

# NewGen Strategies & Solutions

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REPORT

## SANITATION FUND COST OF SERVICE STUDY

APRIL 2022



Prepared for:  
Coachella Valley Water District  
51-501 Tyler Street  
Coachella, California 92235

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911-A Commerce Road  
Annapolis, MD 21401  
Phone: (410) 266-9101

April 28, 2022

Geoffrey S. Kiehl  
Director of Finance  
Coachella Valley Water District  
75515 Hovley Lane East  
Palm Desert, CA 92211

**Subject: Coachella Valley Water District Sanitation Fund Cost of Service Study**

Dear Mr. Kiehl:

NewGen Strategies and Solutions, LLC ("NewGen") was engaged by the Coachella Valley Water District ("CVWD" or "District") to conduct a cost of service study for the District's Sanitation Fund. The attached report presents our findings and recommendations based on our analysis.

We appreciate the opportunity to provide our services to CVWD and would like to express our sincere appreciation to CVWD staff. The dedication and assistance provided by CVWD staff was essential to the completion of this study. It has been a distinct pleasure to work with the District.

Very truly yours,

DocuSigned by:  


C11651334F8F462...  
Eric Callocchia  
Principal

**NewGen Strategies and Solutions, LLC**

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## EXECUTIVE SUMMARY

The Coachella Valley Water District (“CVWD” or “District”) engaged NewGen Strategies and Solutions, LLC (“NewGen”) to complete a cost-of-service study for the District’s Sanitation Fund. This report summarizes the results of the study, including a five-year financial plan, cost of service analysis, and rate recommendations. The study includes recommended rates over the period of Fiscal Year (“FY”) 2023 through 2027.

### Five-Year Financial Plan

The five-year financial plan is driven by two objectives: revenues must meet annual revenue requirements and the Sanitation Fund must satisfy CVWD’s designated reserves policies.

### Forecasted Net Revenue Requirement

The five-year Net Revenue Requirement is based on CVWD’s FY 2022 operating and maintenance (“O&M”) budget and reasonable estimates of cost escalation. Also included are pay-as-you-go (“PAYGO”) and debt financing assumptions for CVWD’s Sanitation Fund Capital Improvement Plan (“CIP”), customer growth consistent with CVWD’s most recent Sanitation Capacity Charge (“SCC”) study, and annual transfers into the Sanitation Fund of CVWD’s Water Demand Offset Fee. The study period forecast of the Sanitation Fund Net Revenue Requirement is shown in Table E-1 below.

**Table E-1<sup>1</sup>**  
**Five-Year Forecasted Net Revenue Requirement**

	<b>FY 2022 Budget</b>	<b>FY 2023 Forecast</b>	<b>FY 2024 Forecast</b>	<b>FY 2025 Forecast</b>	<b>FY 2026 Forecast</b>	<b>FY 2027 Forecast</b>
Operating Expenses	\$36,991,409	\$38,134,959	\$39,736,672	\$41,349,992	\$43,038,992	\$44,739,225
Non-Operating Expenses	\$3,100	\$3,165	\$3,232	\$3,299	\$3,369	\$3,439
Existing Debt Service	\$ -	\$900,259	\$1,104,555	\$1,104,555	\$1,104,555	\$1,104,555
Projected Debt Service	\$306,000	\$900,334	\$1,294,817	\$1,694,386	\$2,129,956	\$2,594,788
CIP PAYGO	\$11,073,765	\$18,225,333	\$20,670,378	\$18,739,982	\$16,996,546	\$15,267,384
CIP SCC Funded	\$1,422,500	\$4,084,000	\$5,983,611	\$6,966,055	\$4,748,806	\$1,759,673
<b>Total Revenue Requirement</b>	<b>\$49,796,774</b>	<b>\$62,248,051</b>	<b>\$68,793,265</b>	<b>\$69,858,269</b>	<b>\$68,022,223</b>	<b>\$65,469,064</b>
Less: Non-Op. Revenue	(\$7,955,255)	(\$9,557,024)	(\$9,433,081)	(\$9,371,703)	(\$9,454,205)	(\$9,695,682)
<b>Net Revenue Requirement</b>	<b>\$41,841,519</b>	<b>\$52,691,026</b>	<b>\$59,360,184</b>	<b>\$60,486,566</b>	<b>\$58,568,018</b>	<b>\$55,773,382</b>

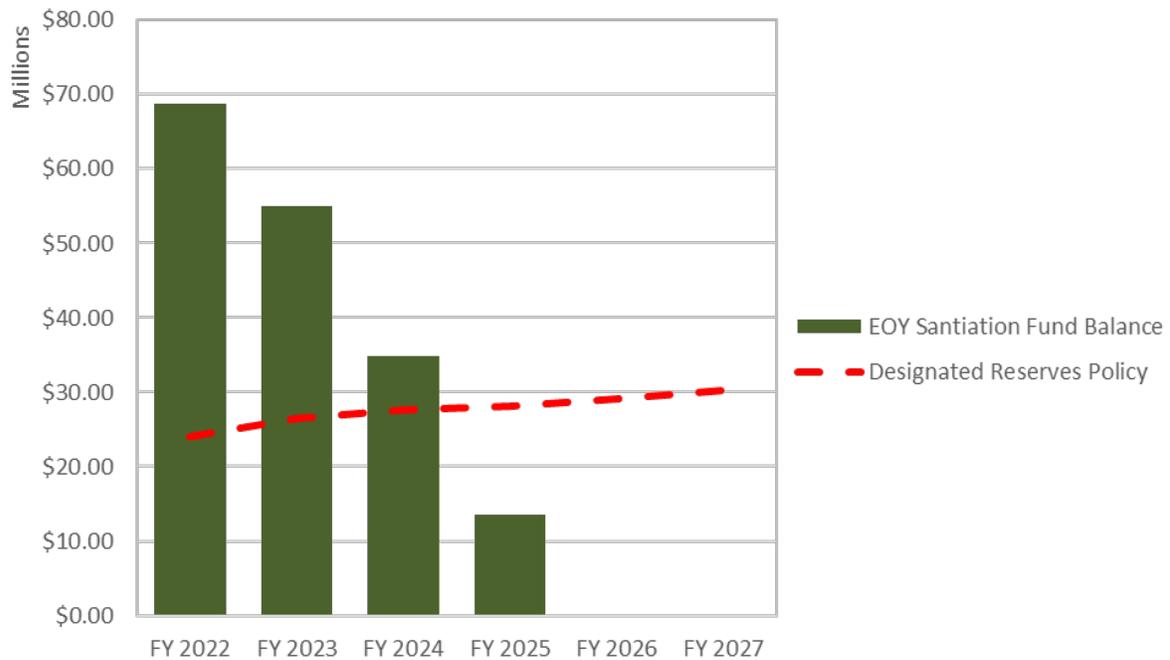
### Fund Balance Forecast

If CVWD does not increase rate revenues and FY 2022 Sewer Service Charges remain in effect over the study period, Figure E-1 shows the forecasted Sanitation Fund end-of year (“EOY”) Balance from FY 2022 – FY 2027.

<sup>1</sup> Figures in this report may not sum due to rounding.



**Figure E-1. Forecasted Sanitation Fund Balance under FY 2022 Rates**



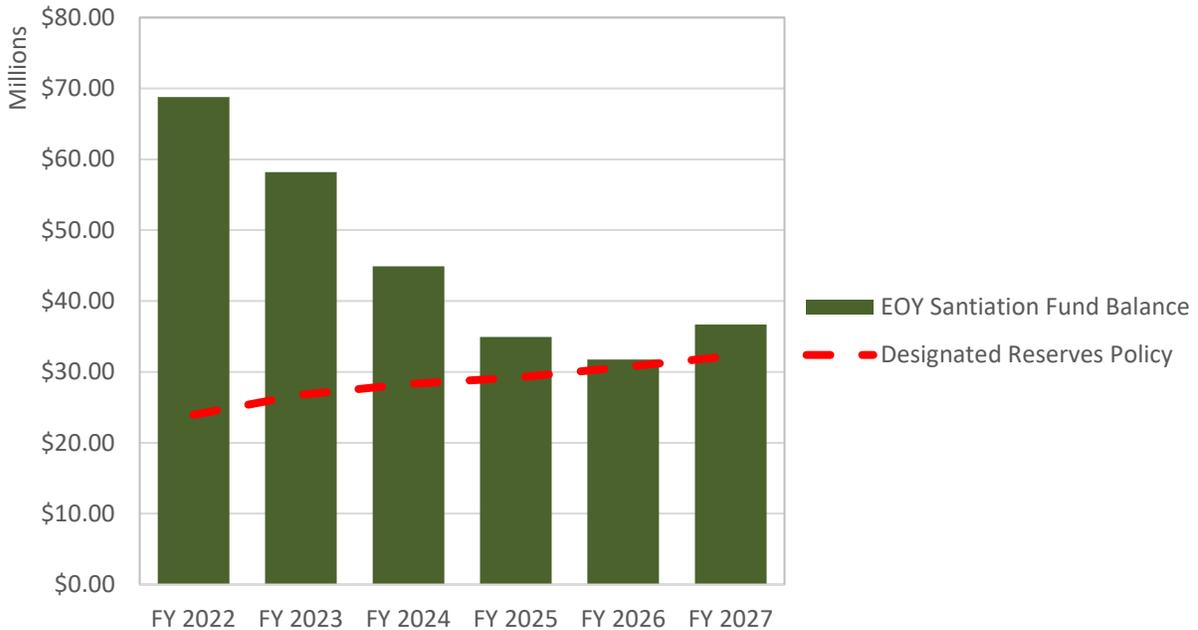
NewGen developed five-year financial plan to increase Sewer Service Charges to meet annual revenue requirements and satisfy CVWD’s designated Sanitation Fund balance policies. Table E-2 shows the five-year revenue increase plan for CVWD’s Sewer Service Charges.

**Table E-2  
Recommended Sewer Service Charge Revenue Increases**

	FY 2022 Budget	FY 2023 Forecast	FY 2024 Forecast	FY 2025 Forecast	FY 2026 Forecast	FY 2027 Forecast
<b>Monthly Account Charge</b>						
Residential	0.0%	8.5%	8.5%	8.5%	8.5%	8.5%
RV/Commercial	0.0%	8.5%	8.5%	8.5%	8.5%	8.5%
<b>ESU Charge</b>						
Residential	0.0%	8.5%	8.5%	8.5%	8.5%	8.5%
RV/Commercial	0.0%	8.5%	8.5%	8.5%	8.5%	8.5%

Figure E-2 below shows the forecasted Sanitation Fund balance assuming CVWD adopts the revenue increase recommended in each year of the financial plan.

Figure E-2. Forecasted Sanitation Fund Balance under Recommended Revenue Increases



### Cost-of-Service Analysis

The purpose of the cost-of-service analysis is to align system costs with revenues generated from each of CVWD’s Sanitation Fund customer classes. This is done by distributing costs into system functions, aligning those functions with the demands of customers, and allocating the costs of each function to the appropriate customer class. The result of the cost-of-service analysis is shown in Table E-3 below.

Table E-3  
Test Year FY 2022 Cost of Service Results

Customer Class	Cost of Service Allocation	Revenue at Existing Rates	\$ Difference	% Difference
Residential	\$32,797,838	\$31,336,206	\$1,461,632	4.7%
RV/Trailer Parks	\$858,427	\$826,020	\$32,408	3.9%
Commercial	\$6,159,633	\$5,821,309	\$338,324	5.8%
<b>Totals</b>	<b>\$39,815,898</b>	<b>\$37,983,534</b>	<b>\$1,832,363</b>	<b>4.8%</b>

The results of the cost-of-service analysis show a system wide under collection of revenues of 4.8%. NewGen calculated a five-year forecast of rates that increases revenues to meet system costs and aligns revenues by class with the results of the cost-of-service analysis.

## Recommended Rates and Bill Impacts

The District currently classifies customers in three customer classes: Residential, RV/Trailer Park, and Commercial. The current rate structure has two components – a Monthly Account Charge and a Charge per Equivalent Sewer Unit (“ESU”). Residential customers are assigned one ESU per dwelling unit. Most RV/Trailer Park accounts are assigned 1 ESU per dwelling unit, however some RV/Trailer Park accounts that are served by master meters providing both landscape irrigation and indoor water for trailers/mobile homes are assigned ESUs based on a 55% return to sewer factor of their average daily water usage over the previous three years, divided by 200 (200 Gallons per day is the indoor water usage assumed for Residential customers). Commercial customers are charged per assigned ESUs based on a 90% return-to-sewer factor.

NewGen’s recommended five-year rates to generate sufficient revenue to meet Sanitation Fund revenue requirements and satisfy designated reserve policies consistent with the financial plan. Table E-4 shows NewGen’s recommended five-year rate forecast.

**Table E-4  
Recommended Sewer Service Charges**

	<b>FY 2022 Actual</b>	<b>FY 2023 Forecast</b>	<b>FY 2024 Forecast</b>	<b>FY 2025 Forecast</b>	<b>FY 2026 Forecast</b>	<b>FY 2027 Forecast</b>
<b>Residential</b>						
Monthly Account Charge	\$1.58	\$1.55	\$1.69	\$1.73	\$1.91	\$2.07
Charge per ESU	\$23.04	\$24.98	\$27.10	\$29.48	\$31.96	\$34.68
<b>RV/Trailer Parks</b>						
Monthly Account Charge	\$3.98	\$4.53	\$4.91	\$5.05	\$5.57	\$6.04
Charge per ESU	\$23.04	\$24.98	\$27.10	\$29.48	\$31.96	\$34.68
<b>Commercial</b>						
Monthly Account Charge	\$3.98	\$4.53	\$4.91	\$5.05	\$5.57	\$6.04
Charge per ESU	\$23.04	\$24.98	\$27.10	\$29.48	\$31.96	\$34.68

The impact of the five-year forecasted rates on a sample Single-Family Residential and Commercial customer monthly bill is shown in Table E-5.

**Table E-5**  
**Impact of Recommended Rates on Example Customers**

	FY 2022 Actual	FY 2023 Forecast	FY 2024 Forecast	FY 2025 Forecast	FY 2026 Forecast	FY 2027 Forecast
<b>Single Family Residential (1 ESU)</b>						
Monthly Sewer Bill	\$24.62	\$26.53	\$28.79	\$31.21	\$33.87	\$36.75
<i>\$ Change</i>	-	\$1.91	\$2.25	\$2.43	\$2.66	\$2.88
<i>% Change</i>	-	7.8%	8.5%	8.4%	8.5%	8.5%
<b>Commercial (1 ESU)</b>						
Monthly Sewer Bill	\$27.02	\$29.51	\$32.01	\$34.53	\$37.53	\$40.72
<i>\$ Change</i>	-	\$2.49	\$2.51	\$2.52	\$3.00	\$3.19
<i>% Change</i>	-	9.2%	8.5%	7.9%	8.7%	8.5%

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# Section 1

## STUDY BACKGROUND AND OBJECTIVES

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This section of our report will describe the background of CVWD’s Sanitation Fund, the study’s objectives, and the period over which our cost-of-service study will recommend Sewer Service Charges.

### System Overview

CVWD’s Wastewater Treatment services are accounted for in the Sanitation Fund.

### Wastewater Treatment

CVWD began wastewater collections and treatment services in 1968, when it acquired the Palm Desert Country Club’s water and sewer systems. Today the District provides wastewater service to more than 96,000 home and business accounts. It operates five water reclamation plants from Palm Desert to Bombay Beach and maintains more than 1,100 miles of sewer pipelines and more than thirty lift stations that collect and transport wastewater to the nearest water reclamation facility. The District treats more than six billion gallons of wastewater yearly.

### Study Objectives

The objectives of the cost-of-service study were as follows:

- Review and evaluate existing rate-related policies and procedures;
- Evaluate current rate structure and recommend any modifications to methodology;
- Evaluate adequacy of the projected revenues under existing rates with anticipated revenue requirements;
- Develop five-year financial plan for CVWD’s Sanitation Fund incorporating both O&M and planned CIP costs;
- Propose Sewer Service Charges for five years in accordance with Water Environment Federation (“WEF”) guidelines, the California Constitution Articles XIII, C and D (Proposition 218), Proposition 26, and Senate Bill X7-7 (SBX 7-7) and all applicable laws;
- Evaluate departmental operations and budgets, based on current service levels, and estimated future levels of service;
- Reflect in the cost of service the required revenues to execute the current sewer system master plan’s infrastructure needs;
- Identify and evaluate existing and potential funding mechanisms to finance wastewater operations and capital improvements; and
- Minimize rate impacts to customers to the greatest extent possible.

NewGen used industry standard wastewater ratemaking practices as described in Water Environment Federation (“WEF”) Manual of Practice 27: *Financing and Charges for Wastewater Systems*. The study followed a three-step process:

## Section 1

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- 1. Develop Financial Plan:** The first step is to develop a forecast of the total costs, i.e., “revenue requirements,” to operate and maintain the wastewater system. This includes operating expenses, debt service, capital improvements, and the maintenance of adequate reserves. Included in this step is a determination of the system’s customer base and how it is estimated to grow over the five-year study period.
- 2. Cost-of-Service Analysis:** Once the total costs of the Sanitation Fund are determined, they are distributed to the system’s customer classes consistently with the usage characteristics of each class.
- 3. Rate Design Evaluation:** Given the results of the cost-of-service analysis, NewGen determined a recommended rate schedule for the system’s residential and non-residential customers complying with California Constitution article XIII D, section 6, commonly referred to as “Proposition 218”.

### Study Period

CVWD operates on a Fiscal Year (“FY”) beginning July 1<sup>st</sup> each year and ending June 30<sup>th</sup> the following year. All years referenced in this report are Fiscal Years. For example, FY 2023 refers to the year beginning July 1, 2022, and ending June 30, 2023. The study period over which this report will detail cost-of-service based rates is FY 2023 – FY 2027, with a cost of service “Test Year” of FY 2022.

## Section 2

# REVENUE REQUIREMENTS AND FINANCIAL PLAN

This section of the report details the data and assumptions relied upon to develop a five-year revenue requirements and financial plan for CVWD’s Sanitation Fund.

### Revenue Requirements

There are two cost categories that comprise the District’s annual revenue requirement: Operating and Maintenance (“O&M”) costs and Capital Costs (i.e., non-operating costs). Capital costs include debt service, pay-as-you-go (“PAYGO”) funded capital improvements, as well as minor capital outlays. NewGen used CVWD’s FY 2022 Sanitation Fund budget as the basis for the study’s forecasts.

### Designated Reserve Policies

The CVWD Board has approved several financial policies that apply to the Sanitation Fund. NewGen’s study is predicated on maintaining compliance with these policies, which are as follows:

- **Operating Reserve:** 25% of annual operating expenses, less depreciation and capital outlay
- **Rate Stabilization Reserve:** 10% of annual rate revenues, less depreciation and capital outlay
- **Capital Reserve:** 25% of the average five-year forward looking annual PAYGO CIP spending
- **Emergency Reserve:** 1.0% of net book value of assets
- **Motor Pool Reserve:** 100% of annual vehicle replacement costs
- **Debt Service Reserve:** One year of annual debt service

CVWD’s policy is to maintain these reserves in these minimum amounts within the Sanitation Fund. In any year in which these reserve goals are not met, then policy dictates that a five-year plan be developed to bring the fund back into compliance with each reserve policy. Table 2-1 shows the forecasted designated reserve included in this cost-of-service study.

**Table 2-1**  
**Forecasted Designated Reserve Policy Requirement**

Category	FY 2022 Budget	FY 2023 Forecast	FY 2024 Forecast	FY 2025 Forecast	FY 2026 Forecast	FY 2027 Forecast
Operating	\$9,247,852	\$9,533,740	\$9,934,168	\$10,337,498	\$10,759,748	\$11,184,806
Rate Stabilization	\$3,854,862	\$4,206,354	\$4,610,331	\$5,053,099	\$5,538,314	\$6,070,257
Capital	\$6,554,442	\$7,095,276	\$7,131,977	\$6,664,201	\$6,664,201	\$6,664,201
Emergency	\$3,738,000	\$3,850,140	\$3,965,644	\$4,084,614	\$4,207,152	\$4,333,366
Motor Pool	\$248,000	\$255,440	\$263,103	\$270,996	\$279,126	\$287,500
Debt Service	\$306,000	\$1,800,594	\$2,399,372	\$2,798,942	\$3,234,511	\$3,699,343
<b>Designated Reserves Policy</b>	<b>\$23,949,156</b>	<b>\$26,741,543</b>	<b>\$28,304,595</b>	<b>\$29,209,349</b>	<b>\$30,683,051</b>	<b>\$32,239,474</b>



## Section 2

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In addition to the reserve policies described above, the study's recommended financial plan results in a debt service coverage ratio (operating revenues less operating expenses divided by annual debt service) for the Sanitation Fund never falling below 2.18 over the study period.

### Operating and Maintenance Costs

The day-to-day operating costs of CVWD's Sanitation Fund are accounted for in the following categories:

- Salaries and Wages
- Benefits
- Supplies and Services
- Utilities

Table 2-1 below shows the FY 2022 budget and five-year study period forecast of CVWD Sanitation Fund operating expenses. Salaries, Wages and Benefits are escalated at 6.0% in FY 2023 and 4.5% per year thereafter based on Employment Cost Trends developed by the US Bureau of Labor Statistics. All other O&M costs are escalated at 2.1% per year, reflecting a generally accepted rate of historical inflation.<sup>2</sup>

**Table 2-2  
Forecasted Operating and Maintenance Costs**

Category	FY 2022 Budget	FY 2023 Forecast	FY 2024 Forecast	FY 2025 Forecast	FY 2026 Forecast	FY 2027 Forecast
Salaries and Wages <sup>3</sup>	\$12,962,381	\$13,075,124	\$13,693,430	\$14,339,559	\$15,014,764	\$15,720,353
Benefits	\$8,608,414	\$9,124,919	\$9,535,540	\$9,964,639	\$10,413,048	\$10,881,635
Supplies and Services	\$10,781,968	\$11,198,859	\$11,672,187	\$12,108,733	\$12,570,440	\$12,990,642
Utilities	\$4,638,646	\$4,736,058	\$4,835,515	\$4,937,061	\$5,040,739	\$5,146,594
<b>Total O&amp;M Expenses</b>	<b>\$36,991,409</b>	<b>\$38,134,959</b>	<b>\$39,736,672</b>	<b>\$41,349,992</b>	<b>\$43,038,992</b>	<b>\$44,739,225</b>

The Supplies and Services category also includes increases in O&M costs related to the addition/expansion of the wastewater customer base and of capital assets. As CVWD's system grows and the District invests in its wastewater collection and treatment facilities, additional O&M costs will be incurred. Accordingly, the projections here rise by more than 2.1% per year to reflect anticipated growth.

### Capital Costs

The five-year financial forecast includes capital costs related to PAYGO funded projects and debt service funded capital projects.

### Capital Improvement Plan

NewGen's forecast includes escalation of planned capital improvement projects into future dollars based on the same rate of general inflation used for O&M costs. The funding sources for capital projects are:

- Sanitation Capacity Charge ("SCC"): The SCC is levied on each new connection to the sanitary sewer system. The SCC has two components. The Collection component recovers costs related to trunk sewers, lift stations, and force mains. The Treatment component recovers costs related to liquid and solids processing, reuse, and disposal.

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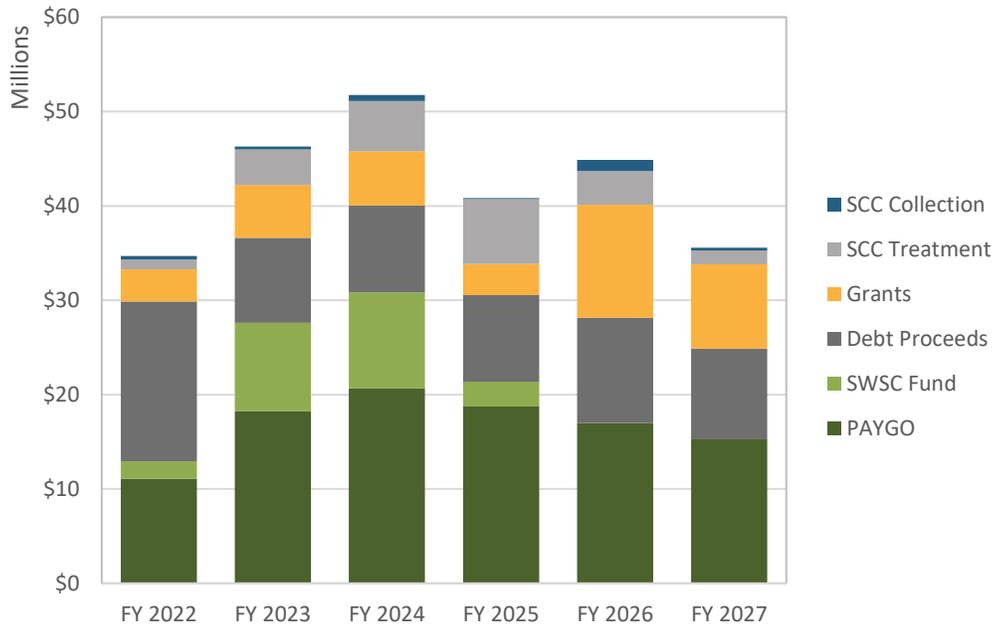
<sup>2</sup> GDP Chained Price Index (Blue Chip Economic Indicators Vol. 46, No. 10, October 11, 2021)

<sup>3</sup> Net of capitalized Labor and Pass-Through Contra-Expenses

- Grants: Grants for qualifying projects.
- Debt Proceeds: New debt issued to support capital projects.
- Supplemental Water Supply Charge (“SWSC”) Fund: Transfers totaling \$12.0 million from the SWSC to support NPW projects.
- PAYGO – Funding from annual Sanitation Fund revenues.

Figure 2-1 shows the study period capital improvement plan by funding source.

Figure 2-1. CVWD Capital Improvement Plan by Funding Source



Appendix A of this report shows a detailed list of the capital improvement projects included in this study.

Appendix B of this report is a Technical Memorandum developed by West Yost & Associates, Inc. confirming that the CIP described in this report aligns with CVWD’s Sewer System Master Plan.

### Debt Service Forecast

At the time of this study, the Sanitation fund had only one approved outstanding debt issue related to FY 2018 NPW connection projects. NewGen’s study also included and estimation of debt service payments for new debt in process at the time of the study related to FY 2022 NPW connection projects. The study also includes the assumption of transfers totaling \$12.0 million from the Supplemental Water Supply Charge (“SWSC”) Fund to the Sanitation Fund that will reduce the District’s need to incur debt to support NPW capital projects over the study period.

Additional planned debt service is based on information provided by the District to NewGen relating to future capital projects that qualify for California Clean Water State Revolving Fund (“CWSRF”) grant and loan programs. Figure 2-2 shows the forecasted debt service payable by the Sanitation Fund.

Figure 2-2. Five-Year Forecasted Sanitation Fund Debt Service



## Five-Year Revenue Requirement Forecast

To forecast the five-year revenue requirement for the Sanitation Fund, it is necessary to offset the total revenue requirement by non-rate revenues to arrive at the net revenue requirement, i.e., the amount that must be raised by Sewer Service Charges each fiscal year.

### Non-Operating Revenues

Various non-operating (i.e., non-rate) revenues support the Sanitation Fund. There are three key assumptions included in the rate study forecast that have a material impact on the recommendations made in this report.

- **Pooled Interest Income:** The study assumes that the District earns 2.0% in interest per year on Sanitation Fund balance throughout the forecast period.
- **Sanitation Capacity Charge (SCC):** The study includes the recently adopted SCC of \$4,533 per Equivalent Dwelling Unit and an assumed rate of 1.0% customer growth rate throughout the projection period (average of 964 new connections per year). One percent customer growth is consistent with the most recently completed SCC study.
- **Water Demand Offset Fee:** The study assumes about \$1.3 million per year of receipts from the District’s Water Demand Offset Fee<sup>4</sup> to support recycled water projects paid out of the Sanitation Fund.

The revenues in Table 2-3 offset the Sanitation Fund revenue requirement each year.

<sup>4</sup> Fee of \$1,918 per Acre Foot (“AF”) of proposed water use charged on new development.

**Table 2-3  
Forecasted Non-Operating Revenues**

	<b>FY 2022 Budget</b>	<b>FY 2023 Forecast</b>	<b>FY 2024 Forecast</b>	<b>FY 2025 Forecast</b>	<b>FY 2026 Forecast</b>	<b>FY 2027 Forecast</b>
Commercial Dumping Fees	\$476,800	\$486,813	\$497,036	\$507,474	\$518,131	\$529,011
Availability Fees	\$80,000	\$81,680	\$83,395	\$85,147	\$86,935	\$88,760
RDA Pass Through	\$930,000	\$959,760	\$990,472	\$1,022,167	\$1,054,877	\$1,088,633
Property Taxes - Current Year	\$906,000	\$934,992	\$964,912	\$995,789	\$1,027,654	\$1,060,539
In Lieu Taxes	\$180,000	\$185,760	\$191,704	\$197,839	\$204,170	\$210,703
Property Taxes - Prior Year	\$26,000	\$0	\$0	\$0	\$0	\$0
Homeowners Property Tax Relief	\$8,000	\$8,256	\$8,520	\$8,793	\$9,074	\$9,365
Property Tax Penalties & Interest	\$25,000	\$25,800	\$26,626	\$27,478	\$28,357	\$29,264
Other Customer Installations	\$26,100	\$26,648	\$27,208	\$27,779	\$28,362	\$28,958
Construction Inspection Fees	\$77,100	\$78,719	\$80,372	\$82,060	\$83,783	\$85,543
Other Fees and Charges	\$2,000	\$2,042	\$2,085	\$2,129	\$2,173	\$2,219
Other Revenues - Current Year	\$3,800	\$3,880	\$3,961	\$4,044	\$4,129	\$4,216
Pooled Interest Income	\$1,972,000	\$1,163,326	\$898,188	\$699,077	\$635,379	\$733,963
Sanitation Capacity Charges	\$1,297,500	\$4,283,685	\$4,329,015	\$4,369,812	\$4,415,142	\$4,455,939
Water Demand Offset Fee	\$1,944,955	\$1,315,664	\$1,329,586	\$1,342,116	\$1,356,039	\$1,368,569
<b>Total Non-Operating Revenues</b>	<b>\$7,955,255</b>	<b>\$9,557,024</b>	<b>\$9,433,081</b>	<b>\$9,371,703</b>	<b>\$9,454,205</b>	<b>\$9,695,682</b>

## Five-Year Financial Plan

The five-year financial plan is driven by two objectives: revenues must meet annual revenue requirements (including use of fund balance) and the Sanitation Fund must satisfy CVWD’s designated reserves policies.

**Table 2-4  
Five-Year Forecasted Net Revenue Requirement**

	<b>FY 2022 Budget</b>	<b>FY 2023 Forecast</b>	<b>FY 2024 Forecast</b>	<b>FY 2025 Forecast</b>	<b>FY 2026 Forecast</b>	<b>FY 2027 Forecast</b>
Operating Expenses	\$36,991,409	\$38,134,959	\$39,736,672	\$41,349,992	\$43,038,992	\$44,739,225
Non-Operating Expenses	\$3,100	\$3,165	\$3,232	\$3,299	\$3,369	\$3,439
Existing Debt Service	\$ -	\$900,259	\$1,104,555	\$1,104,555	\$1,104,555	\$1,104,555
Projected Debt Service	\$306,000	\$900,334	\$1,294,817	\$1,694,386	\$2,129,956	\$2,594,788
CIP PAYGO	\$11,073,765	\$18,225,333	\$20,670,378	\$18,739,982	\$16,996,546	\$15,267,384
CIP SCC Funded	\$1,422,500	\$4,084,000	\$5,983,611	\$6,966,055	\$4,748,806	\$1,759,673
<b>Total Revenue Requirement</b>	<b>\$49,796,774</b>	<b>\$62,248,051</b>	<b>\$68,793,265</b>	<b>\$69,858,269</b>	<b>\$68,022,223</b>	<b>\$65,469,064</b>
Less: Non-Op. Revenue	<b>(\$7,955,255)</b>	<b>(\$9,557,024)</b>	<b>(\$9,433,081)</b>	<b>(\$9,371,703)</b>	<b>(\$9,454,205)</b>	<b>(\$9,695,682)</b>
<b>Net Revenue Requirement</b>	<b>\$41,841,519</b>	<b>\$52,691,026</b>	<b>\$59,360,184</b>	<b>\$60,486,566</b>	<b>\$58,568,018</b>	<b>\$55,773,382</b>

## Section 2

The net revenue requirement is the amount of revenue that must be generated by Sewer Service Charges each year to support the Sanitation Fund. Figure 2-3 below shows the forecast of total Sanitation Fund expenses and revenues assuming no changes in Sewer Service rates.

**Figure 2-3. Total Expenses vs. Total Revenues at FY 2022 Rates**

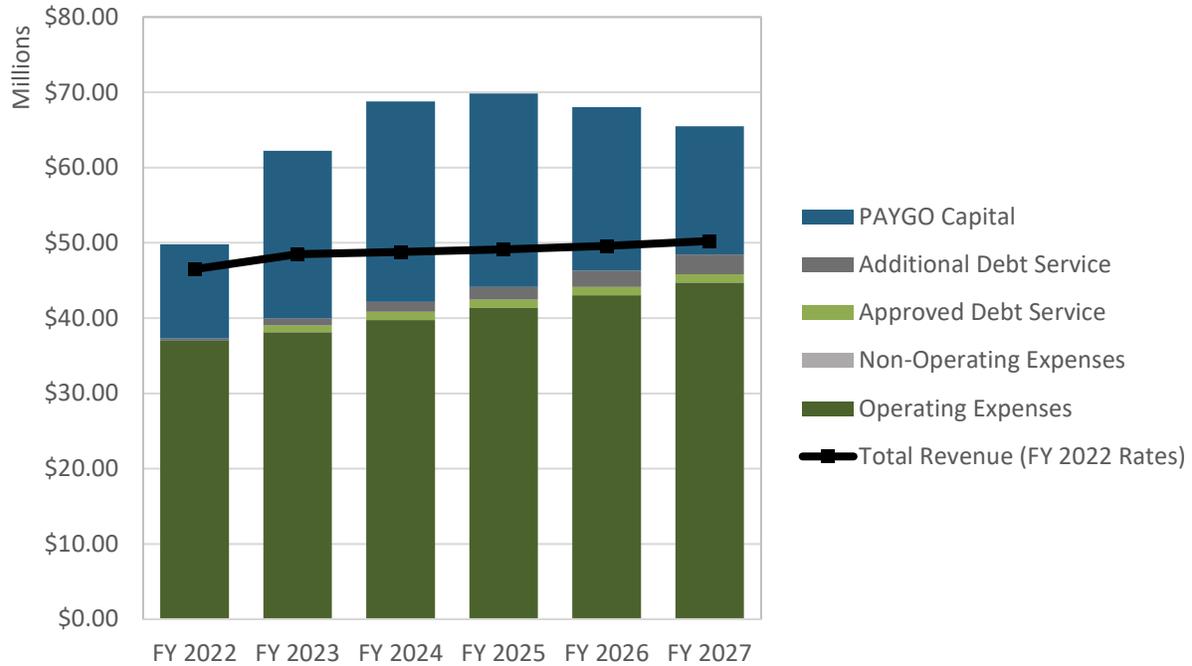
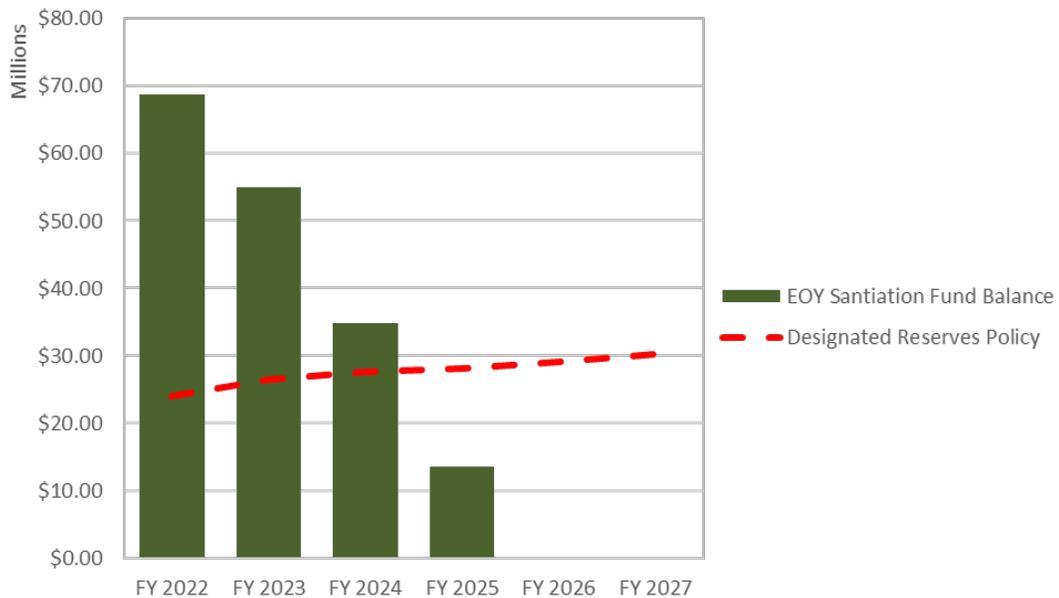


Figure 2-4 shows the forecasted Sanitation Fund balance if FY 2022 rates remain in effect throughout the study period.

**Figure 2-4. Sanitation Fund Balance at FY 2022 Rates**



The figures above demonstrate the need for increased Sewer Service charge revenues.

### Recommended Rate Revenue Increases

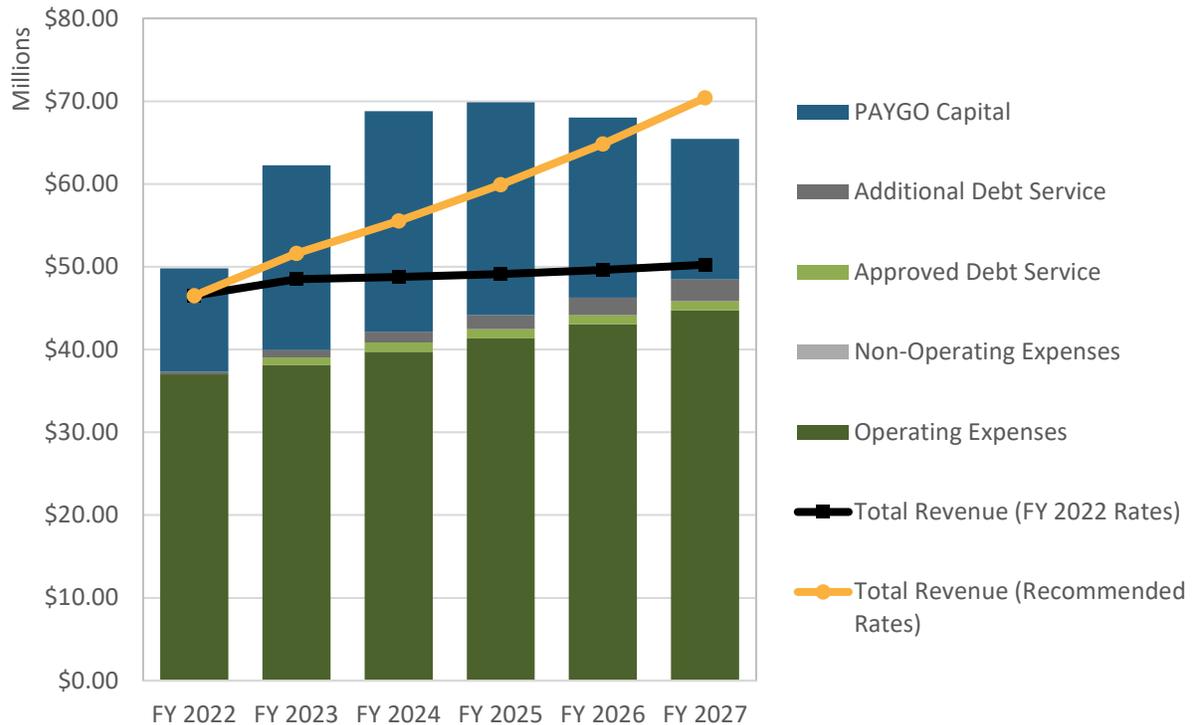
To satisfy the designated reserve policy in the Sanitation Fund, NewGen developed the five-year Sewer Service Charge revenue increase recommendation shown in Table 2-5.

**Table 2-5  
Recommended Sewer Charge Revenue Increases**

	FY 2022 Budget	FY 2023 Forecast	FY 2024 Forecast	FY 2025 Forecast	FY 2026 Forecast	FY 2027 Forecast
<b>Monthly Account Charge</b>						
Residential	0.0%	8.5%	8.5%	8.5%	8.5%	8.5%
RV/Commercial	0.0%	8.5%	8.5%	8.5%	8.5%	8.5%
<b>ESU Charge</b>						
Residential	0.0%	8.5%	8.5%	8.5%	8.5%	8.5%
RV/Commercial	0.0%	8.5%	8.5%	8.5%	8.5%	8.5%

The increase in Sewer Service charge revenue will allow for a strategic drawdown of Sanitation Fund reserves while funding the operating and capital expenses of the wastewater system. The following figures show the rate study forecast of expenses and revenues as well as Sanitation Fund balance assuming the adoption of Sewer Service Charge revenue increases shown above.

**Figure 2-5. Total Expenses vs. Total Revenues at Recommended Revenue Increases**

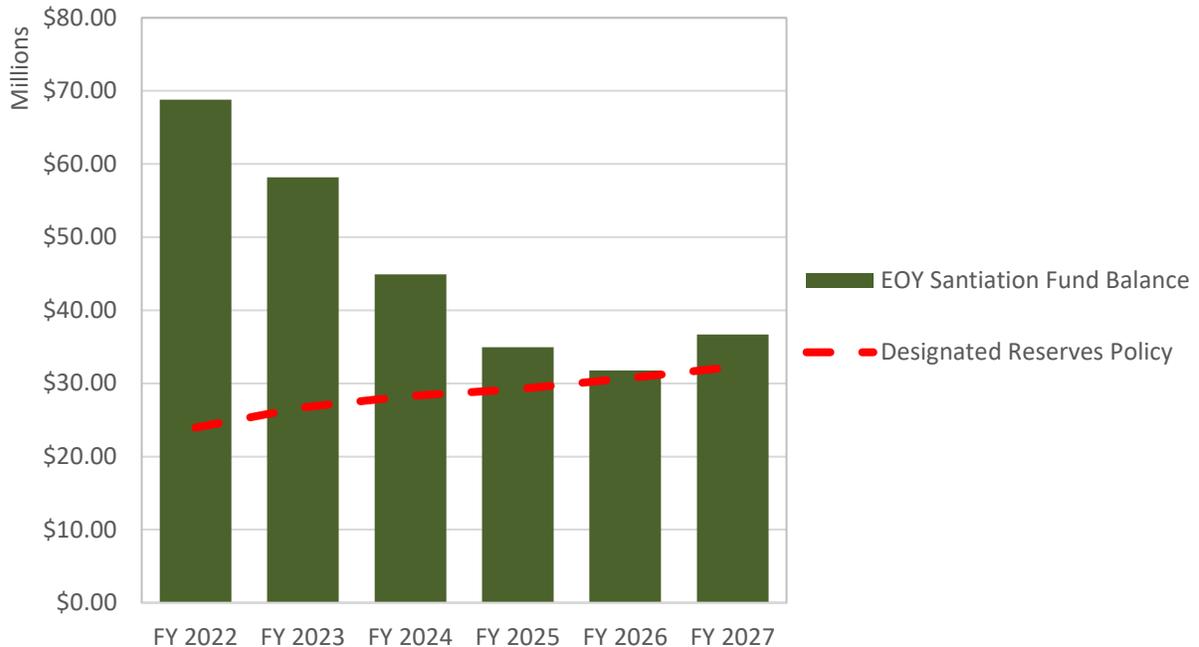


## Section 2

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The financial plan recommended by NewGen will phase-in increases in Sewer Service Charges to meet the forecasted revenue requirement while drawing down on undesignated fund balance, as shown in Figure 2-6.

**Figure 2-6. Sanitation Fund Balance at Recommended Revenue Increases**



Appendix C provides a detailed Sanitation Fund pro forma for the study period.

The recommendation to increase rate revenue by 8.5% in each year of the forecasted period is driven by the need to fund the Sanitation Fund capital plan and the requirement to meet the designated reserves policy.

The next section of this report will detail how Sanitation Fund costs are allocated to customer classes to generate specific recommended rates that result in the revenue forecasts shown above, but also appropriately assign the cost to serve each Sanitation Fund customer class.

## Section 3 COST-OF-SERVICE ANALYSIS

---

### Customers and Usage

The District currently classifies customers in three customer classes: Residential, RV/Trailer Park, and Commercial. The current rate structure has two components – a Monthly Account Charge and a Charge per Equivalent Sewer Unit (“ESU”).

Residential customers are assigned one ESU per dwelling unit. Most RV/Trailer Park accounts are assigned one ESU per dwelling unit. In the District’s experience, RV/Trailer Park indoor water demand is roughly comparable to typical residential properties. The variance in indoor water demand between residential and RV/Trailer Park customers does not justify adding administrative complexity in determining individual ESU assignments for the RV/Trail Park customer class. However, some RV/Trailer Park accounts that are served by master meters providing both landscape irrigation and indoor water for trailers/mobile homes are assigned ESUs based on a 55% return-to-sewer factor of their average daily water usage over the previous three years, divided by 200 (200 Gallons per day is the indoor water usage assumed for Residential customers).

Commercial customers are charged per assigned ESUs based on a 90% return-to-sewer factor, again based on average daily water usage over the previous three years, divided by 200. ESU assignments for RV/Trailer Park customers and Commercial customers are updated one per year. Table 3-1 shows the total number of accounts, ESUs and number of bills by customer class in FY 2021, the most recently available full fiscal year.

**Table 3-1  
FY 2021 Sanitation Fund Customers**

<b>Customer Class</b>	<b>Accounts</b>	<b>ESUs</b>	<b>Number of Bills per Year</b>
Residential	93,732	106,373	100,564
RV/Trailer Parks	50	2,987	594
Commercial	3,734	21,001	44,805
<b>Totals</b>	<b>97,515</b>	<b>130,361</b>	<b>145,963</b>

### Functionalized Test Year

The first step in the cost-of-service process is to identify the functional allocation of the system’s revenue requirements. Table 3-2 shows the functional assignment of the FY 2022 Test Year O&M expenses.

**Table 3-2  
Test Year O&M Budget by Function**

<b>System Function</b>	<b>Test Year O&amp;M Budget</b>
Operations	\$33,473,121
Customer Service	\$2,646,413
Tax Billing	\$64,628
Regular Billing	\$204,126
Inspections	\$603,121
<b>Total O&amp;M Budget</b>	<b>\$36,991,409</b>

### Allocation of Functionalized Costs to Cost Components

The functionalized costs are then allocated to the categories shown in Table 3-3. In this manner, operating costs are be assigned to specific cost-causative components of the system.

**Table 3-3  
Test Year O&M Functional Allocation**

<b>System Function</b>	<b>Customer</b>	<b>Monthly Billing</b>	<b>Annual Billing</b>	<b>System Capacity</b>	<b>Inspections</b>
Operations				100%	
Customer Service	100%				
Tax Billing			100%		
Regular Billing		100%			
Inspections					100%

“Inspections” refers to the cost of inspecting pretreatment facilities including interceptors/separators used to control fats, oils, grease, sand, and lint and are recovered through separate service fees rather than Sewer Service Charges. Table 3-4 shows the dollar assignment to each cost causative component based on the allocations shown in Table 3-3.

**Table 3-4  
Test Year O&M Expenses Allocation by System Function**

<b>System Function</b>	<b>Customer</b>	<b>Monthly Billing</b>	<b>Annual Billing</b>	<b>System Capacity</b>	<b>Inspections</b>	<b>Totals</b>
Operations				\$33,473,121		\$33,473,121
Customer Service	\$2,646,413					\$2,646,413
Tax Billing			\$64,628			\$64,628
Regular Billing		\$204,126				\$204,126
Inspections					\$603,121	\$603,121
<b>Total System O&amp;M</b>	<b>\$2,646,413</b>	<b>\$204,126</b>	<b>\$64,628</b>	<b>\$33,473,121</b>	<b>\$603,121</b>	<b>\$36,991,409</b>

Table 3-5 shows the total Test Year functional allocation, including PAYGO capital and Debt Service, both of which are allocated to the System Capacity component. Note that PAYGO Capital does not include projects supported by SCC revenues.

**Table 3-5  
Test Year Total Expenses Allocation by System Function**

System Function	Customer	Monthly Billing	Annual Billing	System Capacity	Inspections	Totals
Operations				\$33,473,121		\$33,473,121
Customer Service	\$2,646,413					\$2,646,413
Tax Billing			\$64,628			\$64,628
Regular Billing		\$204,126				\$204,126
Inspections					\$603,121	\$603,121
Non-Operating				\$3,100		\$3,100
PAYGO Capital <sup>5</sup>				\$11,073,765		\$11,073,765
Debt Service				\$306,000		\$306,000
<b>Total Test Year</b>	<b>\$2,646,413</b>	<b>\$204,126</b>	<b>\$64,628</b>	<b>\$44,855,986</b>	<b>\$603,121</b>	<b>\$48,374,274</b>

Non-Operating costs are not related to customer service or billing costs, and therefore are allocated to the system capacity component. The result in Table 3-5 allows the assignment of cost causative components to customer classes consistent with each class’s use of the system components.

### Allocate Cost Components to Customer Classes

The cost of each system component is allocated to customer classes in accordance with the allocation basis shown in Table 3-6.

**Table 3-6  
Test Year Total Expenses Allocation to Customer Classes**

Customer Class	Customer	Monthly Billing	Annual Billing	System Capacity	Inspections	Totals
<b>Allocation Basis</b>	<b>No. of Accounts</b>	<b>No. of Bills</b>	<b>No. of Bills</b>	<b>No. of ESUs</b>	<b>direct</b>	
Residential	\$2,543,742	\$140,637	\$64,628	\$36,601,872		\$39,350,878
RV/Trailer Parks	\$1,343	\$831		\$1,027,768		\$1,029,942
Commercial	\$101,328	\$62,659		\$7,226,346		\$7,390,333
Inspections					\$603,121	\$603,121
<b>Totals</b>	<b>\$2,646,413</b>	<b>\$204,126</b>	<b>\$64,628</b>	<b>\$44,855,986</b>	<b>\$603,121</b>	<b>\$48,374,274</b>

Customer costs are allocated to each account, and billing costs are allocated based on the number of annual bills for each customer class. All wastewater system costs related to the collection, conveyance, treatment, and disposal of wastewater are assigned to the System Capacity function. The study considers all wastewater flow from each customer class to be of similar strength because (1) the District has a Fats,

<sup>5</sup> PAYGO Capital does not include SCC funded PAYGO capital.

### Section 3

Oil, & Grease (“FOG”) program with special fees for those accounts that are required to be part of the FOG program, (2) the District has a high-strength discharge prohibition, and, (3) the system’s wastewater influent is such that the District is not required to have high-strength industrial pre-treatment program. Therefore, System Capacity costs are assigned to customer classes based on ESUs.

Inspection costs are segregated because they are supported by a separate fee.

Finally, non-rate revenues must be assigned to the cost-causative components. In Table 3-7. Non-rate revenues are allocated across all components in the same manner as total expenses..

**Table 3-7  
Test Year Non-Rate Revenues Allocation to Customer Classes**

<b>Customer Class</b>	<b>Customer</b>	<b>Monthly Billing</b>	<b>Annual Billing</b>	<b>System Capacity</b>	<b>Inspections</b>	<b>Totals</b>
<b>Allocation Basis</b>	<b>No. of Accounts</b>	<b>No. of Bills</b>	<b>No. of Bills</b>	<b>No. of ESUs</b>	<b>direct</b>	
Residential	\$423,605	\$23,420	\$10,762	\$6,095,252		<b>\$6,553,040</b>
RV/Trailer Parks	\$224	\$138		\$171,153		<b>\$171,515</b>
Commercial	\$16,874	\$10,434		\$1,203,392		<b>\$1,230,701</b>
Inspections						<b>\$0</b>
<b>Totals</b>	<b>\$440,703</b>	<b>\$33,993</b>	<b>\$10,762</b>	<b>\$7,469,797</b>	<b>\$0</b>	<b>\$7,955,255</b>

Subtracting the non-rate revenues from Table 3-7 from the total revenue requirement from Table 3-6 produces the net revenue requirement that needs to be produced by Sewer Service Charges, as shown in Table 3-8.

**Table 3-8  
Net Test Year Revenue Requirement Allocation to Customer Classes**

<b>Customer Class</b>	<b>Customer</b>	<b>Monthly Billing</b>	<b>Annual Billing</b>	<b>System Capacity</b>	<b>Inspections</b>	<b>Totals</b>
<b>Allocation Basis</b>	<b>No. of Accounts</b>	<b>No. of Bills</b>	<b>No. of Bills</b>	<b>No. of ESUs</b>	<b>direct</b>	
Residential	\$2,120,136	\$117,217	\$53,865	\$30,506,620		<b>\$32,797,838</b>
RV/Trailer Parks	\$1,120	\$692		\$856,615		<b>\$858,427</b>
Commercial	\$84,454	\$52,224		\$6,022,954		<b>\$6,159,633</b>
Inspections					\$603,121	<b>\$603,121</b>
<b>Totals</b>	<b>\$2,205,710</b>	<b>\$170,133</b>	<b>\$53,865</b>	<b>\$37,386,189</b>	<b>\$603,121</b>	<b>\$40,419,019</b>

### Cost of Service Analysis Results

Table 3-9 shows a comparison of FY 2022 revenue at existing Sewer Service Charges compared to the cost-of-service allocations developed during the study.

**Table 3-9  
Test Year Cost of Service Results**

<b>Customer Class</b>	<b>Cost of Service Allocation</b>	<b>Revenue at Existing Rates</b>	<b>\$ Difference</b>	<b>% Difference</b>
Residential	\$32,797,838	\$31,336,206	\$1,461,632	4.7%
RV/Trailer Parks	\$858,427	\$826,020	\$32,408	3.9%
Commercial	\$6,159,633	\$5,821,309	\$338,324	5.8%
<b>Totals</b>	<b>\$39,815,898</b>	<b>\$37,983,534</b>	<b>\$1,832,363</b>	<b>4.8%</b>

NewGen’s cost allocation shows that current Sewer Service Charges are under collecting actual costs when compared to the cost-of-service allocations of FY 2022 budgeted costs. However, the under collection is generally evenly spread (on a percentage basis) among the customer classes, suggesting the existing rates allocate the District’s costs consistently with the allocation recommended here and that they predicted the District’s actual costs with reasonable accuracy. NewGen calculated a five-year forecast of rates that increases revenues to meet system costs and aligns revenues by class with the results of the cost-of-service analysis.

The next section of this report will detail the specific forecast of Sewer Service Charges that align with the cost-of-service allocations detailed above and generate revenues consistent with the financial plan developed in Section 2 of this report.

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## Section 4

# RATE DESIGN AND RECOMMENDED RATES

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When undertaking a cost of service or rate study for a utility, it is important that participants in the study have a shared vision of the goals and objectives of the study. Our approach to reviewing and evaluating municipal sewer rates is governed by the view that the ideal rate structure must satisfy seven criteria:

- **Legal and Regulatory Compliance** is a prime consideration because rate structures must incorporate applicable local, state, and federal statutes, as well as any interjurisdictional agreements. In California, this means compliance with California Constitution article XIII D, section 6, commonly referred to as “Proposition 218” and article XIII C. § 1, subdivision (e)(2), “Proposition 26” for some inspection fees and other one-time charges.
- **Equity** requires that rates and charges result in no undue discrimination among customers or customer classes. Although equity is normally related to the cost of service, it should be realized that customer acceptance will center on preconceived notions of equity and fairness.
- **Efficiency** refers to the ability of the rate schedule to encourage wise use of the resources devoted to the services that the utility provides. Efficiency considerations require that:
  - Rates should reflect the cost of providing service.
  - Rates should be similar for customers or customer classes served under similar conditions.
  - Customers should be able to understand the rate schedules so that they can make rational decisions regarding their purchase of additional service.
- **Revenue Adequacy** is the most fundamental of all considerations. Revenue Adequacy recognizes that it is necessary that rates produce revenues sufficient to operate the system even if there are changes in demand for service.
- **Administrative Simplicity** recognizes that limits must be placed on the complexity of the rate schedules to keep them easy to administer and understandable to the public.
- **Sustainability** means that the objective of the rate methodology is to keep rates low over time, not to merely keep them low for the short-term by omitting or deferring needed expenses such as maintenance and funding of necessary cash reserves.
- **Affordability** means that the recommended rates must result in bills that are realistically within the ability of customers to pay.

The application of these criteria should recognize that a rate schedule is a form of public policy statement, setting forth those values that the utility considers important. These values compete and our recommendations seek to balance them appropriately but, ultimately, how to balance these competing goals is a question for the District’s policymakers.

## Current Sewer Service Charges

As discussed in the previous section, the District currently charges an Equivalent Sewer Unit (“ESU”) rate structure. The structure is comprised of two fees – a Monthly Account Charge and a Charge per ESU. Monthly Account Charges are applied to all accounts on a per account basis.

The current Monthly Account Charge and Charge per ESU is shown in Table 4-1.

**Table 4-1  
FY 2022 Sewer Service Charges**

<b>Customer Class</b>	<b>Monthly Account Charge</b>	<b>Charge per ESU</b>
Residential	\$1.58	\$23.04
RV/Trailer Parks	\$3.98	\$23.04
Commercial	\$3.98	\$23.04

## Alternative Rate Structure Evaluation

Prior to CVWD adopting the ESU rate structure, the District charged wastewater customers an Equivalent Dwelling Unit (“EDU”) based rate structure, which was comprised of a fixed Sewer Service Charge and a variable volumetric rate/EDU charge. Residential customers paid a flat charge per EDU, whereas commercial customers paid a charge based on metered water use. NewGen performed an evaluation of potentially reverting to an EDU rate structure as a part of this study.

As with any change in rate structure, there are benefits and drawbacks. One benefit of the EDU structure is that commercial customers can lower their sewer bill by lowering their water usage. This offers flexibility to commercial customers, particularly when demand for their services drop, as was the case with restaurants during the COVID-19 pandemic. A volumetric charge would have allowed customers to reduce costs during a time when their water usage was very low.

However, the variable nature of water demand causes revenue instability for the District’s Sanitation Fund, potentially requiring larger reserves. In general, NewGen recommends generating as much fixed revenue as is reasonably practical. The ESU rate structure, while based on historical demand of commercial customers, is a much more stable source of revenue for the Sanitation Fund. Given that most of the forecasted costs in NewGen’s study do not vary with demand (i.e., capital costs), NewGen recommends that the District maintain its ESU rate structure to match non-variable revenues to non-variable service costs.

## Recommended Rate Structure and Rates

NewGen recommends that the District continue to use the ESU rate structure and to update the cost allocations within that structure based on the results of the cost-of-service analysis detailed in this report.

**Table 4-2  
Recommended Sewer Service Charges**

	FY 2022 Actual	FY 2023 Forecast	FY 2024 Forecast	FY 2025 Forecast	FY 2026 Forecast	FY 2027 Forecast
<b>Residential</b>						
Monthly Account Charge	\$1.58	\$1.55	\$1.69	\$1.73	\$1.91	\$2.07
Charge per ESU	\$23.04	\$24.98	\$27.10	\$29.48	\$31.96	\$34.68
<b>RV/Trailer Parks</b>						
Monthly Account Charge	\$3.98	\$4.53	\$4.91	\$5.05	\$5.57	\$6.04
Charge per ESU	\$23.04	\$24.98	\$27.10	\$29.48	\$31.96	\$34.68
<b>Commercial</b>						
Monthly Account Charge	\$3.98	\$4.53	\$4.91	\$5.05	\$5.57	\$6.04
Charge per ESU	\$23.04	\$24.98	\$27.10	\$29.48	\$31.96	\$34.68

The rates in Table 4-2 are the result of distributing System Capacity Costs among all system ESUs. The Monthly Account Charges are developed by distributing the appropriate customer service and billing charges among accounts in each customer class.

Given the rates in Table 4-2, the change in revenue for each customer class will differ from the 8.5% overall rate revenue increase because of the cost-o-service allocations described in this section. Also, the total increase in Service Charge revenue will be larger than 8.5% each year due to the forecasted growth in Sanitation Fund customers. Table 4-3 summarizes the annual changes in Service Charges for each customer class, the increase in Service Charge revenue for each customer class, and the overall increase in Service Charge revenue.

## Section 4

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**Table 4-3  
Rate and Revenue Percent Change Summary**

	<b>FY 2023 Forecast</b>	<b>FY 2024 Forecast</b>	<b>FY 2025 Forecast</b>	<b>FY 2026 Forecast</b>	<b>FY 2027 Forecast</b>
<b>Residential</b>					
Monthly Account Charge Change	(1.2%)	0.3%	9.1%	13.8%	15.1%
Charge per ESU Change	8.4%	8.9%	8.5%	8.3%	8.2%
<b>Residential Revenue Increase</b>	<b>8.9%</b>	<b>9.6%</b>	<b>9.5%</b>	<b>9.6%</b>	<b>9.6%</b>
<b>RV/Trailer Parks</b>					
Monthly Account Charge Change	14.3%	0.3%	9.1%	13.8%	15.1%
Charge per ESU Change	8.4%	8.9%	8.5%	8.3%	8.2%
<b>RV/Trailer Park Revenue Increase</b>	<b>10.6%</b>	<b>10.6%</b>	<b>10.9%</b>	<b>10.5%</b>	<b>10.5%</b>
<b>Commercial</b>					
Monthly Account Charge Change	14.3%	0.3%	9.1%	13.8%	15.1%
Charge per ESU Change	8.4%	8.9%	8.5%	8.3%	8.2%
<b>Commercial Revenue Increase</b>	<b>9.7%</b>	<b>9.6%</b>	<b>9.7%</b>	<b>9.6%</b>	<b>9.6%</b>
<b>Overall Rate Revenue Increase</b>	<b>9.1%</b>	<b>9.6%</b>	<b>9.6%</b>	<b>9.6%</b>	<b>9.6%</b>
Increase Due to Change in Rates	8.5%	8.5%	8.5%	8.5%	8.5%
Increase Due to Customer Growth	0.6%	1.1%	1.1%	1.1%	1.1%

### Customer Bill Impacts

Table 4-4 shows the impact of the recommended rates on two sample customers, a Single-Family Residential customer, and a 1 ESU commercial customer. The bill impact is not consistent across all customer classes each year because capital costs — the largest driver of system capacity costs — are not incurred evenly across the five years modeled.

**Table 4-4  
Impact of Recommended Rates on Example Customers**

	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>FY 2027</b>
	<b>Actual</b>	<b>Forecast</b>	<b>Forecast</b>	<b>Forecast</b>	<b>Forecast</b>	<b>Forecast</b>
<b>Single Family Residential (1 ESU)</b>						
Monthly Sewer Bill	\$24.62	\$26.53	\$28.79	\$31.21	\$33.87	\$36.75
\$ Change	-	\$1.91	\$2.25	\$2.43	\$2.66	\$2.88
% Change	-	7.8%	8.5%	8.4%	8.5%	8.5%
<b>Commercial (1 ESU)</b>						
Monthly Sewer Bill	\$27.02	\$29.51	\$32.01	\$34.53	\$37.53	\$40.72
\$ Change	-	\$2.49	\$2.51	\$2.52	\$3.00	\$3.19
% Change	-	9.2%	8.5%	7.9%	8.7%	8.5%

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## APPENDIX A: THIRTEEN-YEAR CAPITAL IMPROVEMENT PLAN

REPORT

**SAN ITATION FUND  
COST OF SERVICE STUDY**

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# CVWD Sanitation Fund Capital Improvement Plan

Included Sanitation Fund Cost of Service Study  
Draft Report submitted April 2022

Project	FY 2022	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>WRP 2</b>													
Monitoring Wells	\$150,000	\$51,050											
Total WRP 2	\$150,000	\$51,050	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>WRP 4</b>													
Security System Upgrade									\$686,092	\$802,283			
Chemical System Safety Upgrade	\$15,000	\$42,882											
Process Optimization	\$175,000												
Non Potable Water Upgrades	\$850,000	\$918,900	\$104,244	\$53,217	\$54,334	\$1,886,156	\$1,925,765	\$3,932,413	\$4,723,522	\$6,028,395			
Phase II Plant Process Improvements						\$1,386,879	\$6,796,819	\$6,939,552	\$7,085,283	\$7,234,074			
Phase 1A Recycled Water Delivery Projects										\$7,574,075	\$12,309,982	\$12,568,492	\$5,774,594
Administration Building										\$784,146	\$5,027,397	\$5,132,972	
Total WRP 4	\$1,040,000	\$961,782	\$104,244	\$53,217	\$54,334	\$3,273,036	\$8,722,584	\$10,871,965	\$12,494,896	\$21,638,827	\$13,094,128	\$17,595,888	\$10,907,566
<b>WRP 7</b>													
Security System Upgrade									\$23,618	\$676,386	\$819,131		
Chemical System Safety Upgrade	\$15,000	\$25,525											
Aeration Improvements	\$855,000	\$5,084,580	\$6,775,867	\$5,747,394									
Process Optimization			\$52,122										
Phase 1 Recycled Water Expansion	\$550,000	\$459,450	\$52,122	\$5,321,661	\$10,106,154	\$12,204,539	\$4,531,213	\$5,782,960	\$5,904,402				
Young's Farmland & Garden Fellowship NPW Connection	\$25,000	\$10,210	\$10,424	\$10,643	\$543,342	\$255,186							
Talavera	\$50,000	\$102,100	\$10,424	\$10,643	\$543,342	\$216,353							
Shadow Hills High School NPW Connection	\$50,000	\$102,100	\$10,424	\$10,643	\$543,342	\$216,353							
Phase 1 Canal Customer NPW Conversion	\$200,000						\$1,132,803	\$6,939,552	\$7,085,283	\$4,702,148			
Phase 2 Canal Customer NPW Conversion							\$169,920	\$462,637	\$4,723,522				
Shadow Hills North Golf Course		\$102,100	\$10,424	\$10,643	\$434,673	\$232,996	\$2,724,392						
Total WRP 7	\$1,745,000	\$5,886,065	\$6,921,808	\$11,111,629	\$12,170,852	\$13,125,427	\$8,558,328	\$13,185,149	\$17,736,825	\$5,378,534	\$819,131	\$0	\$0
<b>WRP 10</b>													
Security System Upgrade									\$54,816	\$1,446,815			
Perimeter Security Wall									\$41,567	\$612,876			
Chemical System Safety Upgrade	\$15,000	\$25,525											
Secondary Effluent Pump Station and Storage Ponds	\$728,000												
Process Optimization	\$450,000	\$132,730											
New Solar Power Facilities										\$602,839	\$5,539,492		
Headworks Improvements (Storage and Controls)	\$600,000	\$1,735,700	\$3,857,032	\$7,982,492	\$7,063,441								
Biosolids Upgrade Project									\$472,352	\$602,839	\$7,816,490		
Backup Generators and Automatic Transfer Switch					\$190,170			\$3,810,531					
Phase 1 Expansion Project							\$849,602	\$2,313,184		\$3,014,197	\$14,771,979	\$14,264,459	
Old Septage Receiving Station Upgrades							\$283,201	\$289,148	\$2,302,717				
Solids Handling Upgrades							\$226,561	\$7,980,485					
T1 Filter Assessment and Repair	\$300,000	\$4,751,734	\$6,789,666										
T1 Pump Station Replacement	\$11,150,000	\$7,555,400	\$7,818,308										
The Oasis Country Club Connection	\$4,248,000	\$2,552,500											
Woodhaven Country Club Connection	\$1,400,000	\$153,150											
Palm Desert Resort Country Club Connection	\$1,500,000	\$867,850											
Bermuda Dunes Country Club NPW Connection	\$1,800,000	\$510,500											
Emerald Desert Country Club Connection		\$51,050	\$521,221										
Jack Ivey Ranch NPW Connection	\$60,000	\$510,500	\$1,876,394	\$1,064,332									
Tri-Palms Country Club NPW Connection	\$60,000	\$51,050	\$156,366	\$159,650	\$163,002	\$3,106,610							
Indian Wells Tennis Garden	\$10,000	\$10,210	\$10,424	\$63,860	\$1,086,683								
Palm Royale Country Club	\$60,000	\$510,500	\$1,876,394	\$1,064,332									
Southwest Community Church/Gerald Ford School	\$60,000	\$408,400	\$1,667,906	\$1,064,332									
Marriott Desert Springs North Course Connection	\$25,000	\$102,100	\$52,122	\$53,217	\$271,671			\$5,782,960					
Marriott Shadow Ridge Connection	\$25,000	\$127,625	\$52,122	\$2,660,831	\$2,716,708								
Suncrest Country Club Connection	\$60,000	\$408,400	\$1,667,906	\$1,064,332									
The Eagle (Crystal Lagoon) NPW Connection					\$54,334	\$27,738	\$1,132,803						

Project	FY 2022	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>WRP 10 (Continued)</b>													
Annenberg (aka Sunnyslans) Golf Club Connection	\$60,000	\$408,400	\$1,667,906	\$1,064,332									
Desert Island Country Club Connection	\$50,000	\$102,100	\$26,061	\$532,166	\$434,673								
Rancho Mirage Country Club Connection	\$60,000	\$408,400	\$1,667,906	\$1,064,332									
Springs Country Club Connection	\$50,000	\$102,100	\$26,061	\$532,166	\$434,673								
Tamarisk Country Club Connection	\$60,000	\$408,400	\$1,667,906	\$1,064,332									
Blended Water System Pump Stations				\$532,166	\$326,005	\$27,738	\$3,398,409	\$2,313,184	\$1,771,321				
Mission Hills Country Club Connection				\$106,433	\$163,002	\$27,738	\$2,265,606	\$1,156,592					
Westin Mission Hills Country Club Connection				\$106,433	\$163,002	\$27,738	\$1,812,485						
Forest Lawn NPW Connection						\$110,950	\$56,640	\$28,915		\$3,617,037			
Low Pressure Capacity Expansion	\$100,000	\$714,700	\$130,305	\$2,128,665	\$2,173,366	\$1,109,504	\$2,265,606						
WRP 10 NPW Regional Storage Facility						\$221,901	\$9,572,187	\$9,773,203	\$9,978,440	\$10,187,987			
Outdoor Resort RV Park Connection						\$110,950	\$56,640	\$28,915		\$3,617,037			
<b>Total WRP 10</b>	<b>\$22,931,000</b>	<b>\$22,609,024</b>	<b>\$31,532,003</b>	<b>\$22,308,404</b>	<b>\$15,240,732</b>	<b>\$4,770,865</b>	<b>\$21,919,741</b>	<b>\$33,477,117</b>	<b>\$14,621,213</b>	<b>\$23,701,627</b>	<b>\$28,127,961</b>	<b>\$14,264,459</b>	<b>\$0</b>
<b>Collection</b>													
Lift Station 55-11 Capacity Upgrade (Mecca)	\$250,000	\$765,750	\$4,951,595	\$478,950					\$620,076				
Lift Station 80-07 - Perimeter Wall (Paxton)									\$72,499	\$961,705			
Lift Station 80-16 Upgrade (Bob Hope Drive)									\$249,217	\$2,168,195			
Lift Station 55-10 (Citrus) Abandonment Project													
Lift Station 80-03 Upgrade (Cook Street)	\$450,000	\$612,600	\$1,250,929	\$159,650	\$2,390,703	\$499,277							
Lift Station 55-12 Electrical and Site Upgrade		\$128,000	\$902,000										
Lift Station 80-13 Upgrade						\$124,264	\$1,172,063						
Sewer Pipeline Rehabilitation Project - Fred Waring Drive				\$100,074	\$391,371								
Sewer Pipeline Relocation - Bob Hope Drive			\$200,149	\$204,352	\$1,927,485	\$2,219,007							
Mecca Sewer and Manhole Replacement Rehabilitation													
Sewer Pipeline Rehabilitation Project- Fairway Drive	\$766,000												
First Tee Sewer and Manhole Rehabilitation	\$150,000												
Sewer Manhole Rehabilitation Project	\$337,965	\$345,062	\$352,309	\$359,708									
Lift Station MRTU Upgrades		\$408,400	\$416,976	\$425,733									
Lift Station 81-07 and Lift Station 55-12	\$1,641,000	\$357,350	\$364,854	\$372,516	\$380,339	\$1,054,028							
Palm Desert and Thousands Palms		\$2,030,769											
Cedar Crest	\$545,000		\$37,528	\$820,713									
Section 31 and Vist Del Sol Sewer Pipeline	\$10,000	\$556,445	\$340,878										
Avenue 66 Grade Separation Project													
Avenida Juarez Sewer Pipeline Rehabilitation Project													
Jefferson St and Ave 50 Force Main Phase 1 and Phase 2													
Sewer Pipeline Rehabilitation			\$260,610	\$1,596,498	\$1,630,025	\$1,664,255	\$1,699,205	\$1,734,888	\$1,771,321				
Sewer Manhole Rehabilitation				\$1,756,148	\$1,630,025	\$1,664,255	\$1,699,205	\$1,734,888					
Sewer Lift Station Rehabilitation	\$10,000					\$388,326	\$6,230,417						
Burr St Force Main Project							\$5,947,217	\$2,602,332					
<b>Total Collection</b>	<b>\$4,159,965</b>	<b>\$5,204,376</b>	<b>\$9,177,903</b>	<b>\$6,565,639</b>	<b>\$7,958,577</b>	<b>\$7,613,414</b>	<b>\$17,069,822</b>	<b>\$9,822,084</b>	<b>\$1,771,321</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>Trunk Sewers</b>													
Pierce Street Trunk Sewer				\$26,608	\$244,504	\$3,883,263							
Monroe St Trunk Sewer	\$1,150,000	\$2,654,600											
Avenue 66 Trunk Sewer	\$50,000	\$25,525	\$52,122	\$26,608	\$3,803,391	\$2,385,433							
Airport Blvd Sewer Consolidation Project	\$75,000	\$25,525	\$52,122	\$79,825	\$4,890,075								
<b>Total Trunk Sewers</b>	<b>\$1,275,000</b>	<b>\$2,705,650</b>	<b>\$104,244</b>	<b>\$133,042</b>	<b>\$8,937,970</b>	<b>\$6,268,695</b>	<b>\$0</b>						
<b>Subtotals</b>													
WRP 2	\$150,000	\$51,050	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
WRP 4	\$1,040,000	\$961,782	\$104,244	\$53,217	\$54,334	\$3,273,036	\$8,722,584	\$10,871,965	\$12,494,896	\$21,638,827	\$13,094,128	\$17,595,888	\$10,907,566
WRP 7	\$1,745,000	\$5,886,065	\$6,921,808	\$11,111,629	\$12,170,852	\$13,125,427	\$8,558,328	\$13,185,149	\$17,736,825	\$5,378,534	\$819,131	\$0	\$0
WRP 10	\$22,931,000	\$22,609,024	\$31,532,003	\$22,308,404	\$15,240,732	\$4,770,865	\$21,919,741	\$33,477,117	\$14,621,213	\$23,701,627	\$28,127,961	\$14,264,459	\$0
Collection	\$4,159,965	\$5,204,376	\$9,177,903	\$6,565,639	\$7,958,577	\$7,613,414	\$17,069,822	\$9,822,084	\$1,771,321	\$0	\$0	\$0	\$0
Trunk Sewers	\$1,275,000	\$2,705,650	\$104,244	\$133,042	\$8,937,970	\$6,268,695	\$0	\$0	\$0	\$0	\$0	\$0	\$0
General District PAYGO	\$1,517,000	\$1,365,153	\$1,293,910	\$649,388	\$515,113	\$528,183	\$1,237,161	\$1,256,189	\$1,277,313	\$1,298,882	\$1,320,903	\$1,343,387	\$1,366,343
<b>Total CIP</b>	<b>\$32,817,965</b>	<b>\$38,783,100</b>	<b>\$49,134,113</b>	<b>\$40,821,318</b>	<b>\$44,877,578</b>	<b>\$35,579,621</b>	<b>\$57,507,637</b>	<b>\$68,612,503</b>	<b>\$47,901,568</b>	<b>\$52,017,869</b>	<b>\$43,362,122</b>	<b>\$33,203,734</b>	<b>\$12,273,908</b>

	Study Period (FY 2022 - FY 2027)						Out Years (FY 2028 - FY 2034)					
Escalated	\$242,013,695						\$314,879,342					
Non-Escalated	\$229,771,820						\$265,147,797					



**APPENDIX B:  
WEST YOST  
TECHNICAL MEMORANDUM**

REPORT

**SAN ITATION FUND  
COST OF SERVICE STUDY**

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## TECHNICAL MEMORANDUM

DATE: March 10, 2022

Project No.: 998-40-21-01

SENT VIA: EMAIL

TO: Eric Callocchia, NewGen Strategies & Solutions, LLC

FROM: Robert Reid, PE, RCE #49624  
Jeff Pelz, PE, RCE #46088



SUBJECT: Coachella Valley Water District – Review of Sewer System Capital Improvement Budget

## INTRODUCTION

West Yost reviewed the draft Coachella Valley Water District (CVWD) Sanitation Master Plan Update dated May 2021 (SMP) to verify that the sewer collection and treatment facilities have been adequately analyzed and that the future capital improvement needs of the collection and treatment systems are understood. We also reviewed the portions of the draft Non-Potable Water Master Plan that were provided to us on January 4, 2022 to verify the analysis and needs of the treatment disposal system.

West Yost then compared the proposed Capital Improvement Program (CIP) presented in the SMP to the Sanitation Base Forecast provided by CVWD staff on January 26, 2022. Lastly, we compared the excerpts of the draft Non-Potable Water Master Plan to the Sanitation Base Forecast.

## OBSERVATIONS FROM REVIEW OF SMP

### General Observations

The entire sewer collection system is captured in a fully dynamic hydraulic model using industry-standard software (InfoSWMM by Innovyze, Inc.). This model was created in 2009 and was updated in 2015. As part of the master planning effort, the hydraulic model has been updated to reflect the current land uses and collection system facilities. The existing condition and a future condition for 2045 are analyzed in the model.

The criteria used in the SMP to assess adequacy of pipe capacity are consistent with the CVWD Development Design Manual (DDM). The peak hour dry weather flow criteria vary by pipe size. For pipes with diameters of 8-inches, the allowable depth of flow to pipe diameter ratio (d/D) is 50 percent. For 10-inch to 27-inch diameter pipes, the allowable d/D ratio is 67-percent. For pipes with diameters of 30-inches and larger, the allowable d/D ratio is 75 percent. For peak wet weather flows, pipe and manhole surcharging is allowable up to three feet below the sewer manhole rim elevations. The dry weather criteria are reasonably conservative, allowing for variability between predicted and actual flows, as well as capacity to accommodate some infiltration and inflow before surcharging a pipeline. The criterion for wet weather flows is acceptable if a conservative prediction of infiltration and inflow is used. The peak

infiltration and inflow prediction was not presented, and the wet weather criterion did not appear to be used for identification of any capital improvement.

To calibrate the existing sewer collection system model, 29 flow monitors were installed throughout the system. The SMP states that the hydraulic model is calibrated within 10 percent of the measured flows for 27 of the monitored locations for dry weather flows. This represents very good agreement between modeled flows and measured flows. A wet weather calibration was not presented.

An analysis of flows at the major Water Reclamation Plants (WRP) concluded that peak hour wet weather flows can reasonably be predicted using a peaking factor of 2.30 at the WRP. The report notes that this peaking factor is applicable at the WRP only and that higher peaking factors would be expected in the collection system. Nevertheless, a factor of 2.30 at the treatment plant indicates there is not a general, widespread problem with wet weather infiltration and inflow. As with any collection system, there is always a risk that any particular intense rainstorm has the potential to create more infiltration and inflow than the collection system can accommodate at certain locations. Based on the analysis presented, there does not appear to be a need for specific capital improvements to address wet weather flow capacity in the collection system, assuming that good maintenance and periodic inspection are used to preserve collection system integrity and capacity.

The future system scenarios assume a population growth rate of 3.3 percent per year. According to the SMP, the service area experienced an annual growth rate of 4.2 percent from 1999 to 2007, 0 percent during the Great Recession and 1.2 percent during the post-Recession.

The SMP described observed issues within the collection system that would either require additional maintenance or capital improvements to restore and preserve the original capacity of the system. These include the following:

- Some pipelines constructed flatter than standard minimum slopes, which typically results in low velocity and accumulation of solids require more frequent cleaning.
- Lift Station 55-11 has problematic pump cycling, which may be addressed by constructing additional wet well capacity as part of a capital project to provide additional needed capacity.
- Gravity sewers downstream of Lift Station 80-6 have capacity constraints while the lift station is operating.
- Force main surge in vicinity of Lift Station 55-12.
- Vulnerability of gravity sewers and force mains in the vicinity of the Whitewater Channel. This general concern was address through a thorough risk assessment and identification of multiple rehabilitation measures to maintain capacity and integrity of the collection system.

## Conceptual Improvement Plan

A conceptual improvement plan is proposed in Volume 2, Section 4 of the SMP. Approximately 35 pipe segments are considered deficient as the peak hour dry weather d/D ratios are above the design criteria. However, no wet weather surcharging analysis is provided to specifically evaluate a peak wet weather flow scenario.

The SMP states that Lift Station 55-11 is currently capacity deficient. It also states that several lift stations have been decommissioned, others are planned for abandonment, and others will require expansion in the future to accommodate anticipated growth.

The Mid-Valley Force Main Decommissioning was proposed in the 2009 SMP. The current SMP proposes to strategically operate the force main. The SMP does not identify any future CIP project for this partial abandonment.

The CIP describes planned improvements to accommodate growth within each WRP service area. Seven projects are described for the WRP4 service area, ten projects are described for the WRP7 service area, and one project is described for WRP10 service area. It appears that the proposed improvements are required to accommodate future development. Therefore, the capital costs are allocated to future users.

## Whitewater Channel and Coachella Canal Crossings

In Volume 2, Section 5 of the SMP, pipeline condition and risk assessments were performed for the sewer collection systems within 500-feet of the Whitewater Channel and Coachella Canal. These pipelines are believed to have high risk (based on likelihood and consequence of failure) due to scour from golf course irrigation, deterioration of canals, and high stormwater flow events that have damaged the sewer force main crossings in the past.

Projects WCCA-1 through WCCA-6 were proposed. An estimated cost is provided for each project and is shown in Table 1 below.

Project	Cost, dollars
WCCA-1	199,744
WCCA-2	145,948
WCCA-3	36,563
WCCA-4	6,775
WCCA-5	36,062
WCCA-6	30,575

These projects were funded in the prior year CIP budget.

## Septic-to-Sewer Conversions

Several septic to sewer conversion capital improvement projects are described in Volume 2, Section 6 of the SMP. These are noted as SWS-1 through SWS-6. Areas served predominantly by onsite septic systems generally coincide with disadvantaged communities. Based on the 5-year CIP, these areas will be converted to conventional sewer systems as grant funding is available. Therefore, these costs are not included in the CIP.

## Water Reclamation Plants

CVWD operates five water reclamation plants (WRPs). WRP 10 in Palm Desert, WRP 7 in Indio and WRP 4 in Thermal are larger, regional plants that will experience increases in flow in the future. WRP1 and WRP2 are very small plants along the shore of the Salton Sea that are not anticipating significant growth.

Per the current discharge permit, CVWD must notify the RWQCB when the influent flow reaches 80 percent of the permitted capacity. WRP 10 is projected to operate below this threshold throughout the planning period. WRP 4 is anticipated to pass this threshold before 2025. WRP 7 is anticipated to pass this threshold between 2030 and 2035.

It appears that CVWD has acknowledged and addressed the increase in wastewater strength as water conservation has occurred in the region. This is important because processes whose capacity is related to the waste load (rather than the flow), can reach capacity before flows reach the design flow capacity of the treatment plant.

In addition to evaluation of treatment capacity under current discharge requirements, the SMP provides plans to anticipate future changes in the discharge permits for total dissolved solids, nitrogen and phosphorus. The SMP also proposes several projects to support the District's level of service goals with the intended outcome of lowering operating costs, utilizing staff resources effectively and efficiently, and ensuring compliance.

## **Prioritization of Projects**

In Volume 4, Section 2 of the SMP, the program funding is stated to be \$20 – 30 million (M) per year. Starting year for all projects was set so that the project would be finished before the capacity timeline trigger. Most of the collection system capacity projects will be triggered by the proposed development and flow triggers.

For asset management projects, only assets valued at \$250,000 or more are considered for the CIP. All other assets will be replaced under the O&M budget.

## **20-Year Planned Improvements**

### ***Sewer Collection System***

In Volume 4, Section 3 of the SMP, the 20-year planned improvements are described. Almost all the sewer collection capital projects are driven by the asset management plan.

Project CS-WRP7-1, 2, 4, 6, 7 and CS-WRP4-1 and 3 are partially scheduled in the 20-year CIP. The remaining projects are beyond the 20-year financial planning window. Note that reference to a WRP indicates the project is with that WRP's service area. Improvements to the treatment plant itself are accounted for separately from the collection system improvements.

In Volume 4, Section 5 of the SMP, the annualized budget projections are provided. The CIP costs for each five-year period for the collection system are shown in Table 2 below.

<b>Table 2. Proposed Sewer Collection System Capital Improvements</b>					
Type	2021-2025 M dollars	2026-2030 M dollars	2031-2035 M dollars	2035-2040 M dollars	Total M dollars
WRP 10 Expansion			6.4		6.4
WRP 7 Expansion		1.1	42.9	74.3	118.4
WRP 4 Expansion	6.7	12.5	16.4	18.9	54.5
AM - Sewer Rehab	20.6	15.8	6.0	6.0	48.4
AM - Lift Stations	8.0				8.0
AM - Manholes	4.6	4.6			9.2
<b>Total</b>	<b>\$39.9</b>	<b>\$34.0</b>	<b>\$71.7</b>	<b>\$99.2</b>	<b>\$244.8</b>

As shown in Table 2, the SMP categories the CIP projects as capacity capital improvement projects and asset management projects. Capacity capital improvement projects are those improvements required to alleviate existing or future capacity constraints based on the hydraulic model. Asset management improvements are based on the asset management plan which considers asset risk of failure and consequences of failure. The only capacity CIP project for the first five years is the CS-WRP4-6, Lift Station Capacity Improvements.

Table 5-10 of the SMP shows the collection system capacity CIP projects through 2040. Table 5-12 of the SMP shows the collection system asset management projects and timelines. These budgets were broken down into further detail in the Volume 4 appendix.

### ***Wastewater Reclamation Plants Upgrades***

The 20-year planned improvements for each of the wastewater reclamation plants are described in Volume 4, Section 4 of the SMP. Annualized budget projections are provided in Volume 4, Section 5 of the SMP. The CIP costs for each five-year period for the wastewater reclamation plants are shown in Table 3 below.

**Table 3. Proposed Wastewater Reclamation Plant Capital Improvements**

Type	2021-2025, M dollars	2026-2030 M dollars	2031-2035 M dollars	2035-2040 M dollars	Total M dollars
<b>WRP10 (18 mgd secondary treatment capacity, 15 mgd tertiary treatment capacity)</b>					
Headworks Upgrades	8.6	16.5			25.1
Secondary Treatment	0.8	4.7		9.0	14.5
Tertiary Treatment	0.6	1.9	9.5		12.0
Biosolids Handling	7.3	1.9	\$5.4		14.5
Miscellaneous Projects	15.2				15.2
Asset Management	1.8	1.0	7.7	0.3	10.7
<b>Total - WRP 10</b>	<b>34.2</b>	<b>25.9</b>	<b>22.5</b>	<b>9.3</b>	<b>92.0</b>
<b>WRP 7 (5 mgd secondary treatment capacity, 2.5 mgd tertiary treatment capacity)</b>					
Secondary Treatment	16.1				16.1
Tertiary Treatment	11.0				11.0
Miscellaneous Projects	2.1				2.1
Asset Management	0.3	1.6	3.4	2.6	7.9
<b>Total - WRP 7</b>	<b>29.5</b>	<b>1.6</b>	<b>3.4</b>	<b>2.6</b>	<b>37.1</b>
<b>WRP 4 (9.9 mgd secondary treatment capacity, no tertiary treatment)</b>					
Headworks Upgrades	2.6	17.0	0.6	3.0	23.2
Primary Treatment				11.2	11.2
Secondary Treatment	11.9	29.0	9.5		50.4
Tertiary Treatment	9.8	25.6	26.2	4.8	66.3
Miscellaneous Projects	5.5				5.5
Asset Management		3.6	1.5	2.5	7.6
<b>Total WRP 4</b>	<b>29.8</b>	<b>75.1</b>	<b>37.7</b>	<b>21.5</b>	<b>164.2</b>
<b>WRP 1 (0.15 secondary treatment capacity) &amp; WRP 2 (0.33 mgd secondary treatment capacity)</b>					
WRP 1 Projects			1.2		1.2
WRP 2 Projects	0.3				0.3
Asset Management	0.3	0.9	0.3	1.1	2.4
<b>Total – WRP 1 &amp; 2</b>	<b>0.6</b>	<b>0.9</b>	<b>1.5</b>	<b>1.1</b>	<b>4.0</b>
<b>Other Regional Projects</b>					
O&M Projects	0.8		1.9		2.7
Regional Biosolids	0.3				0.3
<b>Total - Other Regional Projects</b>	<b>1.1</b>		<b>1.9</b>		<b>3.0</b>
<b>Total WRP</b>	<b>\$95.2</b>	<b>\$103.5</b>	<b>\$67.0</b>	<b>\$34.5</b>	<b>\$300.2</b>

## **Project Budgetary Costs**

### ***Sewer Collection System***

The estimated unit costs per lineal foot of gravity main, force main, cured-in-place pipe rehabilitation (CIPP), cleaning and CCTV were extracted from the 2009 CVWD Sewer Collection System Master Plan and adjusted to December 2018 costs based on the Engineering News Record (ENR) construction cost index of 11,185. These costs should be escalated to current dollars.

The replacement pipe costs (construction only) per inch-diameter vary from \$13.11/inch-diameter for 18-inch pipe to \$27.67/inch-diameter for 6-inch pipe. CIPP costs vary as a percentage of replacement pipe cost from 14 percent for 6-inch diameter pipe to 47 percent for 18-inch pipe. The CIPP costs per inch-diameter vary from \$4.00 to \$6.57 per foot.

At a minimum, the collection system costs need to be updated to current dollars using the ENR cost index. The bare construction cost estimates do not incorporate any contingency for variables such as difficult construction conditions or unknown design complexity not typically identified at the master planning stage. Therefore, the estimated sewer collection system construction costs include 30 percent of bare construction costs to account for unforeseen field conditions, which is appropriate. Current market conditions affected by pandemic-related cost increases will likely result in significantly higher costs for projects bid in the near future, at least. The collection system capital improvement costs also include an additional 15 percent of the estimated construction costs to account for administration, construction management and legal costs. This percentage does not appear to include design engineering. The rate structure needs to include the cost of design engineering and engineering services during construction, whether it is in the CIP budget, or in staff costs for in-house engineering.

### ***Wastewater Reclamation Plants Upgrades***

The estimated capital costs for the wastewater reclamation plants are in September 2019 dollars. These costs should be escalated to current dollars.

Estimated wastewater reclamation plant upgrade construction costs include 30 percent of baseline construction costs to account for unforeseen field conditions, which is appropriate for the level of planning. The estimated wastewater reclamation plant construction costs also include an additional 15 to 30 percent for engineering/design, legal, administration and construction management.

## **NON-POTABLE WATER IMPROVEMENTS**

### **Introduction**

WRP 10 is an 18 million gallon per day (mgd) activated sludge wastewater treatment plant that contains three separate liquid-stream secondary treatment trains, two with rated capacities of 8 mgd and the third with a rated capacity of 2 mgd. WRP 10 also contains two tertiary treatment trains that can produce up to 15 mgd of Title 22 recycled water. The tertiary plant effluent is primarily discharged to the non-potable water distribution system, with the excess secondary treated water routed to onsite percolation ponds for land disposal.

WRP 7 is a 5.0 mgd activated sludge wastewater treatment plant. WRP 7 can produce up to 2.5 mgd of Title 22 recycled water. The tertiary water is primarily discharged to the non-potable water distribution

system. The secondary effluent that is not sent to the tertiary treatment process is stored in secondary equalization basins or diverted to on-site and off-site percolation ponds for land disposal.

WRP 4 is permitted to discharge a maximum month average daily effluent flow of 9.9 mgd to the Coachella Valley Storm Water Channel. All effluent from WRP 4 is secondary treated water.

WRP 10, WRP 7 and WRP 4 are governed by permits issued through the Regional Water Quality Control Board, Colorado River Basin, which regulated discharges of wastewater to land and receiving waters. The WRP 10 discharge permit issued in March 2018 required a groundwater study to analyze WRP 10's contributions of total dissolved solids (TDS) and nitrate to the groundwater. The WRP 7 discharge permit Order (Order) was adopted on February 8, 2022. The new Order includes a more stringent interim nitrate effluent limitation for land disposal and a special provision to develop a nitrogen control strategy and work plan by August 8, 2022 to further control nitrogen below drinking water standards or describe plans to eliminate land disposal. These regulatory provisions, and similar provisions expected for WRP10, are a significant driver for the increased costs to provide sanitation service.

According to previous CVWD studies, the life-cycle costs for advanced water treatment facilities to be in compliance with the discharge permits would be approximately \$21,484 per acre-foot per year (\$/AFY) when considering both capital and O&M costs. An expansion of the tertiary treatment facilities and non-potable water distribution system has estimated annual costs of \$460/AFY and \$465/AFY at WRP 10 and WRP 7, respectively. Based on this financial analysis, CVWD has concluded that expansion of the non-potable water distribution system is the most effective strategy to meet the discharge permit requirements while achieving the groundwater basin objectives. Therefore, it appears appropriate that the non-potable water capital improvement costs are included in the sewer fund.

Since WRP 10 and WRP 7 already have limited tertiary treatment capacities and non-potable water distribution systems, we understand that these plants will be upgraded before the effluent from WRP 4 is addressed. For this reason, WRP 10 and WRP 7 have specific capital projects identified in the CIP, while WRP 4 has an overall estimated budget beyond the five-year budgeting period.

## **Review of Proposed Non-Potable Water Improvements**

As the Non-Potable Water System Master Plan is still preliminary, CVWD provided specific excerpts from this study for review that relate to the proposed distribution systems supplied by WRP 10 and WRP 7. The information provided includes tables of unit costs, seven distribution system alternatives, and non-potable water demands in the potential non-potable water service area. Seven figures of the proposed facilities are also provided, with one figure for each distribution system alternative.

Table 1 shows construction costs per lineal foot for non-potable pipes with diameters from 8-inches to 60-inches. These unit costs appear reasonable for pipelines constructed in existing streets that require pavement removal and replacement, traffic control, crossing of existing utilities and appurtenances such as isolation valves and air vacuum relief valves. Table 1 also provides a formula to estimate construction costs for new pump stations based on the pumping capacity. This also appears reasonable. It should be noted that these estimated unit costs are in September 2021 dollars.

Table 2 shows the seven non-potable water distribution system alternatives, benefits and challenges for each alternative, and the total capital cost for each alternative. Table 3 shows the average annual demand and peak month demand for each potential larger demand non-potable water customer. This approach appears reasonable. Since many of these potential customers are existing golf courses, the demands also appear reasonable.

The figures for each distribution system alternative show pipe diameters and routings for the proposed non-potable water distribution system. The larger diameter pipes appear to be located along the backbone streets. Although a hydraulic model was not provided, the pipe routings and diameters appear reasonable.

Alternative 2, Full Expansion of Combined Low and High Pressure Non-Potable Water System appears to be the preferred alternative. This alternative has an estimated capital cost of \$164.1 million. The total pipeline capital cost is \$105.6 million, the WRP 10 Pump Station capital cost is \$42.6 million and the North Valley Pump Station capital cost is \$15.9 million. A timeline for implementation is not provided. Although West Yost was only provided with portions of the draft Non-Potable Water Master Plan, the overall approach appears to be in conformance with industry practices.

## COMPARISON OF SMP TO SANITATION BASE FORECAST

West Yost obtained the Sanitation Base Forecast from CVWD staff on January 26, 2022. Although the focus of the CIP review is for the next five years, the annual CIP budget is projected through 2034. The Sanitation Base Forecast is a combination of identified projects with capital budgets per year and unidentified future projects with assumed budgets per year. As an example, sewer pipeline, manhole and lift station rehabilitation projects for the next several years are identified. For 2024 through 2030, the forecast includes budgets for unidentified projects. This approach appears reasonable as these projects will be better defined in the future but will likely be required. Table 4 compares the SMP budget to the Sanitation Base Forecast for each five-year planning period.

<b>Table 4. Comparison of Total SMP to Sanitation Base Forecast Costs</b>		
<b>Time Period</b>	<b>SMP Cost M dollars,</b>	<b>Base Forecast Cost M dollars</b>
2022 – 2026 <sup>(a)</sup>	135	115.8
2027 – 2031 <sup>(b)</sup>	138	135.0
2032 – 2034 <sup>(c)</sup>	139	20.2
<b>Total Sewer Collection</b>	<b>\$412</b>	<b>\$271.0</b>
(a) 5 Year period includes fiscal 2021 – 2025 for SMP. (b) 5-Year period includes fiscal 2026 -2030 for SMP. (c) Period includes fiscal 2031 -2035 for SMP.		

The Sanitation Base Forecast total estimated CIP costs by time span appear reasonable. As the CVWD Board of Directors requested the Engineering Department to defer costs in the initial five-year period, the Sanitation Base Forecast costs being approximately 14-percent less than the SMP appears reasonable. The second five-year period has very similar costs to the SMP, which is also reasonable. Lastly, the Sanitation Base Forecast costs for the third time period are much lower than the SMP as the Sanitation Base Forecast only includes three years and few projects have been identified for implementation in the 2030's.

As previously discussed, the SMP is presented in two general categories: Sewer Collection and Treatment. Therefore, West Yost has compared the estimated costs by category and will present our analysis with the same organization.

### ***Sewer Collection System Capital Improvements***

West Yost was able to cross-reference most of the collection projects from the SMP to the Sanitation Base Forecast. The capital costs for most of sewer collection projects are the same in both project lists. While some differences are noted, the total estimated capital costs for identified sewer collection system projects from the two sources are within 1.5-percent of each other.

Although the five-year periods do not span the same fiscal years, Table 5 compares the sewer collection system costs for the Sanitation Base Forecast time range.

<b>Table 5. Comparison of Sewer Collection SMP to Sanitation Base Forecast Costs</b>		
<b>Time Period</b>	<b>SMP Cost M dollars,</b>	<b>Base Forecast Cost M dollars</b>
2022 – 2026 <sup>(a)</sup>	39.9	38.0
2027 – 2031 <sup>(b)</sup>	34.0	23.5
2032 – 2034 <sup>(c)</sup>	71.7	0.0
<b>Total Sewer Collection</b>	<b>\$145.6</b>	<b>\$61.5</b>
(a) 5 Year period includes fiscal 2021 – 2025 for SMP.		
(b) 5-Year period includes fiscal 2026 -2030 for SMP.		
(c) Period includes fiscal 2031 -2035 for SMP.		

Overall, the estimated capital costs for the first five-year period are very comparable. The Sanitation Base Forecast is approximately 5 percent less than the SMP. As CVWD Engineering was requested to defer projects as possible, it appears reasonable that the cost is slightly lower. For later years, the Sanitation Base Forecast projects have not been identified, and thereby significantly decrease each subsequent year.

### ***Sewer Treatment Capital Improvements***

The treatment plant projects proposed in the SMP are categorized by the component of the treatment process. The Sanitation Base Forecast appears to be organized by how upgrades will actually be implemented through planning, design and construction.

Although the five-year periods do not span the same fiscal years, Table 6 compares the projects costs for the proposed capital improvements for the first 5-year period in the SMP for each WRP to the 5-year forecast by project package in the Sanitation Base Forecast.

<b>Table 6. Comparison of WRP SMP to Base 5-Year Forecast Costs</b>		
<b>Facility</b>	<b>SMP Cost<sup>(a)</sup> M dollars,</b>	<b>Base Forecast Cost<sup>(b)</sup> M dollars</b>
WRP 10	34.2	30.0
WRP 7	29.5	33.1
WRP 4	29.8	4.5
WRP 1	0	0
WRP 2	0.6	0.2
Other Regional Projects	1.1	0
<b>Total WRP</b>	<b>\$95.2</b>	<b>\$67.8</b>
(a) 5 Year period includes fiscal 2021 – 2025.		
(b) 5-Year period includes fiscal 2022 -2026.		

For the initial five-year time range, the SMP CIP costs are approximately 16-percent higher than the Sanitation Base Forecast cost. Some of this difference may be due to the different fiscal years being included in the 5-year projections. It may also be that some of the project implementation packages have not been developed and input into the Sanitation Base Forecast. It may also be that the SMP was more aggressive than will be executed by CVWD as requested by the Board of Directors.

The CIPs for the 20-year planning period for the SMP and the 13-year Sanitation Base Forecast were also compared. These are shown in Table 7.

Facility	SMP Cost <sup>(a)</sup> M dollars	Base Forecast Cost <sup>(b)</sup> M dollars
WRP 10	92.0	82.3
WRP 7	37.1	59.4
WRP 4	164.2	52.0
WRP 1	2.4	0
WRP 2	1.5	0.2
Other Regional Projects	3.0	0
<b>Total WRP</b>	<b>\$300.2</b>	<b>\$193.9</b>
(a) 20 Year period includes fiscal 2021 – 2040. (b) Period includes 2022 - 2034.		

Based on review of projects, it appears that most of the improvements to WRP 4 will be performed in the portion of the 20-year period after the shorter-term focus of the Sanitation Base Forecast. For WRP 7, it appears that additional projects for the recycled water expansion are included in the second five-year period of the Sanitation Base Forecast that are not fully detailed in the SMP.

## **COMPARISON OF DRAFT NON-POTABLE WATER MASTER PLAN TO SANITATION BASE FORECAST**

According to the Sanitation Base Forecast, many the non-potable water distribution system projects proposed in the draft Non-Potable Water Master Plan will be implemented in the next 13-years. The Sanitation Base Forecast shows relatively uniform implementation over the next ten years. Table 8 shows the Sanitation Forecast Base totals by five-year time span and compares the total cost to the draft Non-Potable Water Master Plan.

<b>Table 8. Comparison of Non-Potable Water Program to Sanitation Base Forecast Costs</b>		
<b>Time Period</b>	<b>NPMP Cost<sup>(a)</sup> M dollars,</b>	<b>Base Forecast Cost M dollars</b>
2022 – 2026		83.7
2027 – 2031		87.8
2032 – 2034		24.5
<b>Total WRP</b>	<b>\$194.9<sup>(b)</sup></b>	<b>\$195.9<sup>(b)</sup></b>
(a) Draft Non-Potable Water Master Plans does not currently include phasing.		
(b) Total includes \$30.8 M for WRP 4 non-potable water delivery system.		

As the Engineering Department has discussed the urgency and criticality of expansion of the non-potable water distribution system, it appears reasonable that the Sanitation Base Forecast shows full implementation in the next 13 years.



## APPENDIX C: SANITATION FUND PRO FORMA

REPORT

**SAN ITATION FUND  
COST OF SERVICE STUDY**

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## Appendix C

### Sanitation Fund Pro Forma

	FY 2022 Budget	FY 2023 Forecast	FY 2024 Forecast	FY 2025 Forecast	FY 2026 Forecast	FY 2027 Forecast
<b>Rate Revenue Increase</b>	<b>0.0%</b>	<b>8.5%</b>	<b>8.5%</b>	<b>8.5%</b>	<b>8.5%</b>	<b>8.5%</b>
<b>Revenues</b>						
Service Charge Revenue	\$38,548,624	\$42,063,537	\$46,103,305	\$50,530,988	\$55,383,137	\$60,702,574
Water Demand Offset Fee	\$1,944,955	\$1,315,664	\$1,329,586	\$1,342,116	\$1,356,039	\$1,368,569
Sanitation Capacity Charges	\$1,297,500	\$4,283,685	\$4,329,015	\$4,369,812	\$4,415,142	\$4,455,939
Pooled Interest Income	\$1,972,000	\$1,163,326	\$898,188	\$699,077	\$635,379	\$733,963
Commercial Dumping Fees	\$476,800	\$486,813	\$497,036	\$507,474	\$518,131	\$529,011
Other Revenues	\$2,264,000	\$2,307,537	\$2,379,256	\$2,453,224	\$2,529,515	\$2,608,200
<b>Total Revenues</b>	<b>\$46,503,879</b>	<b>\$51,620,561</b>	<b>\$55,536,386</b>	<b>\$59,902,691</b>	<b>\$64,837,342</b>	<b>\$70,398,257</b>
<b>Operating Expenses</b>						
Salaries and Benefits	\$22,503,568	\$23,853,782	\$24,927,202	\$26,048,926	\$27,221,128	\$28,446,079
Less: Capitalized Labor	(\$932,773)	(\$1,653,739)	(\$1,698,233)	(\$1,744,728)	(\$1,793,316)	(\$1,844,090)
Supplies and Services	\$10,781,968	\$11,198,859	\$11,672,187	\$12,108,733	\$12,570,440	\$12,990,642
Utilities	\$4,638,646	\$4,736,058	\$4,835,515	\$4,937,061	\$5,040,739	\$5,146,594
Minor Capital Outlay	\$3,100	\$3,165	\$3,232	\$3,299	\$3,369	\$3,439
<b>Total Operating Expenses</b>	<b>\$36,994,509</b>	<b>\$38,138,124</b>	<b>\$39,739,903</b>	<b>\$41,353,291</b>	<b>\$43,042,360</b>	<b>\$44,742,665</b>
<b>Operating Income (Loss)</b>	<b>\$9,509,370</b>	<b>\$13,482,437</b>	<b>\$15,796,483</b>	<b>\$18,549,400</b>	<b>\$21,794,982</b>	<b>\$25,655,592</b>
<b>Debt Service</b>						
Existing Debt Service	\$0	\$900,259	\$1,104,555	\$1,104,555	\$1,104,555	\$1,104,555
Future Debt Service	\$306,000	\$900,334	\$1,294,817	\$1,694,386	\$2,129,956	\$2,594,788
<b>Total Debt Service</b>	<b>\$306,000</b>	<b>\$1,800,594</b>	<b>\$2,399,372</b>	<b>\$2,798,942</b>	<b>\$3,234,511</b>	<b>\$3,699,343</b>
PAYGO CIP	\$11,073,765	\$18,225,333	\$20,670,378	\$18,739,982	\$16,996,546	\$15,267,384
SCC Funded PAYGO CIP	\$1,422,500	\$4,084,000	\$5,983,611	\$6,966,055	\$4,748,806	\$1,759,673
<b>Total Revenue Requirement</b>	<b>\$49,796,774</b>	<b>\$62,248,051</b>	<b>\$68,793,265</b>	<b>\$69,858,269</b>	<b>\$68,022,223</b>	<b>\$65,469,064</b>
Over (Under) Expenses	(\$3,292,895)	(\$10,627,489)	(\$13,256,878)	(\$9,955,578)	(\$3,184,881)	\$4,929,192
Beginning Balance	\$72,086,672	\$68,793,777	\$58,166,288	\$44,909,409	\$34,953,831	\$31,768,950
<b>Ending Balance</b>	<b>\$68,793,777</b>	<b>\$58,166,288</b>	<b>\$44,909,409</b>	<b>\$34,953,831</b>	<b>\$31,768,950</b>	<b>\$36,698,142</b>
Designated Reserve Policy	\$23,949,156	\$26,741,543	\$28,304,595	\$29,209,349	\$30,683,051	\$32,239,474
Over (Under) Reserve Policy	\$44,844,621	\$31,424,744	\$16,604,814	\$5,744,482	\$1,085,898	\$4,458,668



**THANK YOU!**



911-A Commerce Road, Annapolis, MD 21401  
Phone: 1-443-951-4207  
E-mail: [ecalocchia@newgenstrategies.net](mailto:ecalocchia@newgenstrategies.net)  
[www.newgenstrategies.net](http://www.newgenstrategies.net)