate is assumed net of the District’s projected investment income based on current market conditions.

**Table 2-1: Inflationary Assumptions**

Category	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034
General	3.0%	3.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Salaries	6.0%	6.0%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%
Benefits	5.0%	5.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
CIP Projects	3.4%	3.4%	3.4%	3.4%	3.4%	3.4%	3.4%	3.4%	3.4%	3.4%
Utilities	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Reserve Interest Rate	2.0%	2.0%	2.0%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%

## 2.2. Account and EDU Growth Assumptions

**Table 2-2** shows account growth assumptions developed in cooperation with District staff. Single family customer accounts are expected to increase by less than 0.2 percent or about 7 new units annually. No increase in multi-family or commercial customers is expected. Commercial Group I customers include office buildings, small retail stores, schools, etc. Commercial Group II customers represent shopping centers, strip malls, medical office buildings and/or restaurants, and manufacturing facilities.

**Table 2-2: Account Growth Assumptions**

Customer Class	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034
<b>Single Family Residential</b>	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
<b>Other</b>											
Multi-Family	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Commercial - Group I	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Commercial - Group II	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

**Table 2-3** shows the projected Equivalent Dwelling Units (EDUs) reflecting the growth assumptions in **Table 2-2**. Actual EDUs for FY 2023 were provided by District Staff and were used to project future EDUs (FY 2024 through FY 2034.) The EDU definition for Multi-Family, consistent with the last study, is based on the actual flow ratio between Multi-Family and Single-Family Residential wastewater (sewer) customers. One Multi-Family dwelling unit is equivalent to 0.79 EDU.

**Table 2-3: Projected Wastewater EDUs**

Customer Class	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034
<b>Single Family Residential</b>	4,025	4,032	4,039	4,046	4,053	4,060	4,067	4,075	4,083	4,091	4,099	4,107
<b>Other</b>												
Multi-Family	1,604	1,604	1,604	1,604	1,604	1,604	1,604	1,604	1,604	1,604	1,604	1,604
Commercial - Group I	1,310	1,310	1,310	1,310	1,310	1,310	1,310	1,310	1,310	1,310	1,310	1,310
Commercial - Group II	400	400	400	400	400	400	400	400	400	400	400	400
<b>Total EDUs</b>	<b>7,339</b>	<b>7,346</b>	<b>7,353</b>	<b>7,360</b>	<b>7,367</b>	<b>7,374</b>	<b>7,381</b>	<b>7,389</b>	<b>7,397</b>	<b>7,405</b>	<b>7,413</b>	<b>7,421</b>

**Table 2-4** shows the projected wastewater flow expressed in hundred cubic feet (hcf). FY 2023 actual flows, which are used to charge FY 2024 rates, are used to project flows from FY 2025 through FY 2034. Flow is a function of the return factor as shown in **Table 2-4** and account growth factors in **Table 2-2**. The return factor represents the amount of water use returned to the sewer. The Study assumes that the return factor will not change for any customer class throughout the Study Period. SFR flows increase due to more normal winter water use and the growth in those accounts shown in **Table 2-3**.

Note that the Single Family Residential (SFR) class flow is based on *annualized lowest winter water use* from December through March of the previous fiscal year and is capped at 10 hcf per month. SFR properties tend to have a substantial portion of outdoor water use, which does not flow back into the sewer system as wastewater. Wastewater flow equal to lowest month winter water use is a reasonable estimate of indoor water use as outdoor watering is limited in winter months. Other customer classes (e.g., Multi-Family Residential and Commercial) tend to have less outdoor water use. Thus, their flow is based on *actual* water use from the previous year.

**Table 2-4: Projected Wastewater Flow (hcf)**

Customer Class	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034
<b>Return Factor (all classes)</b>	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
<b>Single Family Residential (lowest winter use)</b>	322,140	338,834	339,421	340,008	340,595	341,182	341,853	342,524	343,195	343,866	344,537
<b>Other (actual use)</b>											
Multi-Family	92,892	92,892	92,892	92,892	92,892	92,892	92,892	92,892	92,892	92,892	92,892
Commercial - Group I	61,892	61,892	61,892	61,892	61,892	61,892	61,892	61,892	61,892	61,892	61,892
Commercial - Group II	58,941	58,941	58,941	58,941	58,941	58,941	58,941	58,941	58,941	58,941	58,941
<b>Total Annual Flow (hcf)</b>	<b>535,865</b>	<b>552,559</b>	<b>553,146</b>	<b>553,733</b>	<b>554,320</b>	<b>554,907</b>	<b>555,494</b>	<b>556,081</b>	<b>556,668</b>	<b>557,255</b>	<b>557,842</b>

## 2.3. Reserve Assumptions

### 2.3.1. RESERVE POLICY BACKGROUND

A reserve policy is a Board approved written document that defines the risk management policy for a public agency's financial reserves. The Board's Reserve Policy for the District is used to develop the financial plan. Wastewater reserves enable the District to meet working capital requirements, address revenue shortfalls due to economic recessions, and provide funds in case of an asset failure and/or natural disaster. Reserve policies provide guidelines for sound financial management with an overall long-range perspective to maintain financial solvency. Reserves also set aside funds for capital asset replacement as they age (and need to be replaced) and for new capital projects. Adhering to a sustainable reserve policy enhances financial management transparency and achieves or maintains favorable credit rating(s) for future District debt issues.

The appropriate amount of reserves and reserve types are determined by a variety of factors, such as the size of the operating budget, the amount of debt, the type of rate structure, frequency of customer billing and risk of natural disaster. While reserves vary by agency, most reserves tend to fall into the following categories: operating, rate stabilization, capital, pension stabilization, and emergency. These are each further discussed below.

#### Operating Reserve

The purpose of an operating reserve is to provide working capital to support the operation, maintenance, and administration. The District's wastewater service charges are collected through the County Tax Collector's office at the same time that property tax bills are paid by wastewater (sewer) customers (the majority of which are collected on December 10 and April 10.) Due to the timing of these receipts for sewer services, the operating reserve supports the District's cash flow needs during normal operations and ensures that operations can continue until the County forwards the rate revenues. As it is unlikely for a utility to precisely predict the revenues and revenue requirements for each billing period, a reserve set aside to hedge the risk of monthly negative cash positions is part of prudent financial planning and fiscal management.

#### Rate Stabilization

Rate stabilization reserves are used to minimize the need for abrupt rate increases that may be needed during times of decreased wastewater flow, economic recessions, or emergencies. The rate stabilization reserve would be used to offset the District's costs. A rate stabilization reserve acts as a buffer to protect customers from experiencing large rate increases.

#### Capital Reserve

Capital reserves fund the replacement and renewal of a utility's infrastructure. Because utilities are highly capital-intensive enterprises, it is important to accurately estimate long-term capital costs and develop a reserve to fund the eventual replacement of the system and new capital projects. Capital reserves vary the most (amongst all reserve targets) by agency. There are three accepted industry standard methods used to establish capital reserves:

- » One to five times the average capital expense over 5 to 10 years;
- » Given percentage of asset value, normally valued at replacement cost, of two to five percent; and
- » Asset depreciation normally calculated using replacement cost.

#### Pension Stabilization

The purpose of the pension stabilization reserve is to secure the District's ability to have a consistent annual Unfunded Accrued Liability (UAL) payment to California Public Employee's Retirement System (CalPERS), including Additional Discretionary Payment(s) while achieving its pension funding goal as outlined in the



District’s Pension Funding Policy. The funding goal of a defined benefit pension plan is 100%, which is to fund the long-term cost of benefits provided to the plan members.

### Emergency

An emergency reserve seeks to minimize disruptions in service during a natural disaster or asset/facility failure. An emergency reserve decreases risk by setting aside adequate funds to rebuild/replace an essential facility or pipeline after failure/disaster. Normally, a local public agency performs a critical asset analysis as the basis for the target level of emergency reserve. The District does not currently have an emergency reserve – however the rate stabilization fund has a dual purpose as an emergency fund.

## 2.3.2. CURRENT RESERVES

The District’s current reserve policy follows:

- » **Operating Reserve:** A minimum of 180 days of annual wastewater (sewer) operations and maintenance expenditures approved by the Board. The maximum shall not exceed 365 days of annual sewer operations and maintenance expenditures approved by the Board in District’s budget. In FY 2024, the minimum and maximum targets were \$2.0 million and \$4.1 million, respectively.
- » **Rate Stabilization:** The rate stabilization reserve minimum is 25% of annual wastewater (sewer) operating and maintenance expenditures approved by the Board and the maximum is 100 percent of annual Board approved operating budget. The minimum and maximum target for FY 2024 were \$1.0 million and \$1.4 million, respectively.
- » **Capital Reserve:** The capital reserve minimum is two years’ average of planned capital expenditures of the approved 10-year Wastewater (sewer) Capital Spending Plan. The maximum shall not exceed five years’ average of the approved (ten-year) capital improvement plan. In FY 2024 the minimum and maximum targets were \$6.2 and \$15.5 million, respectively.
- » **Pension Stabilization:** The pension stabilization minimum balance is the one-year average of Projected Future Employer Contributions for UAL Payment over the next 5 fiscal years based on the most current CalPERS annual actuarial report for Classic and PEPRA plans. The maximum balance is two times the one-year average noted in the minimum balance. In FY 2024 the minimum and maximum targets were \$106,000 and \$212,000, respectively.

**Table 2-5** lists the District’s FY 2024 beginning fund balances for the Operating, Rate Stabilization, and Capital reserves as well as the minimum and maximum targets. The Operating Reserve is above its maximum target while the Capital Reserve is below its maximum but above its minimum. The Pension Stabilization fund is below the minimum target as the fund was only added in FY 2023 and will continue to be funded from the Operating Reserve to meet the minimum balance in future years. The total beginning balance is between the total minimum and maximum targets.

**Table 2-5: FY 2024 Beginning Fund Balances**

Reserve	FY 2024	Min Target	Max Target
Operating	\$4,196,892	\$2,039,497	\$4,078,995
Rate Stabilization	\$2,667,189	\$1,019,749	\$4,078,995
Capital	\$13,072,117	\$6,188,400	\$15,471,000
Pension Stabilization	\$40,576	\$106,285	\$212,569
<b>Total Beginning Balance</b>	<b>\$19,936,198</b>	<b>\$9,247,646</b>	<b>\$23,628,989</b>



## 2.4. Data Sources

The District provided the following data to aid in preparing this report:

- » Revenues and expenditures for FY 2023 (actuals) and FY 2024 budgeted
- » Ten-year Wastewater Capital Improvement Plan, based on:
  - Rancho Cielo and 4S Rancho Wastewater Collection System Sewer Pump Stations Condition Assessment (Dudek, 2024)
  - 4S Ranch Water Reclamation Facility Consequence of Failure Analysis (Dudek, 2024)
  - Wastewater System Electrical System Evaluation (Dudek, 2024)
- » Debt service payment schedules
- » Estimated beginning balances for FY 2024
- » Wastewater billing data (with identifying information removed) for FY 2023
- » Customer growth projections
- » Wastewater asset information
- » Total plant influent flow, BOD, and TSS
- » Sewer debt and reserve policies

# 3. Financial Plan

As the first step in the rate study process, Raffelis reviewed the District’s revenue requirements. Raffelis analyzed the District’s wastewater annual operating revenues, operation and maintenance (O&M) expenses, transfers between funds, and reserve requirements. This Section of the Report discusses projected revenues at current rates, O&M expenses, other reserve funding and revenue adjustments to ensure the Wastewater Utility’s fiscal solvency.

## 3.1. Revenues from Current Wastewater Rates

The total annual Single Family Residential (SFR) customer charge is the sum of the annual service access charge assessed per equivalent dwelling unit (EDU) plus a commodity charge assessed per hundred cubic feet (hcf) of water use. The current FY 2024 wastewater charges and rates are presented in **Table 3-1**.

The annual service access charge is a uniform flat charge across all customer classes. The commodity charge is based on an SFR customer’s annualized minimum prior year winter water use with a maximum monthly (or cap) use of 10 hcf.<sup>1</sup> For example, a customer with a minimum winter water use of 7 hcf would be charged the following:

$$\text{Total Annual SFR Bill} = \text{Annual Service Access Charge} + (7 \text{ hcf} \times \text{Flow Charge per hcf} \times 12 \text{ months}) = \$805.68$$

An SFR using more than 10 hcf will only be assessed the flow charge at 10 hcf monthly (or 120 hcf annually). For example, a customer with a minimum winter water use of 25 hcf would be charged the following:

$$\text{Total Annual SFR Bill} = \text{Annual Service Access Charge} + (10 \text{ hcf} \times \text{Flow Charge per hcf} \times 12 \text{ months}) = \$1,066.32$$

**Table 3-1: FY 2024 (Current) Wastewater Charges and Rates**

Customer Class	Annual Service Access Charge (per EDU)	Commodity Rate (\$/hcf)
<b>Single Family Residential</b>	\$197.52	\$7.24
<b>Other</b>		
Multi-Family	\$156.31	\$7.24
Commercial - Group I	\$197.52	\$7.24
Commercial - Group II	\$197.52	\$10.02

Non-SFR customers are charged similarly except the commodity portion of their charge is based on their actual water use. Additionally, non-SFR customers do not have a water use cap.

One Multi-Family (MFR) dwelling unit was revised to be equivalent to 0.79 EDU in the previous study. This was estimated as the ratio of SFR to MFR flow per EDU using housing density data. The annual fixed charge for MFR customers is adjusted to 79 percent of the SFR fixed charge to account for their lower sewer flow.

<sup>1</sup> For the purposes of determining the sewer use, the District defines winter months as December, January, February, and March of the prior fiscal year.

$$FY\ 2024\ MFR\ Fixed\ Charge = \$197.52 \times 0.79^2 = \$156.31$$

Raftelis calculated projected revenue under existing rates by multiplying the number of EDUs for each user class by the existing annual service access charge and added to that the revenue from the commodity rate which is the wastewater use for each class multiplied by the commodity rates shown in **Table 3-1**. The resulting revenue under existing rates is shown in line 3 of **Table 3-4**.

### 3.2. Operation and Maintenance Expenses

Using the District’s FY 2024 detailed Operation and Maintenance (O&M) budgeted values, future expenses were projected by using the inflation factors in **Table 2-1**. **Table 3-2** summarizes budgeted and projected O&M expenses.

**Table 3-2: Projected O&M Expenses**

Budget Item	FY 2024 <i>Projected</i>	FY 2025 <i>Forecast</i>	FY 2026 <i>Forecast</i>	FY 2027 <i>Forecast</i>	FY 2028 <i>Forecast</i>	FY 2029 <i>Forecast</i>	FY 2030 <i>Forecast</i>	FY 2031 <i>Forecast</i>	FY 2032 <i>Forecast</i>	FY 2033 <i>Forecast</i>	FY 2034 <i>Forecast</i>
Personnel	\$1,620,000	\$1,709,660	\$1,804,323	\$1,881,361	\$1,961,699	\$2,045,480	\$2,132,851	\$2,223,967	\$2,318,989	\$2,418,084	\$2,521,428
Operations	\$1,724,137	\$1,811,067	\$1,879,622	\$1,939,655	\$2,002,013	\$2,066,798	\$2,134,264	\$2,204,393	\$2,277,304	\$2,353,125	\$2,431,986
Other	\$540,000	\$558,268	\$577,154	\$596,678	\$616,864	\$637,732	\$659,306	\$681,610	\$704,668	\$728,507	\$753,152
<b>Total O&amp;M</b>	<b>\$3,884,137</b>	<b>\$4,078,995</b>	<b>\$4,261,099</b>	<b>\$4,417,694</b>	<b>\$4,580,576</b>	<b>\$4,750,010</b>	<b>\$4,926,421</b>	<b>\$5,109,970</b>	<b>\$5,300,961</b>	<b>\$5,499,716</b>	<b>\$5,706,566</b>

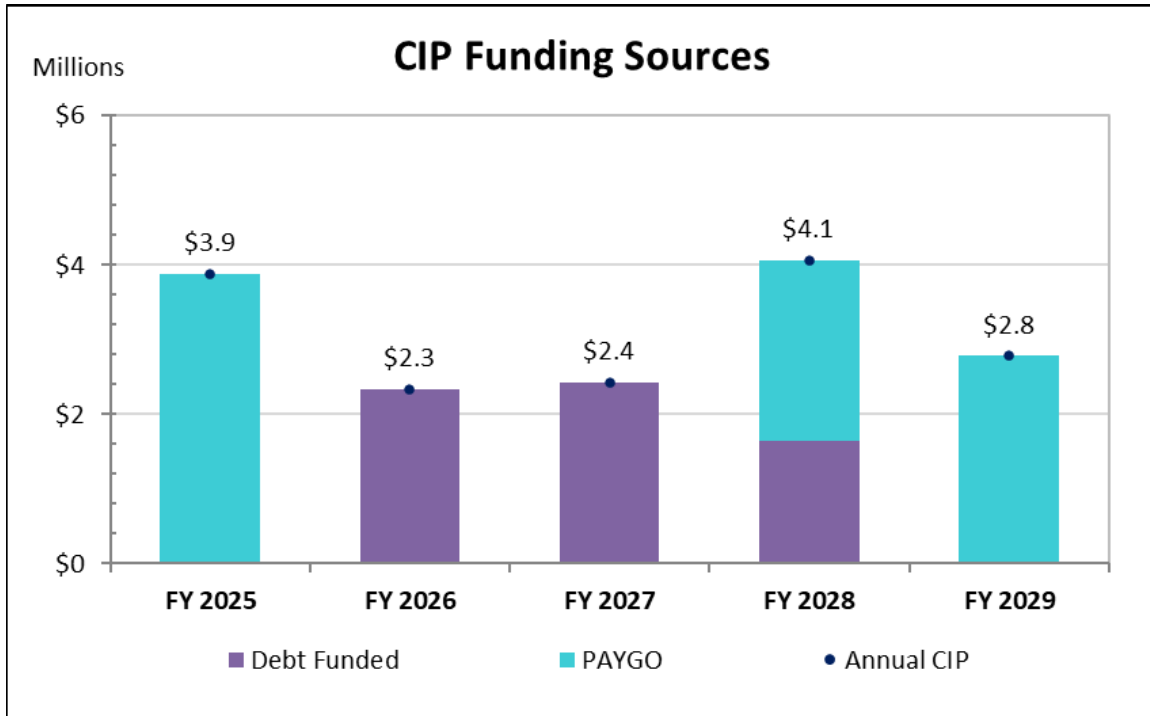
### 3.3. Projected Capital Improvement and Replacement Projects

The District plans to execute approximately \$26.8 million for the wastewater capital improvement plan (CIP) during the 10-year Study Period. The first five years of the CIP are shown in **Figure 3-1**. This is an average of \$2.7 million in annual CIP costs across the Study Period. Future CIP costs are inflated costs provided by District Engineering.<sup>3</sup> Raftelis recommends use of rate revenue and reserves (PAYGO) and issue of new debt to help pay the remaining wastewater CIP to minimize the impact of increased CIP expenditures on future wastewater rate increases. **Figure 3-1** below shows District PAYGO funding by the light blue bars in and the purple bars indicate debt funding in FY 2026 – FY 2028

<sup>2</sup> Note the exact value differs slightly due to rounding.

<sup>3</sup> Note that CIP projects were inflated 3.4% annually by the District prior to submitting to Raftelis based on a 20-year average inflation of the 20-City ENR Construction Cost Index.

Figure 3-1: Projected Replacement CIP and Funding Sources



### 3.4. Existing and Proposed Debt

The District currently has two outstanding debts, the 2021A Wastewater Revenue Bonds and the 2021B Wastewater Revenue Bonds. The 2021A Wastewater Revenue Bonds were issued on October 27, 2021, in the amount of \$5,042,140 to finance wastewater (sewer) improvements at the 4S Wastewater Treatment Plant, including rehabilitations, replacements, and modifications to the existing Neighborhood One Sewer Pump Station and the Headworks Screening System at the 4S Wastewater Treatment Plant. The Series 2021A bonds mature on June 1, 2041, and carry an interest rate of 2.14%. The District’s annual debt service cost for the 2021A bonds is approximately \$310,000 paid 100% from the Wastewater Fund. The 2021B Sewer Revenue Bonds were also issued on October 27, 2021, in the amount of \$3,932,970 to refund and refinance the existing 2018A Sewer Revenue Bonds, which were issued in fiscal year 2018 to finance improvements to the District’s administrative and operations building at 1966 Olivenhain Road, Encinitas, CA. The 2021B bonds mature on June 1, 2028, and carry an interest rate of 1.14%. The Wastewater Fund has been allocated 20% of the debt service payment for the 2021B bond issuance which equals approximately \$121,000 annually through FY 2028.

Raftelis recommends the District issue new debt in the amount of \$6.5 million in FY 2026 to pay for the wastewater capital improvement program resulting in approximately \$423,000 in annual debt service payment each year starting in FY 2026 for 30 years.

### 3.5. Proposed Financial Plan

The District’s wastewater utility needs revenue adjustments to cover O&M expenses, to fund capital improvement projects and meet target reserves per the Board’s reserves policy. The proposed sewer revenue adjustments for the next five years are shown in **Table 3-3**. Raftelis recommends the District implement a 5.5 percent annual revenue adjustment for FY 2025 and thereafter. It is also recommended that the District issue \$6.5 million in debt in FY 2026. The debt helps mitigate the need for higher revenue adjustments and meet the required minimum reserves.

To ensure the capital reserve meets its minimum target there is a one-time withdrawal of \$1 million in FY 2025 from the rate stabilization reserve and that will be returned over the following three years.

**Table 3-3: Proposed Five-Year Revenue Adjustments**

Fiscal Year	Effective Date	Revenue Adjustment
FY 2025	July 1, 2024	5.5%
FY 2026	July 1, 2025	5.5%
FY 2027	July 1, 2026	5.5%
FY 2028	July 1, 2027	5.5%
FY 2029	July 1, 2028	5.5%

**Table 3-4** shows the operating fund cash flow under the proposed wastewater revenue adjustments shown in **Table 3-3**. From FY 2030 to FY 2034, the Cashflow assumes five percent annual revenue adjustments. As shown in **Table 3-4** by the net cashflow (line 22), with the proposed revenue adjustment, revenues are sufficient to meet O&M expenses and debt service. The District will exceed its debt coverage target as shown by the projected debt service coverage ratios in **Table 3-4, line 24**, under the proposed five-year revenue adjustments in **Table 3-3**.

**Table 3-4: Proposed Wastewater Financial Plan**

Line No.	Description	FY 2024 <i>Projected</i>	FY 2025 <i>Forecast</i>	FY 2026 <i>Forecast</i>	FY 2027 <i>Forecast</i>	FY 2028 <i>Forecast</i>	FY 2029 <i>Forecast</i>	FY 2030 <i>Forecast</i>	FY 2031 <i>Forecast</i>	FY 2032 <i>Forecast</i>	FY 2033 <i>Forecast</i>	FY 2034 <i>Forecast</i>
1	<b>REVENUES</b>											
2	<b>Operating Revenues</b>											
3	Revenues from Current Rates	\$5,494,513	\$5,616,761	\$5,622,393	\$5,628,026	\$5,633,658	\$5,639,291	\$5,645,729	\$5,652,167	\$5,658,605	\$5,665,044	\$5,671,482
4	Proposed Revenue Adjustments	\$0	\$308,922	\$635,471	\$980,635	\$1,345,456	\$1,731,037	\$2,101,950	\$2,492,173	\$2,902,692	\$3,334,547	\$3,338,337
5	<b>Total Operating Revenues</b>	<b>\$5,494,513</b>	<b>\$5,925,683</b>	<b>\$6,257,864</b>	<b>\$6,608,661</b>	<b>\$6,979,115</b>	<b>\$7,370,327</b>	<b>\$7,747,679</b>	<b>\$8,144,340</b>	<b>\$8,561,298</b>	<b>\$8,999,590</b>	<b>\$9,009,818</b>
6	<b>Non-Operating Revenues</b>											
7	Interest Income	\$80,000	\$251,457	\$218,528	\$326,625	\$221,694	\$198,361	\$182,138	\$173,051	\$182,294	\$198,332	\$211,114
8	<b>Total Non-Operating Revenues</b>	<b>\$80,000</b>	<b>\$251,457</b>	<b>\$218,528</b>	<b>\$326,625</b>	<b>\$221,694</b>	<b>\$198,361</b>	<b>\$182,138</b>	<b>\$173,051</b>	<b>\$182,294</b>	<b>\$198,332</b>	<b>\$211,114</b>
9	<b>TOTAL REVENUES</b>	<b>\$5,574,513</b>	<b>\$6,177,140</b>	<b>\$6,476,392</b>	<b>\$6,935,286</b>	<b>\$7,200,809</b>	<b>\$7,568,689</b>	<b>\$7,929,817</b>	<b>\$8,317,391</b>	<b>\$8,743,592</b>	<b>\$9,197,922</b>	<b>\$9,220,933</b>
10												
11	<b>EXPENSES</b>											
12	<b>Operating Expenses</b>											
13	Personnel	\$1,620,000	\$1,709,660	\$1,804,323	\$1,881,361	\$1,961,699	\$2,045,480	\$2,132,851	\$2,223,967	\$2,318,989	\$2,418,084	\$2,521,428
14	Operations	\$1,724,137	\$1,811,067	\$1,879,622	\$1,939,655	\$2,002,013	\$2,066,798	\$2,134,264	\$2,204,393	\$2,277,304	\$2,353,125	\$2,431,986
15	Other	\$540,000	\$558,268	\$577,154	\$596,678	\$616,864	\$637,732	\$659,306	\$681,610	\$704,668	\$728,507	\$753,152
16	<b>Subtotal Operating Expenses</b>	<b>\$3,884,137</b>	<b>\$4,078,995</b>	<b>\$4,261,099</b>	<b>\$4,417,694</b>	<b>\$4,580,576</b>	<b>\$4,750,010</b>	<b>\$4,926,421</b>	<b>\$5,109,970</b>	<b>\$5,300,961</b>	<b>\$5,499,716</b>	<b>\$5,706,566</b>
17	<b>Debt Service</b>											
18	Series 2021A and 2021B Bonds	\$431,726	\$431,684	\$431,742	\$431,678	\$431,711	\$309,888	\$309,882	\$309,889	\$309,885	\$309,889	\$309,888
	New Debt Service	\$0	\$0	\$422,834	\$422,834	\$422,834	\$422,834	\$422,834	\$422,834	\$422,834	\$422,834	\$422,834
19	<b>Subtotal Debt Service</b>	<b>\$431,726</b>	<b>\$431,684</b>	<b>\$854,577</b>	<b>\$854,512</b>	<b>\$854,546</b>	<b>\$732,722</b>	<b>\$732,716</b>	<b>\$732,723</b>	<b>\$732,719</b>	<b>\$732,723</b>	<b>\$732,722</b>
20	<b>TOTAL EXPENSES</b>	<b>\$4,315,864</b>	<b>\$4,510,679</b>	<b>\$5,115,675</b>	<b>\$5,272,206</b>	<b>\$5,435,121</b>	<b>\$5,482,732</b>	<b>\$5,659,137</b>	<b>\$5,842,692</b>	<b>\$6,033,681</b>	<b>\$6,232,439</b>	<b>\$6,439,288</b>
21												
22	<b>NET CASHFLOW</b>	<b>\$1,258,650</b>	<b>\$1,666,461</b>	<b>\$1,360,717</b>	<b>\$1,663,079</b>	<b>\$1,765,687</b>	<b>\$2,085,956</b>	<b>\$2,270,679</b>	<b>\$2,474,699</b>	<b>\$2,709,911</b>	<b>\$2,965,483</b>	<b>\$2,781,644</b>
23												
24	<b>Debt Service Coverage Ratio</b>	392%	486%	259%	295%	307%	385%	410%	438%	470%	505%	480%
25	<b>Target Debt Service Coverage Ratio</b>	125%	125%	125%	125%	125%	125%	125%	125%	125%	125%	125%

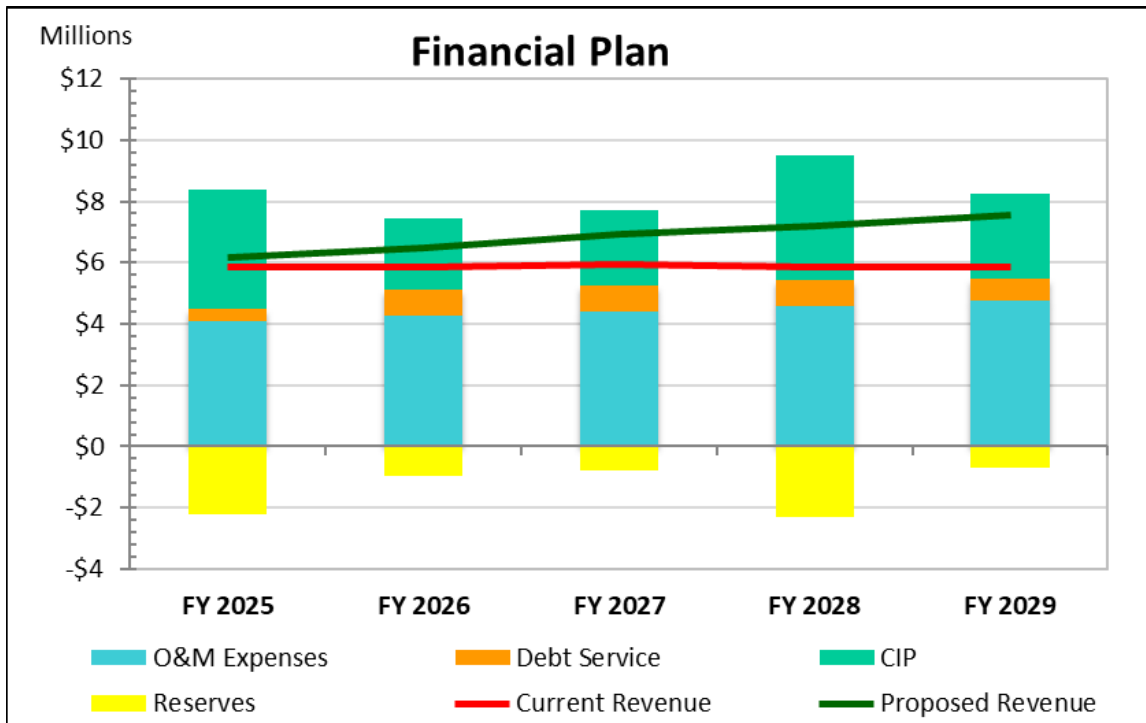
Projected reserve balances are shown below in **Table 3-5** and fall between the minimum and maximum targets for the five-year period of proposed rates (FY 2022 to FY 2026), as shown in **Figure 3-3**. The table shows the total ending balance of all four reserves and the total unrestricted balance of the operating, rate stabilization, and capital reserves, which are shown in **Figure 3-3**.

**Table 3-5: Ending Reserve Balances**

Reserve	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034
Operating	\$2,039,542	\$2,131,002	\$2,208,719	\$2,289,799	\$2,375,486	\$2,463,442	\$2,463,122	\$2,554,821	\$2,650,732	\$2,750,215	\$2,852,859
Rate Stabilization	\$2,667,189	\$1,667,189	\$2,017,189	\$2,367,189	\$2,667,189	\$2,667,189	\$2,667,189	\$2,667,189	\$2,667,189	\$2,667,189	\$2,667,189
Capital	\$9,083,117	\$7,659,117	\$12,540,617	\$11,215,617	\$8,415,617	\$7,507,617	\$6,048,617	\$6,095,617	\$7,002,617	\$7,954,619	\$8,417,623
Pension Stabilization	\$59,576	\$78,576	\$97,576	\$116,576	\$135,576	\$154,576	\$173,576	\$192,576	\$211,576	\$230,576	\$249,576
<b>Total Ending Balance</b>	<b>\$13,849,423</b>	<b>\$11,535,884</b>	<b>\$16,864,101</b>	<b>\$15,989,181</b>	<b>\$13,593,868</b>	<b>\$12,792,824</b>	<b>\$11,352,504</b>	<b>\$11,510,202</b>	<b>\$12,532,114</b>	<b>\$13,602,599</b>	<b>\$14,187,247</b>
<i>Total Unrestricted Ending Balance</i>	<i>\$13,789,848</i>	<i>\$11,457,308</i>	<i>\$16,766,525</i>	<i>\$15,872,605</i>	<i>\$13,458,292</i>	<i>\$12,638,248</i>	<i>\$11,178,928</i>	<i>\$11,317,627</i>	<i>\$12,320,538</i>	<i>\$13,372,023</i>	<i>\$13,937,671</i>

**Figure 3-2** shows the District’s five-year financial plan, with the operating expenses including debt service and the capital expenditures shown as stacked bars and the revenues under current and proposed rates shown by the lines. The proposed rate revenue (dark green line) is adequate to cover operating expenses (turquoise bar) and debt service (orange bar). However, when capital expenditures are included, the reserves have to be drawn down. This is represented by the yellow bars under the horizontal axis, which equals the size of the bar above the green line.

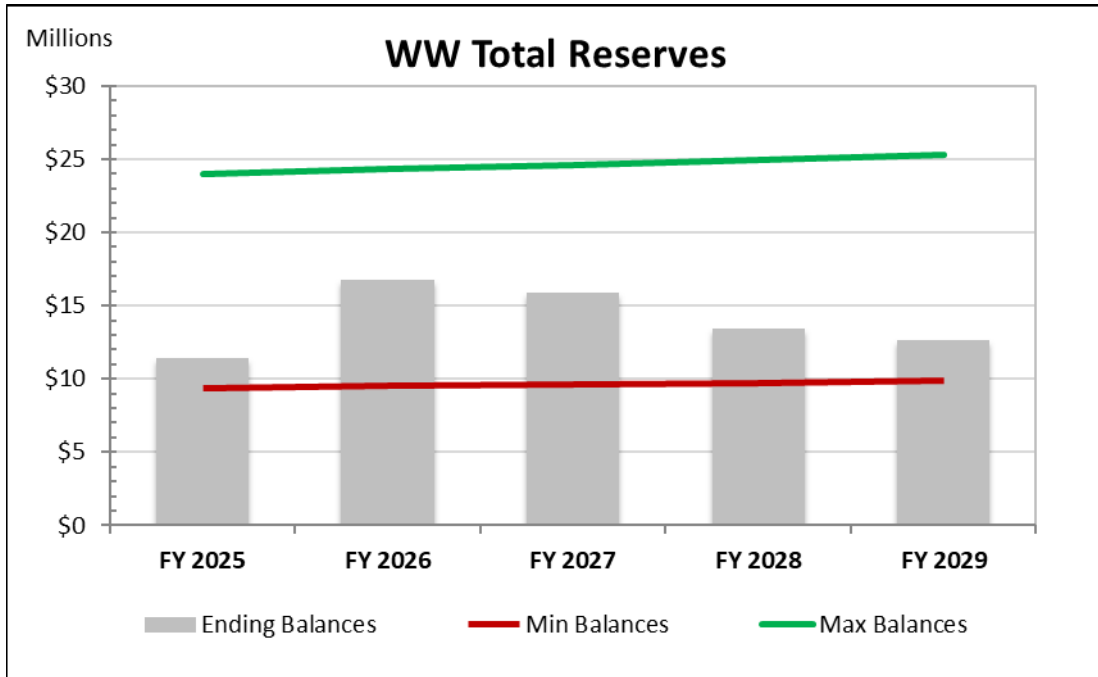
**Figure 3-2: Proposed Wastewater Financial Plan**



**Figure 3-3** shows the total ending reserve balances (including operating reserve, rate stabilization reserve, and capital reserve) under the proposed wastewater revenue adjustments. The ending balances for each reserve are shown in **Table 3-5**. It should be noted that to ensure the capital reserve meets its minimum target there is a one-time withdrawal of \$1 million in FY 2025 from the rate stabilization reserve and that will be returned over the following three years. With the proposed adjustments and debt issue, the total reserve falls between the minimum and maximum target balances for the five-year period during which these changes are proposed. Additionally, the District is setting aside funds to build up the Pension Stabilization Fund which will have a minimum target of the average 5-year unfunded accrued liability (UAL) and a maximum target of 2 times the average 5-year UAL.



Figure 3-3: Projected Wastewater Fund Ending Balances



# 4. Cost-of-Service Analysis

This Section discusses the allocation of Operating and Maintenance (O&M) costs and capital costs to wastewater functions, cost causation components, and subsequently the determination of unit costs and rate calculation by customer class. The proposed wastewater utility cost of service (COS) was developed consistent with guidelines detailed in the Water Environment Federation (WEF) Manual of Practice No. 27, *Financing and Charges for Wastewater Systems, 2018*.

A summary of the COS analysis Raftelis performed is as follows:

1. First, Raftelis used residential and non-residential wastewater strengths consistent with industry standards. Strengths are defined as the concentration of biochemical oxygen demand (BOD<sup>4</sup>) and total suspended solids (TSS)<sup>5</sup> in milligrams per liter (mg/L) in wastewater.
2. Next Raftelis incorporated the estimated flow and strength loadings from each customer class. The wastewater flows were obtained from District provided water use data.
3. District wastewater expenses are categorized by functions. These functions are: Collection, Treatment, Disposal, Billing and Customer Service and General (Administration).
4. Raftelis allocated O&M costs in each function (from step 3) to cost causation components: Flow, BOD, TSS, Administrative and General. This was subsequently used to allocate the total revenue requirement to each cost causation component.
5. Raftelis calculated unit cost causation component rates by dividing the total cost allocated to each cost causation component in step 4 by the total flow and strength loadings (in pounds of BOD or SS) and equivalent dwelling units (EDU) of the customers.
6. Lastly, Raftelis calculated the cost by customer class by multiplying the unit cost components in step 5 by the flow and strength loading and EDUs from each class.

## 4.1. Flow and Strength Loadings

The class strengths are shown in **Table 4-1**. The strengths are representative of typical strengths from each class based on industry standards and the strengths used in the prior rate study. To simplify rates and minimize impacts, customers are grouped into three classes based on their strength: residential, low strength commercial and medium-high strength commercial. Residential and Commercial Group I customers, which include office buildings, small retail stores, schools, etc., have the lowest strength since their sewage is typical household wastewater. Commercial Group II customers represent shopping centers, strip malls, medical office buildings, industrial customers, supermarkets and/or restaurants which typically have a higher strength sewage due to the BOD associated with food wastes.

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<sup>4</sup> BOD is a measure of oxygen utilization by the microorganisms in wastewater. The more waste matter in a wastewater streams the higher the BOD which in turn incurs higher treatment costs since the wastewater treatment plant must oxygenate the wastewater.

<sup>5</sup> TSS is a measure of the dry weight of suspended particles in wastewater that have not been dissolved. Filtration and sedimentation processes during treatment remove TSS. As with BOD, the treatment costs increase as the solid matter increases.

**Table 4-1: Customer Class Strength Classifications**

Customer Class	BOD (mg/L)	TSS (mg/L)
<b>Single Family Residential</b>	250	275
<b>Other</b>		
Multi-Family	250	275
Commercial - Group I	225	225
Commercial - Group II	725	725

Raftelis estimated the wastewater flow, BOD and TSS plant loadings generated by each customer class as shown in **Table 4-2** based on the prior year wastewater billings. Flows in FY 2025 were estimated to be 5% higher than FY 2023 and FY 2024 flows because of the wet winter in FY 2023. The flow is based on lowest winter water usage for single family customers and strengths shown in **Table 4-1**. The flow, loadings, and EDUs from each class were used to develop unit costs to distribute the total revenue requirement to each customer class so that each customer class is assigned costs proportionally to its customer characteristics.

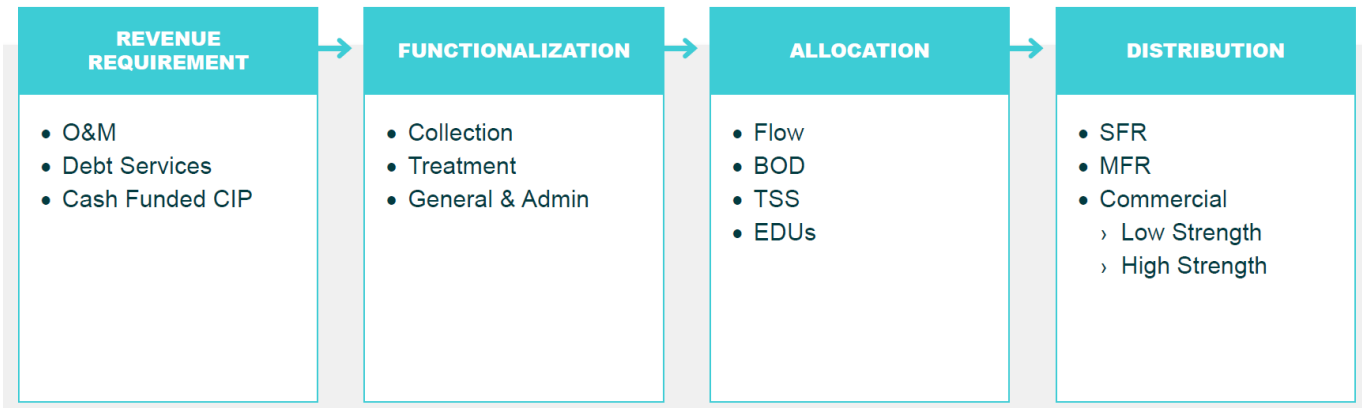
**Table 4-2: FY 2025 Flow and Strength Loadings**

Customer Class	FY 2025 Flow (MG / yr) (1)	BOD (lbs / yr) (2)	TSS (lbs / yr) (3)	FY 2025 Flow (hcf / yr) (4)	BOD (mg / L) (5)	TSS (mg / L) (6)
<b>Single Family Residential</b>	241.0	502,729	553,002	322,140	250	275
<b>Other</b>						
Multi-Family	69.5	144,966	159,463	92,892	250	275
Commercial - Group I	46.3	86,929	86,929	61,892	225	225
Commercial - Group II	44.1	266,750	266,750	58,941	725	725
	<b>401</b>	<b>1,001,374</b>	<b>1,066,144</b>	<b>535,865</b>	<b>265</b>	<b>282</b>

## 4.2. Allocation of O&M and Capital to Cost Causation Components

In the Cost-of-Service analysis, the goal of this study is to allocate the District’s yearly revenue requirement to each cost causation component (Flow, BOD, TSS, & EDUs). To do so we first functionalize each cost (determine whether its Collection, Treatment, or General & Admin) which is then allocated to the cost causation components of flow, BOD, TSS and Customer. The cost-of-service analysis process is displayed in **Figure 4-1**. The forecasted costs for FY 2025 are used to categorize the costs to the different functions. The total O&M Category expenses (shown in line 6 through 8, column 5 of **Table 4-3**) are allocated to each cost causation component as shown in **Table 4-3**. The allocation for each O&M functional cost is determined by multiplying the total in column 5 by the respective percentages for each cost causation component shown in lines 1 through 3. The resulting allocation (line 10) is calculated by dividing the total amount allocated to each cost causation component by the total O&M budget in line 9, column 5. Line 10 shows the resulting percentage allocation of O&M costs to each cost causation component and is used to allocate the FY 2025 O&M revenue requirements in **Table 4-7**.

**Figure 4-1: Cost-of-Service Process**



Approximately 38.3% of O&M costs are allocated to flow and 10.2% each to BOD and TSS and the remaining 41.3% to Customer/Capacity.<sup>6</sup> The resulting allocation in line 10 is used in a subsequent step in **Table 4-7**.

**Table 4-3: O&M Allocation**

Line No.	O&M Category	Flow	BOD	TSS	Customer / Capacity	TOTAL	
		(1)	(2)	(3)	(4)	(5)	
1	Collection	100%	0%	0%	0%	100%	
2	Treatment	50%	25%	25%	0%	100%	
3	General	0%	0%	0%	100%	100%	
4							
5	O&M Category	Flow	BOD	TSS	Customer / Capacity	TOTAL	Percent Total
6	Collection	\$731,960	\$0	\$0	\$0	\$731,960	18%
7	Treatment	\$830,619	\$415,309	\$415,309	\$0	\$1,661,238	41%
8	General	\$0	\$0	\$0	\$1,685,797	\$1,685,797	41%
9	<b>TOTAL</b>	<b>\$1,562,579</b>	<b>\$415,309</b>	<b>\$415,309</b>	<b>\$1,685,797</b>	<b>\$4,078,995</b>	<b>100%</b>
10	% Allocation	38.3%	10.2%	10.2%	41.3%	100%	

Similar to the District’s O&M expenses, Raftelis functionalized District assets and allocated the functionalized asset value to the cost causation components. Raftelis used the replacement cost to value District assets.<sup>7</sup> **Table 4-4** shows the functionalization and allocation of assets to cost causation components. The allocation of assets is developed in the same manner as that of O&M costs in **Table 4-3**. According to industry standards, collection assets are allocated 100% to flow and treatment is allocated to flow, BOD and TSS to reflect the cost of treating the

<sup>6</sup> Due to rounding, the percentages may not add up to exactly 100%.

<sup>7</sup> Replacement cost refers to the amount that the District would pay if they were to replace a given asset today. The 20-City Engineering News-Record Construction Cost Index is used to calculate replacement cost of capital assets.

strength component of sewage. Line 11 of **Table 4-4** shows the overall wastewater asset percentage allocation to the cost causation components.

The overall asset allocation, in line 11, is used in a subsequent step, in **Table 4-7**, to allocate capital related revenue requirements to the cost causation components. Since capital expense projects can vary from year to year, it is standard industry practice to use the basis for asset allocation to allocate capital costs to preclude sharp changes to rates from year to year because over the long term all assets need to be replaced and using the total asset allocation serves the purpose of assigning capital costs to the appropriate cost causation centers. Raftelis allocated each functionalized category (e.g., Land, Treatment, Collection, and General) to cost causation components to allocate the FY 2025 Capital Revenue Requirement. Note that the capital costs in the “Land” category in **Table 4-4** are combined with the capital costs in the “General” category.

**Table 4-4: Capital Allocation using Replacement Costs**

Line No.	Asset Category	Flow	BOD	TSS	Customer / Capacity	TOTAL	
		(1)	(2)	(3)	(4)	(5)	
1	Land	0%	0%	0%	100%	100%	
2	Treatment	50%	25%	25%	0%	100%	
3	Collection	100%	0%	0%	0%	100%	
4	General	0%	0%	0%	100%	100%	
5	Asset Category	Flow	BOD	TSS	Customer / Capacity	TOTAL	Percent Total
6	Land	\$0	\$0	\$0	\$625,802	\$625,802	0.5%
7	Treatment	\$22,256,543	\$11,128,272	\$11,128,272	\$0	\$44,513,087	32.6%
8	Collection	\$77,912,398	\$0	\$0	\$0	\$77,912,398	57.1%
9	General	\$0	\$0	\$0	\$13,414,907	\$13,414,907	9.8%
10	<b>TOTAL</b>	<b>\$100,168,941</b>	<b>\$11,128,272</b>	<b>\$11,128,272</b>	<b>\$14,040,708</b>	<b>\$136,466,193</b>	<b>100%</b>
11	% Allocation	73.4%	8.2%	8.2%	10.3%	100%	

### 4.3. Revenue Requirement Determination

Next Raftelis determined the wastewater revenue requirement, which includes funds to cover yearly operating expenses, capital expenditures and reserve funding. **Table 4-5** shows the determination of the rate revenue requirement. To determine the current revenue requirement, Raftelis added operating, debt service, and capital expenditures as shown in line 5 column 3, subtracted other non-rate revenues as shown in line 9, and subtracted the annual cash balance (drawdown of the reserves, in this case) in line 13 to arrive at the net revenue requirement shown in line 15, column 3. This is the total amount of revenue to be recovered from rates. This is also known as the test year rate revenue requirement.

**Table 4-5: Revenue Requirement**

Line No.	Description	Operating (1)	Capital (2)	Total (3)
1	<b>Revenue Requirement</b>			
2	O&M	\$4,078,995	\$0	\$4,078,995
3	Debt Service	\$0	\$431,684	\$431,684
4	Rate Funded Capital Projects	\$0	\$3,874,000	\$3,874,000
5	<b>Total Revenue Requirement</b>	<b>\$4,078,995</b>	<b>\$4,305,684</b>	<b>\$8,384,679</b>
6				
7	<b>Revenue Offsets</b>			
8	Interest Income	\$251,457	\$0	\$251,457
9	<b>Total Revenue Offsets</b>	<b>\$251,457</b>	<b>\$0</b>	<b>\$251,457</b>
10				
11	<b>Less Adjustments</b>			
12	Transfer from (to) Reserves	\$0	\$2,207,539	\$2,207,539
13	<b>Total Less Adjustments</b>	<b>\$0</b>	<b>\$2,207,539</b>	<b>\$2,207,539</b>
14				
15	<b>Rate Revenue Requirement</b>	<b>\$3,827,538</b>	<b>\$2,098,145</b>	<b>\$5,925,683</b>

## 4.4. Determine Units of Service

To develop unit costs by cost causation component, Raftelis first determined the units of service for each cost causation component from **Table 4-2**. The units of service by cost causation component and by class are shown in **Table 4-6**. Line 6 shows the total units of service for each cost causation component in hcf, pounds per year for BOD<sup>8</sup> and TSS<sup>9</sup> or equivalent dwelling units (EDUs) respectively. The flows and loadings represent FY 2025 projections.

**Table 4-6: FY 2025 Units of Service Determination**

Line No.	Customer Class	FY 2025 Billed Sewer Use (hcf) (1)	BOD (lbs / yr) (2)	TSS (lbs / yr) (3)	EDUs (4)
1	<b>Single Family Residential</b>	338,834	528,781	581,659	4,039
2	<b>Other</b>				
3	Multi-Family	92,892	144,966	159,463	1,604
4	Commercial - Group I	61,892	86,929	86,929	1,310
5	Commercial - Group II	58,941	266,750	266,750	400
6	<b>TOTAL</b>	<b>552,559</b>	<b>1,027,427</b>	<b>1,094,802</b>	<b>7,353</b>

<sup>8</sup> For BOD: Yearly load in lbs = flow (hcf)\*748 gal/1,000,000\* strength (mg/L) \* 8.34

<sup>9</sup> For TSS: Same as BOD

8.34 is a conversion factor to convert MGD\*mg/L into lbs. per day

## 4.5. Determine Unit Costs by Cost Component

In **Table 4-7**, each functional category (e.g., Collection, Treatment, and General) in O&M and Capital Revenue Requirements (**Table 4-5**, columns 1&2, line 16) is allocated to the cost causation components determined in **Table 4-3** and **Table 4-4**, respectively. The operating revenue requirement (Column 5, Line 2) is allocated to each function by the operating allocation percentages in line 1 from **Table 4-3**. The capital revenue requirement (Column 5, Line 5) is allocated to each function by the asset allocation percentages in Line 4 from **Table 4-4**. The operating and capital revenue requirements for each function are summed up in Line 7.

To cover the fixed costs of operations which are independent of the flows and loadings, a portion of the general Customer/Capacity costs are allocated to EDUs. Line 8 in **Table 4-7** makes an adjustment so that the District can maintain 27% fixed revenue collection consistent with prior rate structure in the 2020 sewer rate study. This provides the District with reasonable revenue stability in the case of drought and conservation and ensures that all customers share in the cost of the system. The resulting allocation of the revenue requirement to cost components is shown on line 9. To determine the unit cost (by cost causation component), Raftelis divided the revenue requirement for each cost causation component in line 9 by the units of service in line 11 (which were derived in **Table 4-6**, line 6) to yield the unit costs shown in line 13.

**Table 4-7: Determination of Unit Costs of Service by Cost Component**

Line No.	Description	Flow (1)	BOD (2)	TSS (3)	Customer / Capacity (4)	Total (5)
1	Operating Allocation	38%	10%	10%	41%	100%
2	Operating Revenue Requirement	\$1,466,251	\$389,707	\$389,707	\$1,581,873	\$3,827,538
3						
4	Capital Allocation	73%	8%	8%	10%	100%
5	Capital Revenue Requirement	\$1,540,081	\$171,095	\$171,095	\$215,874	\$2,098,145
6						
7	<b>Total Operating and Capital Costs</b>	<b>\$3,006,331</b>	<b>\$560,802</b>	<b>\$560,802</b>	<b>\$1,797,747</b>	<b>\$5,925,683</b>
8	Adjustments to Fixed Charges	\$144,065	\$26,874	\$26,874	(\$197,812)	\$0
9	<b>Adjusted Revenue Requirement</b>	<b>\$3,150,396</b>	<b>\$587,676</b>	<b>\$587,676</b>	<b>\$1,599,934</b>	<b>\$5,925,683</b>
10						
11	Units of Service	552,559	1,027,427	1,094,802	7,353	
12	Units	<i>hcf</i>	<i>lbs/yr</i>	<i>lbs/yr</i>	<i>EDUs</i>	
13	<b>Unit Cost</b>	<b>\$5.70</b>	<b>\$0.57</b>	<b>\$0.54</b>	<b>\$217.59</b>	

## 4.6. Determine the Costs of Service

The final and ultimate step is to determine the cost of service for each customer class. Raftelis calculated the cost to serve each class by multiplying the unit costs in **Table 4-7** (line 20) by the respective units of service in **Table 4-6** (lines 1-5). The general calculation for the customer class cost of service is as follows:

$$\sum_{n=1}^4 \text{unit of service}_n \times \text{unit cost}_n$$

where *n* represents the four cost components (e.g., Flow, BOD, TSS, Customer/Capacity), the *unit of service* is from **Table 4-6**, and *unit cost* is from **Table 4-7**. For example, the total calculation for Commercial Group I is:

$$(61,892 \times \$5.70) + (86,929 \times \$0.57) + (86,929 \times \$0.54) + (1,310 \times \$217.59) = \$734,302$$

Note that the total cost of service shown in line 6, column 5 equals the net revenue requirement shown in **Table 4-5** (line 15, column 3). This is the amount of revenue that needs to be collected from each class through a fixed and volumetric rate structure.

The results of the calculation of costs to each customer class are presented in **Table 4-8**.

**Table 4-8: Cost of Service Derivation**

Line No.	Description	Flow	BOD	TSS	Customer / Capacity	Total
		(1)	(2)	(3)	(4)	(5)
1	<b>Single Family Residential</b>	\$1,931,850	\$302,457	\$312,228	\$878,843	<b>\$3,425,378</b>
2	<b>Other</b>					
3	Multi-Family	\$529,621	\$82,919	\$85,598	\$349,013	<b>\$1,047,151</b>
4	Commercial - Group I	\$352,875	\$49,723	\$46,663	\$285,042	<b>\$734,302</b>
5	Commercial - Group II	\$336,050	\$152,578	\$143,188	\$87,036	<b>\$718,852</b>
6	<b>TOTAL COST</b>	<b>\$3,150,396</b>	<b>\$587,676</b>	<b>\$587,676</b>	<b>\$1,599,934</b>	<b>\$5,925,683</b>



# 5. Wastewater Rates

Wastewater rates and charges are derived based on the cost to serve each class. The annual service access charge is calculated in **Table 4-7**. This is a uniform rate for all customer classes that is assessed annually. **Table 5-1** shows the proposed annual service access charges for FY 2025. One Multi-Family (MFR) dwelling unit was revised to be equivalent to 0.79 EDU in the previous study. This was estimated as the ratio of SFR to MFR flow per dwelling unit based on residential density per household from Census data. The annual fixed charge for MFR customers is 79 percent of the SFR fixed charge to account for their lower sewer flow.

$$FY\ 2025\ MFR\ Fixed\ Charge = \$217.59 \times 0.79^{10} = \$172.19$$

**Table 5-1: Proposed FY 2025 Annual Service Access Charge**

Line No.	Customer Class	Service Access Charge (\$ / EDU)	Service Access Charge (\$ / dwelling unit)
1	<b>Single Family Residential</b>	<b>\$217.59</b>	<b>\$217.59</b>
2	<b>Other</b>		
3	Multi-Family	<b>\$172.19</b>	<b>\$172.19</b>
4	Commercial - Group I	<b>\$217.59</b>	
5	Commercial - Group II	<b>\$217.59</b>	

The differences and strengths of the residential and Group I commercial customer classes are narrow and within the margin of error. Therefore, for simplicity, and ease of administration, the District will continue charging the same commodity rate to SFR, Multi-family, and Group I Commercial customers. **Table 5-2** shows the sum of the commodity rate revenue requirement (line 5, column 1) for SFR, Multi-family, and Group I Commercial customers and sum of their water (wastewater) use (line 5, column 2). **Table 5-2** also presents Group II Commercial commodity rate revenue requirement and water use in line 6.

**Table 5-2: Commodity Rate Revenue Requirement and Water Use**

Line No.	Customer Class	Commodity Rate Revenue Requirement (1)	Water Use (hcf) (2)
1	<b>SFR</b>	\$2,546,535	338,834
2	<b>Other</b>		
3	Multi-Family	\$698,137	92,892
4	Commercial - Group I	\$449,260	61,892
5	<b>SUBTOTAL</b>	<b>\$3,693,932</b>	<b>493,618</b>
6	Commercial - Group II	<b>\$631,816</b>	<b>58,941</b>

<sup>10</sup> Note the exact value differs slightly due to rounding.

**Table 5-3** shows the commodity rates for customers for all customer classes. The commodity rate (\$/hcf) in column 3 is calculated by dividing the commodity rate revenue requirement (column 1) by the water use (column 2).

**Table 5-3: Proposed FY 2025 Commodity Rate (\$/hcf)**

Customer Class	Commodity Rate Revenue Requirement (1)	Water Use (hcf) (2)	Commodity Rate (\$/hcf) (3)
SFR, Multi-Family, Com. Group I	\$3,693,932	493,618	<b>\$7.49</b>
Commercial - Group II	\$631,816	58,941	<b>\$10.72</b>

Note: The exact value of the final commodity rates may differ +/- \$0.01 due to rounding.

Based on the proposed revenue adjustments in **Table 3-3**, Raftelis calculated rates from FY 2025 to FY 2029 for the annual service access charge (**Table 5-4**) and commodity rates (**Table 5-5**). Rates for FY 2025 are based on cost of service and rates for subsequent years are increased by the revenue adjustments.

**Table 5-4: Proposed Five-Year Annual Service Access Charge**

Customer Class	Current	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
<b>Single Family Residential</b>	\$197.52	\$217.59	\$229.56	\$242.19	\$255.52	\$269.58
<b>Other</b>						
Multi-Family	\$156.31	\$172.19	\$181.67	\$191.67	\$202.22	\$213.35
Commercial - Group I	\$197.52	\$217.59	\$229.56	\$242.19	\$255.52	\$269.58
Commercial - Group II	\$197.52	\$217.59	\$229.56	\$242.19	\$255.52	\$269.58

**Table 5-5: Proposed Five-Year Commodity Rates (\$/hcf)**

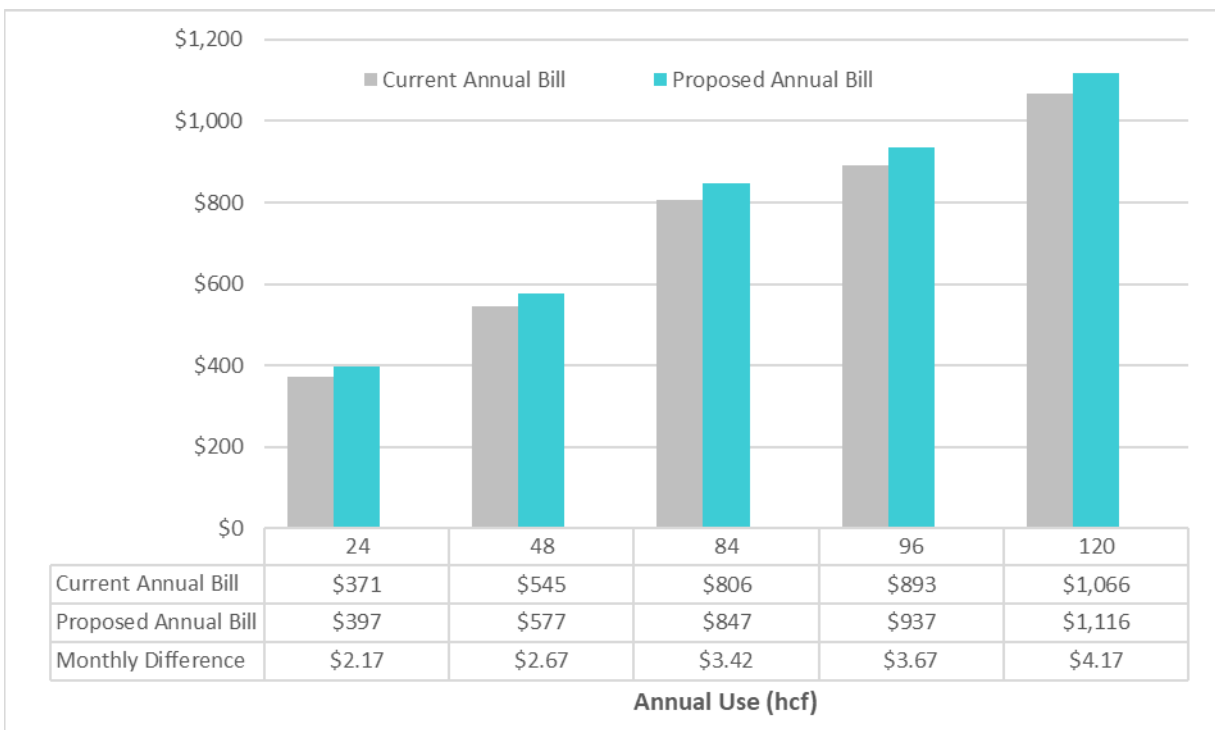
Customer Class	Current	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
<b>Single Family Residential</b>	\$7.24	\$7.49	\$7.91	\$8.35	\$8.81	\$9.30
<b>Other</b>						
Multi-Family	\$7.24	\$7.49	\$7.91	\$8.35	\$8.81	\$9.30
Commercial - Group I	\$7.24	\$7.49	\$7.91	\$8.35	\$8.81	\$9.30
Commercial - Group II	\$10.02	\$10.72	\$11.31	\$11.94	\$12.60	\$13.30

# 6. Customer Bill Impact Analysis

The District’s wastewater service fees are collected on each property owner’s property tax bill on an annual basis. Wastewater bills are due and payable at the same time when a property owner’s tax bill is due to the San Diego County Tax Collector Office.

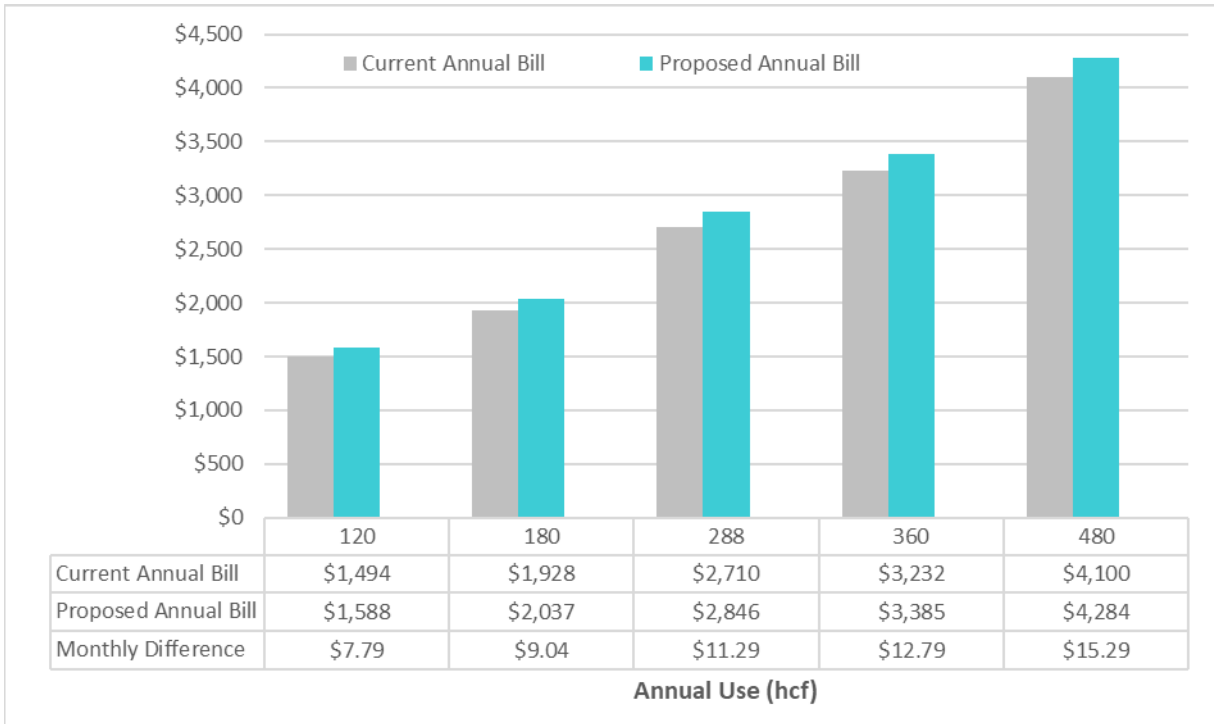
**Figure 6-1** shows the customer bill impacts for Single Family customers assuming different winter water use points. Single Family customers are billed based on their minimum winter monthly (prior year) usage up to a cap of 10 hcf per month (120 hcf annually). The average SFR winter monthly use is 7 hcf, which is annualized to 84 hcf.

**Figure 6-1: SFR Annual Bill Impacts**



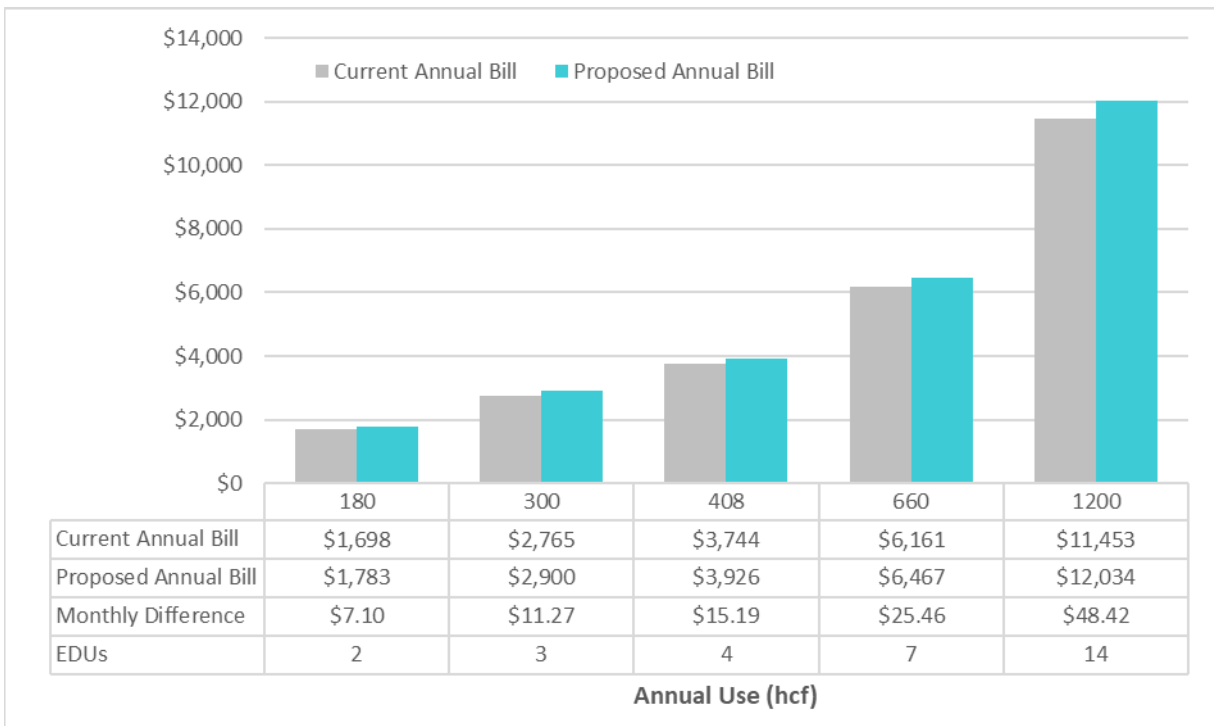
Multi-family customers are billed based on prior year’s actual water use. Bill impacts are shown in **Figure 6-2** for a four-unit MFR account. Similar to Single Family customers, each dwelling unit is assessed the annual service access charge plus their share of water use for the dwelling unit complex. For example, assuming a condominium with 4 dwelling units, the charge per dwelling unit would be \$172.19 plus ¼ of the water use for the complex multiplied by the commodity rate of \$7.49/hcf. The average MFR monthly use is 6 hcf, annualized to 72 hcf and for a four-unit account the average annual use is 288 hcf. The commodity portion of the MFR customer charge is based on their *actual water use*.

**Figure 6-2: MFR Annual Bill Impacts For a 4 Unit Account**



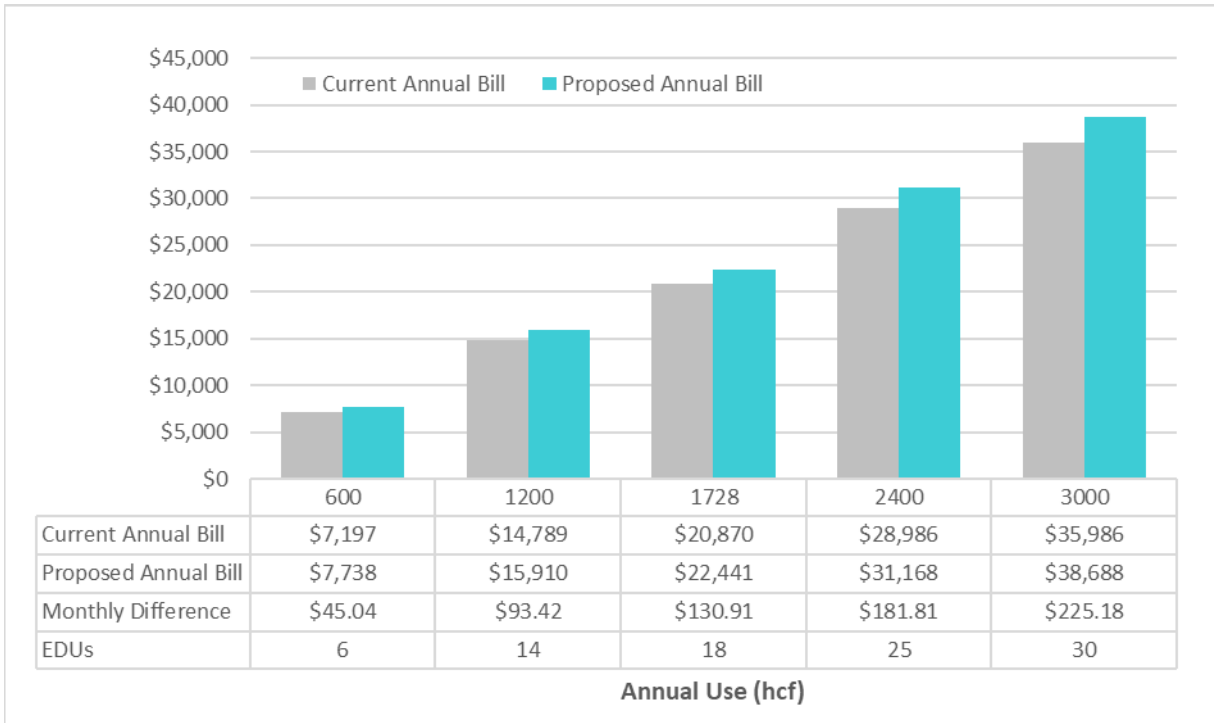
**Figure 6-3** shows the bill impacts for Group I Commercial customers. Each commercial account is assessed a charge which is the sum of the number of EDUs times the annual service access charge and *actual water use* multiplied by the commodity rate. The average Group I Commercial monthly use is 34 hcf, annualized to 408 hcf.

**Figure 6-3: Commercial Group I Annual Bill Impacts**



Group II Commercial customers are charged in an analogous manner, with bill impacts illustrated in Figure 6-4. The average Group II Commercial monthly use is 144 hcf, annualized to 1,728 hcf.

**Figure 6-4: Commercial Group II Annual Bill Impacts**



# 7. Rate Survey

Raftelis conducted a survey of surrounding agencies in San Diego County in January of 2024. The sewer service charges for single family customers using 7 hcf per month are shown below. Care should be taken however, in drawing conclusions from such a comparison as some factors including geographic location, demand, customer constituency, level of treatment, level of grant funding, age of system, level of capital funding and debt, and rate-setting methodology can affect the cost of providing service.

Figure 7-1: Single-Family Wastewater Bill Comparison

