BUENA SANITATION DISTRICT

Sewer Rate Study

Report / Aug 26, 2017

CITY OF VISTA
CALIFORNIA

RAFTELIS
FINANCIAL CONSULTANTS, INC.

RAFTELIS
FINANCIAL CONSULTANTS, INC.

445 S. Figueroa Street
Suite 2270
Los Angeles, 90071

Phone 213.262.9304
Fax 626.583.1411

www.raftelis.com

Aug 26, 2017

Mr. Elmer Alex
Principal Engineer
200 Civic Center Drive
Vista, CA 92084

Subject: Buena Sanitation District Sewer Rate Study Report

Dear Mr. Alex,

Raftelis Financial Consultants, Inc. is pleased to provide this Sewer Rate Study Report (Report) for the Buena Sanitation District. The study aims to address the financial challenges the District is currently facing, and to establish sewer rates that are equitable and in compliance with Proposition 218.

The objectives of the study include the following:

- Develop a financial plan and propose revenue adjustments to achieve financial sufficiency by meeting operation and maintenance (O&M) costs, ensuring sufficient funding of the District's financial reserves, and funding of capital projects
- Conduct a cost-of-service analysis
- Develop fair and equitable sewer rates, compliant with Proposition 218, that adequately recover costs and promote revenue stability
- Develop five-year rate projections and customer impact estimates
- Revise the existing extra usage charge and apply industry standards to determine its level

The Report summarizes the key findings and recommendations of the study.
It has been a pleasure working with you, and we thank you and the District staff for the cooperation and support provided during the preparation of this study.

Sincerely,
RAFTELIS FINANCIAL CONSULTANTS, INC.

Sanjay Gaur
Vice President

Gabriella Stoyanova-Rozenova
Consultant

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

ABBREVIATIONS

AF	Acre foot / Acre feet, 1 AF = 435.6 HCF
AWWA	American Water Works Association
BOD	Biochemical Oxygen Demand
BSD	Buena Sanitation District
Buena	Buena Sewer System
Buena - City	Properties within the city limits of Vista, served by Buena Sanitation District
Buena -County	Properties in unincorporated areas of Vista and some properties in San Marcos, served by Buena Sanitation District
CIP	Capital Improvement Projects
City	City of Vista
COS	Cost of Service
CPI	Consumer Price Index/Indices
District	Buena Sanitation District
EDU	Equivalent Dwelling Unit
ENR CCI	Engineering News Records Construction Cost Indices
EWA	Encina Wastewater Authority
FY	Fiscal Year (July 1 – June 30)
GPCD	Gallons per capita per day
HCF	Hundred cubic feet or 100 cubic feet, 1 HCF = 748 gallons
JPA	Joint Powers Authority
M1 Manual	"Principles of Water Rates, Fees, and Charges: Manual of Water Supply Practices M1" published by AWWA
MFR	Multi-Family Residential
MGD	Million gallon per day
MGY	Million gallon per year
O&M	Operations and Maintenance
PAYGO	Pay-As-You-Go
R&R	Refurbishment and Replacement
RFC	Raftelis Financial Consultants, Inc.
RTS	Return to sewer
SFR	Single Family Residential
SRF	State Revolving Fund
Study	Wastewater rate study
TSS	Total Suspended Solids
Vista	Vista Sewer System
WEF	Wastewater Environment Federation

1. EXECUTIVE SUMMARY

In 2016, Raftelis Financial Consultants, Inc. ("RFC") was engaged by the Buena Sanitation District ("District") to complete a financial plan and cost of service study (Study) for its sanitary sewer system across the study period FY2017-FY2025.

The City of Vista (City) operates and maintains both its own sanitary collection system and the Buena Sanitation District's sanitary collection system. Each sewer collection system is a distinct legal entity. The Buena Sanitation District, owns and manages the sewer collection system for two main areas – properties within the City of Vista (Buena-City) and unincorporated areas of Vista and some properties in San Marcos (Buena-County). Wastewater is collected through a network comprised of 101 miles of sewer pipes, serving approximately 5,360 parcels, and conveying an annual average flow of 1.6 million gallons per day. The Buena Outfall routes sewage approximately 5.5 miles through one lift station to the Encina Wastewater Authority Water Pollution Control Facility. The District owns one pump station. The wastewater is delivered to and treated by the Encina Wastewater Authority. It discharged into the ocean. Wastewater treatment costs are based both on the District's ownership in EWA and the usage in terms of annual flow to the treatment facility.

The City of Vista's sewer utility provides Buena sewer customers who reside in the City limits (Buena - City) with water quality protection services to protect life, property, receiving waters and the environment from loss or damage by discharges. The District compensates Vista Sewer utility annually through a refund representing approximately 17 percent of the City's total water quality protection expenditures.

The last cost of service analysis for the District was completed in 2007 and the proposed rates were adopted in 2008. The present rate study is based on industry standard principles and ensures that the proposed rates are consistent with the cost of service.

The main objectives of the Study include the following:

1. Develop a financial plan and propose revenue adjustments to achieve financial sufficiency by meeting operation and maintenance (O&M) costs, ensuring sufficient funding of the District's financial reserves, and funding of capital projects
2. Conduct a cost-of-service analysis
3. Develop fair and equitable sewer rates, compliant with Proposition 218, that adequately recover costs and promote revenue stability
4. Develop five-year rate projections and customer impact estimates
5. Revise the existing extra usage charge and apply industry standards to determine its level

Wastewater rates were prepared based on 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 their application in the context of the Report are described below.

1.1 PROPOSED RESERVE POLICY

A reserve policy is a written document that establishes reserve targets. It provides guidelines for sound financial management with an overall long-term goal of maintaining financial solvency and mitigating financial risks associated with revenue instability, volatile capital costs and emergencies. Adopting and adhering to a sustainable reserve policy enhances financial management transparency and helps achieve and maintain a favorable credit rating for future 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. The proposed Buena Sewer Fund target reserves are summarized in the table below. Since Buena Sanitation District does not have debt, there is no debt reserve.

Table 1-1 Sewer Fund Target Reserves

	Level	Notes	FY 2018
Operating Cash Flow	50%	of O&M	$2,390,774
Treatment and Discharge Rate Stabilization	15%	of 5yr annual average Encina Cost	$218,220
Emergency Reserve Target	$1,000,000	No annual increase	$1,000,000
TOTAL			**$3,608,994**

1.2 NO REVENUE ADJUSTMENT PROPOSED

The District uses four funds to identify and allocate the cost of different sewer system activities. For the purpose of the cost of service analysis, the Operating and Capital funds are combined into a single fund referred to as Buena Sewer Fund. Separate financial plans are developed for Capital Expansion and Capital Facility Funds.

Under the current financial plan, Buena Sewer Fund meets successfully the District's financial needs and no revenue adjustment is recommended.

1.3 PROPOSED WASTEWATER RATES

The table below shows proposed rates for FY 2019-FY 2027, based on cost of service analysis.

Table 1-2 COS Based Rates

	Current Rates FY 2018	Proposed Rates FY 2019-FY 2023	% change
Buena--City			
Commercial Fixed Cahrge (per EDU owned)	$158.00	**$200.00**	26.6%
Commercial Flow Rate by Strength Class (per hcf)			
Commercial - Low	$5.66	**$5.83**	3.0%
Commercial - Med	$6.42	**$6.68**	4.0%
Commercial - High	$7.94	**$9.21**	16.0%
Single Family	$711.00	**$663.00**	-6.8%
Multi Family	$498.00	**$463.00**	-7.0%
Buena--County			
Commercial Fixed Charge (per EDU owned)	$158.00	**$158.00**	0.0%
Commercial Flow Rate by Strength Class (per hcf)			
Commercial - Low	$4.85	**$5.83**	20.2%
Commercial - Med	$5.61	**$6.68**	19.1%
Commercial - High	$7.12	**$9.21**	29.4%
Single Family	$632.00	**$621.00**	-1.7%
Multi Family	$442.00	**$434.00**	-1.8%
Extra Strength Surcharge			
BOD Rate per lb	$0.84	**$0.69**	-17.9%
TSS Rate per lb	$0.37	**$0.56**	51.4%

Residential customers are expected to see a reduction in their wastewater bills in FY2019. The commercial customers' bills will increase but the magnitude of the increase will depend on the purchased capacity (in terms of EDU) as well as the flow and the strength of the discharged wastewater.

Commercial customers who discharge wastewater with excess strength concentrations must pay an extra strength surcharge. Currently, extra strength is defined as strength above 500 milligrams per liter of BOD or 500 milligrams per liter of total suspended solids. The surcharges are levied per pound of biochemical oxygen demand and suspended solids. RFC proposes the extra strength surcharges per pound of BOD and TSS to be equal to $0.69 and $0.56, respectively. In addition, RFC recommends to the District staff to update the extra strength surcharge threshold for BOD from 500 mg/L to 1000 mg/L and for TSS from 500 mg/L to 600 mg/L in line with the cost of service evaluations and the average wastewater strength of high strength commercial customers.

Currently, the commercial customers are charged the commercial fixed rate based on owned EDU capacity regardless of excess wastewater capacity used (in terms of EDUs). After discussion with Districts' staff, RFC proposed that the fixed charge be calculated on the owned and excess wastewater capacity used (in terms of EDUs). In addition, the commercial customers whose discharge is above the owned capacity will be charged a capacity rental charge (in EDU) for the excess capacity used

1.4 PROPOSED CAPACITY RENTAL CHARGE

Distrct staff requested RFC to redefine the existing excess usage charge for commercial customers. RFC determined that customers who exceed their purchased EDU capacity are essentially "renting" additional capacity; hence, that charge should be modeled after the framework that private water/wastewater utilities follow for return on investment, known as "utility basis approach".

RFC proposes that the Excess Usage Charge be renamed the Capacity Rental Charge. The new charge will be applied to wastewater capacity usage above the owned capacity, in terms of equivalent dwelling units (EDU). The charge per EDU is proposed to be equal to the calculated annual rate of return per EDU. The FY2019 charge is estimated to be $285, with proposed annual adjustments of 2 percent to compensate for inflation. The capacity rental charge will be applied to customers' bills in addition to the fixed and volumetric charges to those customers who exceed their owned capacity.

2. INTRODUCTION

In 2016, Raftelis Financial Consultants, Inc. (RFC) was engaged by the Buena Sanitation District (Buena or District) to complete a financial plan and cost of service study for its sanitary sewer system The Study covers the period FY2017-FY 2025 and its primary objective is to develop equitable rates compliant with Proposition 218.

2.1 SEWER SYSTEM

The City of Vista operates and maintains both its own and Buena Sanitation District's sanitary collection system. Each sewer collection system is a distinct legal entity. The Buena Sanitation District owns and manages the sewer collection system for two main areas –properties within the City of Vista (Buena-City) and unincorporated areas of Vista and some properties in San Marcos (Buena-County). Wastewater is collected through a network comprising 101 miles of sewer pipes of public mains and trunk sewers, serving approximately 5,360 parcels, and conveys an annual average flow of 1.6 million gallons per day. The Buena Outfall routes sewage approximately 5.5 miles through one lift station to the Encina Wastewater Authority treatment facility. The District owns one pump station, the Buena Creek Pump Station. The wastewater is delivered to and treated by the Encina Wastewater Authority, and discharged into the ocean.

Encina Wastewater Authority is a wastewater treatment agency, established through a Joint Powers Authority (JPA) between six agencies. The ownership of the District in Encina includes the above-mentioned pump station, 7.09 percent of the treatment plant (Unit I) and 6.93 percent of the ocean outflow (Unit J). The joint ownership facilitates cost sharing and enables economies of scale which cannot be achieved independently. According to the cost sharing arrangement, operational expenses of the treatment plant are proportional to the actual effluent from the member agencies, while expenses that are not related to the amount of wastewater are allocated based on the ownership shares.

Vista sewer utility provides Buena customers who reside in the City limits (Buena-City) with water quality protection services to protect life, property, receiving waters and the environment from loss or damage by discharges. The District compensates the Vista Sewer utility annually through a refund representing approximately 17 percent of the City's total water quality control expenditures.

The last cost of service analysis for the District was completed in 2007 and the proposed rates were adopted in 2008. The present rate study is based on industry standard principles and ensures that the proposed rates are consistent with the cost of service.

2.2 OBJECTIVES OF THE STUDY

The main objectives of the Study include the following:

1. Develop a financial plan and propose revenue adjustments to achieve financial sufficiency by meeting operation and maintenance (O&M) costs, ensuring sufficient funding of the District's financial reserves, and funding of capital projects
2. Conduct a cost-of-service analysis
3. Develop fair and equitable sewer rates, compliant with Proposition 218, that adequately recover costs and promote revenue stability
4. Develop five-year rate projections and customer impact estimates
5. Revise the existing extra usage charge and apply industry standards to determine its level

2.3 PROCESS

Wastewater rates were prepared based on 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 studies. The WEF Manual's general principles and their application in the context of the Report are described below.

The first step in the rate setting process is determining the adequate level of funding for the utility, referred to as "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 the existing rates in terms of recovering the utility's costs. Various factors can affect these calculations, including the number of customers served, water-use trends, nonrecurring sales, conservation, inflation, interest rates, capital finance needs, changes in tax laws (to the extent applicable), and other changes in operating and economic conditions.

After determining the utility's revenue requirement, the next step is a cost of service (COS) analysis. Using approved expense and revenue budgets and capital improvement plans, the utility's costs and assets are classified by major operating functions such as collection, treatment, etc. (cost functionalization).

The next step is to allocate the "functionalized costs" to cost causation components. For wastewater, these components include wastewater flow and strength, and general administrative costs. Wastewater strength is defined as the Biochemical Oxygen Demand (BOD) and Total Suspended Solid (TSS) loads. These cost causation components are then allocated among different customer classes (e.g., single-family residential, multi-family residential and commercial) by determining the loadings of flow and strength for each class.

Once the analysis is completed, rates are designed such that to cover the cost of service for each customer class.

2.4 LEGAL REQUIREMENTS

California Constitution - Article XIII D, Section 6 (Proposition 218)
Proposition 218, reflected in the California Constitution as Article XIII D, was enacted in 1996 to ensure that rates and fees are reasonable and proportional to the cost of providing service. The principal requirements for fairness of the fees related to wastewater service are:

1. A property-related charge (such as sewer rates) imposed by a public agency on a parcel shall not exceed the costs required to provide the property related service.
2. Revenues derived by the charge shall not be used for any purpose other than that for which the charge was imposed.
3. The amount of the charge imposed upon any parcel shall not exceed the proportional cost of service attributable to the parcel.
4. No charge may be imposed for a service unless that service is actually used or immediately available to the owner of property.
5. A written notice of the proposed charge shall be mailed to the record owner of each parcel at least 45 days prior to the public hearing, when the agency considers all written protests against the charge.

2.5 DISCLAIMERS

In performance of the services, it is understood that the District and/or others may supply RFC with certain information and/or data, and that RFC will rely on such information. The accuracy of such information is not within RFC's control and RFC shall not be liable for its accuracy, nor for its verification, except to the extent that such verification is expressly a part of RFC 's scope of services.

RFC's opinions, estimates, projections, and forecasts of current and future costs, revenues, other levels of any sort, and events shall be made on the basis of available information and RFC's expertise and qualifications as a professional. RFC does not warrant or guarantee that its opinions, estimates, projections or forecasts of current and future levels and events will not vary from the District's estimates or forecasts or from actual outcomes. RFC identifies costs, allocates costs to customer classes and provides rate models. It does not establish rates, which is the legislative responsibility of District.

The numbers shown in the tables listed in this Report may contain decimal rounding errors, thus they may not add up to the precise numbers as shown.

3. GENERAL ASSUMPTIONS

The Study period includes Fiscal Years (FY) 2017 through FY 2025, with the Fiscal Year beginning July 1 of the previous calendar year. Various types of assumptions and inputs were incorporated into the Study, based on discussions with and/or direction from the District's staff. These include account and usage growth rates for the different customer classes, inflation factors, and other relevant assumptions.

3.1 INFLATION FACTORS

The District's inflationary assumptions are presented in Table 3-1, below.

Table 3-1 Inflation Factors

	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
CPI	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
General	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%
Salaries& Benefits	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%
ENR (YOY, March)[1]	2.09%	2.09%	2.09%	2.09%	2.09%	2.09%	2.09%	2.09%
Interest on reserves	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
Encina Cost Change	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%
Utilities	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%
Capital	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%

3.2 WASTEWATER DISCHARGE PROJECTIONS

Projections of the amount of wastewater discharge are based on two key variables — the number of accounts and demand per account. The District's staff anticipates that there will be a minimal account growth of about 0.2% per year for residential customers over the Study period and projects no change in the commercial accounts.

The wastewater flow is expected to remain constant with the exception of the extra wastewater discharge for commercial customers. This is the discharge above the purchased capacity in terms of Equivalent Dwelling Units (EDU). The latter is likely to decline in FY 2017 and FY 2018 due to the lag of two years[2] in water consumption reporting and the drought-related reduction in water consumption in FY 2015 and FY 2016, respectively. However, the decline in the overall inflow from Buena as reported by EWA, was relatively small in FY 2015 and FY 2016[3] which implies that there was optimization of the wastewater flow within the limits of the purchased capacity.

[1] ENR CCI 5-year annual average for March.
[2] The District assumes 100% Return to Sewer (RTS) and uses water consumption with a lag of two years to calculate wastewater discharge.
[3] Data for 2015 and 2016 wastewater discharge come from EWA CAFR 2016.

Table 3-2 Sewer Demand Projections Factors (annual percentage change)

	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
Number of EDUs									
Residential	0.00%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
Commercial (Permit EDUs)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Excess Usage (EDUs)	-15.00%	-15.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Flow (hcf)									
Low	-3.2%	-2%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Medium	-3.2%	-2%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
High	-3.2%	-2%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

The projections assume a constant combined wastewater flow from Vista and Buena throughout the study period.

3.3 ENDING BALANCES

The District uses four funds to identify and allocate the cost of different sewer system activities. The Operating Fund (Fund 504) includes the rate revenues as well as the operation and management costs associated with the sewer system. The Capital Fund (Fund 506) accounts for the capital investment expenditures and any debt service. It also receives transfers from the operating fund. For the purpose of the cost of service analysis, the Operating and Capital funds are combined into a single fund referred to as Buena Sewer Fund.

Finally, the Capital Expansion and Capital Facility Funds (Fund 505 and Fund 510, respectively) are used for revenues and expenses related to capacity expansion and development.

Table 3-3 Funds Structure

Fund	Primary Revenue Sources	Primary Expenditures
Buena Sewer Fund		
Operating Fund (Fund 504)	Sewer service charges	O&M expenses
Capital Replacement Fund (Fund 506)	Debt proceeds (if any)	Debt service (if any), CIP funding
Capital Expansion Fund (Fund 505)	Excess Usage Charge (from FY 2018)	CIP Funding
Capital Facility Fund (Fund 510)	Capacity Fees	CIP Funding

District staff provided the ending balances for the four funds as of June 30, 2016.

Table 3-4 Ending Balances as of June 30, 2016

	BUENA SANITATION DISTRICT
Operating Fund Reserves	
Operating Cash Flow	$1,851,972
Rate Stabilization	$305,776
Total Operating Fund Reserves	**$2,157,748**
Capital Fund Reserves	
Emergency Reserve	$700,000
Other Available Capital	$16,702,922
Total Capital Fund Reserves	**$17,402,922**
Total Buena Sewer Fund End Balances	**$19,560,670**
Capital Expansion Fund End Balances	**$379,547**
Capital Facility Fund End Balances	**$110,488**

3.4 RESERVE POLICY

A reserve policy is a written document that establishes reserve goals. It provides guidelines for sound financial management with an overall long-term goal of maintaining financial solvency and mitigating financial risks associated with revenue instability, volatile capital costs and emergencies. Adopting and adhering to a sustainable reserve policy enhances financial management transparency. It also helps achieve and maintain a favorable credit rating for future debt issues. Reserves can offset unanticipated reductions in revenues, offset fluctuations in costs of providing services, and fiscal emergencies such as revenue shortfalls, asset failures, and natural disasters. Capital reserves set funds aside for replacement of capital assets as they age, as well as for new capital projects.

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. Typically, reserves fall into the following categories: operations & maintenance (O&M), rate stabilization, debt service (if any) and emergency reserve.

The proposed Buena Sewer Fund target reserves are summarized in Table 3-5 and described in detail in the following subsections[4].

Table 3-5 Buena Sewer Fund Target Reserves

	Level	Notes	FY 2018
Operating Cash Flow	50%	of O&M	$2,390,774
Treatment and Discharge Rate Stabilization	15%	of 5yr annual average Encina Cost	$218,220
Emergency Reserve Target	$1,000,000	No annual increase	$1,000,000
TOTAL			**$3,608,994**

3.4.1 Operating Cash Flow Reserve

The purpose of an O&M reserve is to provide working capital to support the operation, maintenance, and administration of the sewer system. From a risk management perspective, the O&M reserve

[4] Buena Sanitation district has no outstanding debt.

supports the Districts's cash flow needs during normal operations and ensures that operations can continue should there be significant events that impact cash flows. As it is unlikely for a utility to perfectly predict the revenues and revenue requirements for each billing period, setting aside a reserve to hedge the risk of negative cash positions is a prudent financial planning decision. An important factor to consider when creating a cash flow reserve, is the frequency of billing. A utility that bills once a month would generally require less reserves than a utility that bills semi-annually[5]. This is due to the utility with monthly bills receiving income more frequently than the utility only receiving payments twice a year. There is a shorter period that the utility must be able to cover in the event of a revenue shortfall.

RFC recommends that the District continues to calculate the O&M reserve as the equivalent of half of the annual operating budget to ensure adequate working capital for operating expenses. The annual bills are paid in two installments; thus, a six-month reserve is the minimum to provide sufficient working capital. This accounts for the timing of expense occurrence and revenue collection. The projected level of O&M target reserves for FY 2018 is $2,390,774.

3.4.2 Treatment and Discharge Rate Stabilization Reserve

While it is not typical for wastewater treatment utilities to have substantial rate increases in a short period of time, factors such as unexpected increase in short-term O&M expenses may result in large rate corrections. A treatment and discharge rate stabilization reserve could be set up in order to smooth rates through a gradual adjustment rather than abrupt and large rate changes. Based on directions from the Disrict staff, the main factor that could trigger a sizeable rate increase is a large increase in the operating cost of Encina Wastewater Authority.

The District's current rate stabilization reserve was set to 25 percent of the five-year average annual expenses to EWA. After discussion with District staff and since there were no significant unanticipated increases in treatment costs in the last 5years, RFC recommended a reduction in the percentage from 25 to 15 percent. This results in a projected rate stabilization target reserve of $281,220 for FY 2018.

3.4.3 Capital Emergency Reserve

The purpose of an emergency fund is to allow the utility to provide uninterrupted service in the event of a fiscal emergency, natural disaster, or facility failure. An emergency reserve mitigates the impact on operations by considering the high capital cost of the utilities and setting aside adequate funds to restart the system after an event or replace an essential facility.

Based on discussions with staff, the capital emergency reserve was fixed at $1M (up from $700K). This level was assessed to be sufficient to fund an emergency repair to a failure of the sewer collection system. The capital emergency reserve will not be adjusted to inflation in the following years.

[5] Buena Sanitation District customers pay their annual bills in two installments.

3.5 DATA

The following data provided by the District's staff was used in the development of the Buena Sewer Fund financial plan and cost of service analysis:

1. Buena residential and commercial customers dataset for 2016
2. Adopted rates for FY 2017 and FY 2018
3. FY 2017 Budget (revenues as of May 2017) and FY 2018 proposed Budget (as of Apr 2017)
4. CIP as of March 2017
5. FY 2016 actual financial performance for the four funds
6. Encina Wastewater Authority billings for Buena Sewer System 2014-2016
7. Encina proposed Budget for 2018
8. District Sewer Fixed Assets List by accusation cost
9. Funds 504, 505, 506 and 510 cash balances as of June 30, 2016

4. FINANCIAL PLAN

Establishing the Buena Sewer Fund[6] revenue requirement is a key first step in the rate setting process. It involves an analysis of annual operating revenues under the current rates, O&M expenses, capital expenditures, transfers between funds, and reserve requirements to ensure the financial sustainability of the Buena Sewer Fund.

4.1 OPERATING REVENUES

4.1.1 Current Rates and Customer Classes

The effective rates in Buena for FY 2017 and FY 2018 were adopted in 2013[7]. Sewer charges are collected on an annual basis. They are generally placed each year on the property owner's San Diego County Property Tax Bill and paid in two installments. The volume of the wastewater discharge is based on the water consumption with a two-year lag and 100 percent return to sewer.

There are two service areas: Buena-City and Buena-County. Buena-City includes properties within the City of Vista limits and Buena-County includes unincorporated properties. While both areas are served by Buena Sanitation District, there are differences in the rates due to the water quality protection services provided to the Buena-City customers only.

Table 4-1 Adopted Rates for Buena Sewer

	Buena--City		Buena--County	
Customer Class	**FY 2017**	**FY 2018**	**FY 2017**	**FY 2018**
Residential				
SFR (per EDU	$711.00	$711.00	$632.00	$632.00
MFR (per Unit)	$498.00	$498.00	$442.00	$442.00
Commercial				
per EDU	$158.00	$158.00	$158.00	$158.00
Per Excess Usage EDU	$565.10	$573.50	$565.10	$573.50
Flow by Strength Class (per hcf)				
Low	$5.66	$5.66	$4.85	$4.85
Medium	$6.42	$6.42	$5.61	$5.61
High	$7.94	$7.94	$7.12	$7.12
Surcharge Extra Strength				
BOD Rate per lb	$0.84	$0.84	$0.84	$0.84
TSS Rate per lb	$0.37	$0.37	$0.37	$0.37

There are two categories of sewer customers in Buena Sanitation District: residential and commercial. The residential customers are divided into two separate groups. The first one combines the single-family residences (SFR), townhomes, condos and duplex units. Their rate is based on the number of EDU per unit.

[6] Buena Sewer Fund combines Fund 504 (Operating Fund) and Fund 506 (Capital Fund).
[7] Buena Sanitation District Ordinance 2013-1

The second residential group includes multi-family residencies (MFR). The expected sewer capacity needed per one multi-family unit is estimated to be 70 percent of 1 EDU, and the rate for a multi-family residence is 70 percent of the rate for a single-family residence.

Commercial customers are divided into three groups based on the strength of their wastewater discharge. The strength is calculated as a combination of the biochemical oxygen demand (BOD) and suspended solids (TSS) content in the discharge, and is assigned to each commercial customer upon joining the system. In addition to the strength, each commercial customer buys sewer capacity (in terms of EDUs) which reflects the expected volume of discharge per year.

The rate for commercial customers has two components: a fixed charge and a volumetric based rate. The fixed charge is levied on the basis of purchased EDU and the volumetric rate --per hundred cubic feet of water discharge.

If commercial customers discharge more than the purchased capacity, they are charged for each additional tenth of an EDU with an excess usage charge[8]. The definition of the current excess usage charge is provided in the Municipal Code[9]. Since this charge represents a rental income to Buena Sewer (the customers pay for renting more capacity), RFC recommends that revenues from it be diverted to the Capital Expansion Fund[10]. This change would become effective in FY 2018 and it is incorporated in the revenue projection.

Table 4-2 Buena Sewer Demand

	FY 2016	
	Buena--City	Buena--County
Residential		
SFR EDUs	3,054	2,815
MFR Units	2,519	1,820
Commercial		
Permit EDUs	3,958	433
Excess Usage EDUs[11]	439	95
Flow by Strength Class (hcf) [12]		
Low	107,864 hcf	20,420 hcf
Medium	69,372 hcf	6,384 hcf
High	40,379 hcf	5,349 hcf

[8] The 2016 data reveals that while some of the customers have significant excess usage, others are considerably below their purchased capacity.
[9] Section 14.06.040
[10] For details see the section on Capacity Rental Charge section of this Study.
[11] Total Excess EDUs data for FY2016 is provided by the District
[12] Flow data is based on 2014 water consumption.

4.1.2 Projected Sewer Demand

The volume of EDU capacity purchased by commercial customers is projected to remain at its FY 2016 level. The District's expects a small increase in the number of residential EDUs, driven by new customers in the area. The flow by strength class is also expected to remain relatively stable. Projections also incorporate the two-year lag, and the small reduction in FY 2017 and FY 2018 captures the actual total effluent change as reported by Encina. A 15 percent reduction is expected in the number of excess usage EDUs in FY 2017 and FY 2018 due to the droughts in 2015 and 2016, respectively.

The sewer demand for FY 2017 for each area is obtained by multiplying the FY 2016 actual number of EDUs (or flow volume) by the respective projection factor for FY 2017 from Table 3-2. Next, the projection for FY 2018 is based on the calculated volumes for FY 2017, multiplied by the projection factor for FY 2018 for each customer category. The sewer demand projection for the study period is shown in Table 4-3

Table 4-3 Projected Sewer Demand

	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
Buena—City									
Residential									
SFR EDUs	3,054	3,059	3,065	3,071	3,077	3,083	3,088	3,094	3,100
MFR Units	2,519	2,524	2,529	2,533	2,538	2,543	2,548	2,553	2,557
Commercial									
Permit EDUs	3,958	3,958	3,958	3,958	3,958	3,958	3,958	3,958	3,958
Excess EDUs	373	317	317	317	317	317	317	317	317
Flow by Strength Class									
Low (hcf)	104,407	102,333	102,333	102,333	102,333	102,333	102,333	102,333	102,333
Medium (hcf)	67,149	65,815	65,815	65,815	65,815	65,815	65,815	65,815	65,815
High (hcf)	39,085	38,308	38,308	38,308	38,308	38,308	38,308	38,308	38,308
Buena—County									
Residential									
SFR EDUs	2,815	2,820	2,826	2,831	2,836	2,842	2,847	2,852	2,858
MFR Units	1,820	1,823	1,827	1,830	1,834	1,837	1,841	1,844	1,848
Commercial									
Permit EDUs	433	433	433	433	433	433	433	433	433
Excess EDUs	80	68	68	68	68	68	68	68	68
Flow by Strength Class									
Low (hcf)	19,766	19,373	19,373	19,373	19,373	19,373	19,373	19,373	19,373
Medium (hcf)	6,179	6,057	6,057	6,057	6,057	6,057	6,057	6,057	6,057
High (hcf)	5,178	5,075	5,075	5,075	5,075	5,075	5,075	5,075	5,075

The FY 2018 revenue projection is based on the adopted rates for FY 2018 for each area (Table 4-1), multiplied by the projected residential and commercial EDUs and flows for each area (Table 4-3).

Table 4-4 Rate Revenue Projection for FY 2018

		Rates 2018 *Table 4-1.*	Projected Sewer Demand 2018 *Table 4-3*	Revenues Projection 2018
	A	B	C	D=B*C
1	**Residential**			
2	SFR EDUs	$711.00	3,059	$2,175,223
3	MFR Units	$498.00	2,524	$1,256,839
4	**Total Residential**			**$3,432,061**
5	**Commercial**			
6	Permit EDUs	$158.00	3,958	$625,332
7	Excess EDUs	$573.50	317	*Diverted to Capital Expansion Fund*
8	Flow by Strength Class			
9	*Low (hcf)*	$5.66	102,333	$579,204
10	*Medium (hcf)*	$6.42	65,815	$422,530
11	*High (hcf)*	$7.94	38,308	$304,168
12	***Total Flow Strength*** ***[****9]+[10]+[11]*			**$1,305,902**
13	***Total Commercial*** *[6]+[12]*			**$1,931,235**
14	***Total Buena-City*** *[4]+[13]*			**$5,363,296**
15	**Residential**			
16	SFR EDUs	$632.00	2,820	$1,782,387
17	MFR Units	$442.00	1,823	$805,964
18	**Total Residential**			
19	**Commercial**			
20	Permit EDUs	$158.00	433	$68,430
21	Excess EDUs	$573.50	68	*Diverted to Capital Expansion Fund*
22	Flow by Strength Class			
23	*Low (hcf)*	$4.85	19,373	$93,958
24	*Medium (hcf)*	$5.61	6,057	$33,978
25	*High (hcf)*	$7.12	5,075	$36,132
26	***Total Flow Strength*** ***[****9]+[10]+[11]*			**$164,068**
27	***Total Commercial*** *[6]+[12]*			**$232,497**
28	***Total Buena—County*** *[14]+[27]*			**$2,820,848**
	Total Rate Revenue [14]+[28]			**$8,184,144**

The revenue projection in the period FY 2019 - FY 2025 assumes no rates increase (i.e., the rates are kept at the 2018 level) and the deviation from FY 2018 is due entirely to the assumed annual changes in purchased capacity (in terms in EDUs) and wastewater discharge flows.

The shift of excess usage charge revenues from the Buena Sewer Fund to the Capital Expansion Fund in FY 2018 are reflected by showing zero revenues from this item in the Buena Sewer Fund in FY 2018 and in the subsequent periods.

Table 4-5 Projected Revenues from Current Rates

	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
Buena—City									
Residential									
SFR	$2,171,110	$2,175,223	$2,179,343	$2,183,472	$2,187,609	$2,191,753	$2,195,905	$2,200,065	$2,204,233
MFR	$1,254,462	$1,256,839	$1,259,220	$1,261,605	$1,263,995	$1,266,390	$1,268,789	$1,271,192	$1,273,601
Total Residential	**$3,425,572**	**$3,432,061**	**$3,438,563**	**$3,445,077**	**$3,451,604**	**$3,458,142**	**$3,464,694**	**$3,471,257**	**$3,477,833**
Commercial									
Permit EDUs	$625,332	$625,332	$625,332	$625,332	$625,332	$625,332	$625,332	$625,332	$625,332
Excess EDUs	$211,028	$0	$0	$0	$0	$0	$0	$0	$0
Flow	$1,332,373	$1,305,902	$1,305,902	$1,305,902	$1,305,902	$1,305,902	$1,305,902	$1,305,902	$1,305,902
Total Commercial	**$2,168,734**	**$1,931,235**	**$1,931,235**	**$1,931,235**	**$1,931,235**	**$1,931,235**	**$1,931,235**	**$1,931,235**	**$1,931,235**
Total Buena City	**$5,594,306**	**$5,363,296**	**$5,369,798**	**$5,376,312**	**$5,382,839**	**$5,389,377**	**$5,395,929**	**$5,402,492**	**$5,409,068**
Buena—County									
Residential									
SFR	$1,779,017	$1,782,387	$1,785,764	$1,789,147	$1,792,536	$1,795,932	$1,799,334	$1,802,743	$1,806,158
MFR	$804,440	$805,964	$807,491	$809,021	$810,553	$812,089	$813,627	$815,169	$816,713
Total Residential	**$2,583,457**	**$2,588,351**	**$2,593,254**	**$2,598,167**	**$2,603,089**	**$2,608,021**	**$2,612,961**	**$2,617,912**	**$2,622,871**
Commercial									
Permit EDUs	$68,430	$68,430	$68,430	$68,430	$68,430	$68,430	$68,430	$68,430	$68,430
Excess EDUs	$45,480	$0	$0	$0	$0	$0	$0	$0	$0
Flow	$167,393	$164,068	$164,068	$164,068	$164,068	$164,068	$164,068	$164,068	$164,068
Total Commercial	**$281,303**	**$232,497**	**$232,497**	**$232,497**	**$232,497**	**$232,497**	**$232,497**	**$232,497**	**$232,497**
Total Buena (County)	**$2,864,760**	**$2,820,848**	**$2,825,752**	**$2,830,665**	**$2,835,587**	**$2,840,518**	**$2,845,459**	**$2,850,409**	**$2,855,368**
Total Buena Sanitation District Rate Revenues	**$8,459,065**	**$8,184,144**	**$8,195,550**	**$8,206,977**	**$8,218,425**	**$8,229,896**	**$8,241,387**	**$8,252,901**	**$8,264,437**

The projection of other revenues assumes that most of the items will remain at their FY 2017 budgeted level, except for investment earnings which are calculated based on the available resources and assumed interest rate and GASB adjustments, which are expected to be neutral to revenues during the study period.

Table 4-6 Other Revenue Projection

	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
Annexation Fees	$0	$0	$0	$0	$0	$0	$0	$0	$0
Inter Agency Flow Agreement	$61,991	$61,991	$61,991	$61,991	$61,991	$61,991	$61,991	$61,991	$61,991
Investment Earnings	$33,233	$36,618	$39,892	$41,451	$43,070	$44,760	$46,520	$48,336	$50,231
Other Revenue	$0	$0	$0	$0	$0	$0	$0	$0	$0
Sewer Service Charges Prorated	$7,788	$7,788	$7,788	$7,788	$7,788	$7,788	$7,788	$7,788	$7,788
GASB 31 Adjustment	-$42,665	$0	$0	$0	$0	$0	$0	$0	$0
Operating Fund Other Revenue	**$60,347**	**$106,397**	**$109,671**	**$111,230**	**$112,849**	**$114,539**	**$116,299**	**$118,115**	**$120,010**
Investment Earnings	$249,114	$249,856	$239,087	$222,082	$230,154	$242,862	$239,555	$216,589	$142,129
GASB 31 Adjustment	-$354,475	$0	$0	$0	$0	$0	$0	$0	$0
Developer Contributed Lines	$0	$0	$0	$0	$0	$0	$0	$0	$0
Capital Fund Other Revenues	**-$105,361**	**$249,856**	**$239,087**	**$222,082**	**$230,154**	**$242,862**	**$239,555**	**$216,589**	**$142,129**
Buena Sewer Fund Total Other Revenue	**-$45,013**	**$356,253**	**$348,758**	**$333,312**	**$343,004**	**$357,401**	**$355,854**	**$334,704**	**$262,139**

4.2 OPERATING EXPENSES

Operating expenses are projected by adjusting the budgeted expenses in FY 2017 with the applicable inflation factor from Table 3-1 The only exceptions are the treatment costs and the refunded water quality protection expenses to Vista Sewer.

The treatment costs, which represent payments Buena Sewer Fund makes to Encina for wastewater treatment, have two main parts. The first part combines the fixed costs that do not depend on the amount of effluent to be treated. The budgeted fixed costs for FY 2017 are inflated each year with the assumed "Encina Cost Change" inflation factor from Table 3-1.

The second part of the cost is based on the volume of the treated effluent and the unit cost per treated million gallon of wastewater. The latter is calculated by using Encina's operating revenues from Buena Sanitation District[13] in 2017 of $959,835 and dividing it by 540 MG in that year (effluent from Buena Table 4-7). The resulting unit cost per million gallon of treated wastewater for FY 2017 of $1,777 is escalated by an inflation factor of 5 percent ('Encina Cost Change') each year for the rest of the study period. Finally, the projected unit cost is multiplied by the projected effluent to obtain the volumetric cost of treated wastewater.

Table 4-7 Wastewater Treatment Cost Projection

		Escalation factor:	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
1	**Fixed Cost**	*Table 3-1*	$519,855	$434,862	$456,605	$479,435	$503,407	$528,577	$555,006	$582,757	$611,895
2	Unit cost (MG)	*Table 3-1*	$1,777	$1,866	$1,959	$2,057	$2,160	$2,268	$2,381	$2,500	$2,625
3	Projected Effluent (MGY)	*District's staff projections*	540	650	650	650	650	650	650	650	650
4	**Volumetric Cost**	[2]*[3]	$959,835	$1,212,116	$1,272,722	$1,336,358	$1,403,176	$1,473,335	$1,547,001	$1,624,351	$1,705,569
5	**TOTAL Treatment Cost**	[1]+[4]	**$1,479,690**	**$1,646,978**	**$1,729,327**	**$1,815,793**	**$1,906,583**	**$2,001,912**	**$2,102,008**	**$2,207,108**	**$2,317,463**

Vista Sewer provides water quality protection services to the customers in Buena customers who reside in the City limits (Buena - City[14]). The total water quality protection service costs represent 17 percent of Vista Sewer total water quality protection cost. Since Buena Sewer Fund pays a refund to Vista Sewer Fund, the total O&M are increased with the refund (**Table 4-8**).

Table 4-8 Operating Expenses by Type

	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
Staffing	$1,114,317	$1,365,787	$1,410,084	$1,455,943	$1,503,426	$1,552,601	$1,603,535	$1,656,303	$1,710,980
Professional Services	$131,626	$123,493	$127,198	$131,014	$134,944	$138,992	$143,162	$147,457	$151,881
Encina Costs	$1,479,690	$1,646,978	$1,729,327	$1,815,793	$1,906,583	$2,001,912	$2,102,008	$2,207,108	$2,317,463
Operating Expenses	$95,884	$129,151	$133,026	$137,016	$141,127	$145,361	$149,721	$154,213	$158,839
Allocated Costs	$857,814	$940,696	$968,917	$997,984	$1,027,924	$1,058,762	$1,090,524	$1,123,240	$1,156,937
Utilities	$50,925	$41,919	$43,177	$44,472	$45,806	$47,180	$48,596	$50,053	$51,555
Capital Outlay	$16,763	$162,836	$167,721	$172,753	$177,935	$183,273	$188,772	$194,435	$200,268
Water Quality Protection (Refund to Vista)	$380,914	$370,688	$379,704	$389,256	$399,379	$410,113	$421,496	$433,573	$446,391
TOTAL	**$4,127,933**	**$4,781,548**	**$4,959,153**	**$5,144,231**	**$5,337,125**	**$5,538,194**	**$5,747,814**	**$5,966,383**	**$6,194,315**

[13] Encina Wastewater Authority Proposed Budget 2018, page 5
[14] Buena—County customers do not receive this service.

Table 4-8 presents the operating and maintenance expenses by cost categories and explicitly shows the allocated overhead cost[15] while Table 4-9 shows the same operating expenses grouped by functional cost categories to be used in the cost of service analysis

Table 4-9 Operating Cost by Sub-Fund

By sub-fund	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
Administration	$1,812,204	$1,983,175	$2,078,933	$2,179,444	$2,284,949	$2,395,700	$2,511,966	$2,634,027	$2,762,177
of which: Encina cost	*$1,479,690*	*$1,646,978*	*$1,729,327*	*$1,815,793*	*$1,906,583*	*$2,001,912*	*$2,102,008*	*$2,207,108*	*$2,317,463*
Engineering	$692,392	$952,936	$981,524	$1,010,970	$1,041,299	$1,072,538	$1,104,714	$1,137,855	$1,171,991
Maintenance	$1,242,423	$1,474,749	$1,518,991	$1,564,561	$1,611,498	$1,659,843	$1,709,638	$1,760,927	$1,813,755
Water Quality Protection (Refund to Vista)	$380,914	$370,688	$379,704	$389,256	$399,379	$410,113	$421,496	$433,573	$446,391
Total	**$4,127,933**	**$4,781,548**	**$4,959,153**	**$5,144,231**	**$5,337,125**	**$5,538,194**	**$5,747,814**	**$5,966,383**	**$6,194,315**

4.3 CAPITAL IMPROVEMENT PROGRAM

The District provided estimates of the capital improvement costs associated with refurbishment and replacement (R&R) needs till the end of study period in FY 2025. The proposed capital improvement program (CIP) will be funded entirely through rate revenues and reserves (Pay-As-You-Go or PAYGO). The detailed project list and funding by years are presented in the Appendix. Except in FY 2018 and FY 2019, the funding needed for Encina's capital improvements represents the bulk of the capital program.

Table 4-10 Total CIP Funded by Operating and Capital Funds (in 2017 dollars)

	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
Total CIP	**$5,511,966**	**$1,905,914**	**$5,891,188**	**$2,387,681**	**$2,251,736**	**$1,402,887**	**$3,478,420**	**$2,973,030**	**$7,884,873**
of which:									
Encina Capital Improvements	*$972,246*	*$1,105,914*	*$1,596,188*	*$1,627,681*	*$1,151,736*	*$1,052,887*	*$2,046,420*	*$1,673,030*	*$1,224,873*

[15] Overhead costs – Ongoing administrative costs collectively incurred by Vista Sewer and Buena Sanitation District, which are allocated to each agency on a percentage split basis. Examples include engineering services, administrative staff, and IT services. The allocation method was developed by RFC in 2016.

Figure 4-1 Buena Sewer Capital Improvement Program (in current dollars[16])

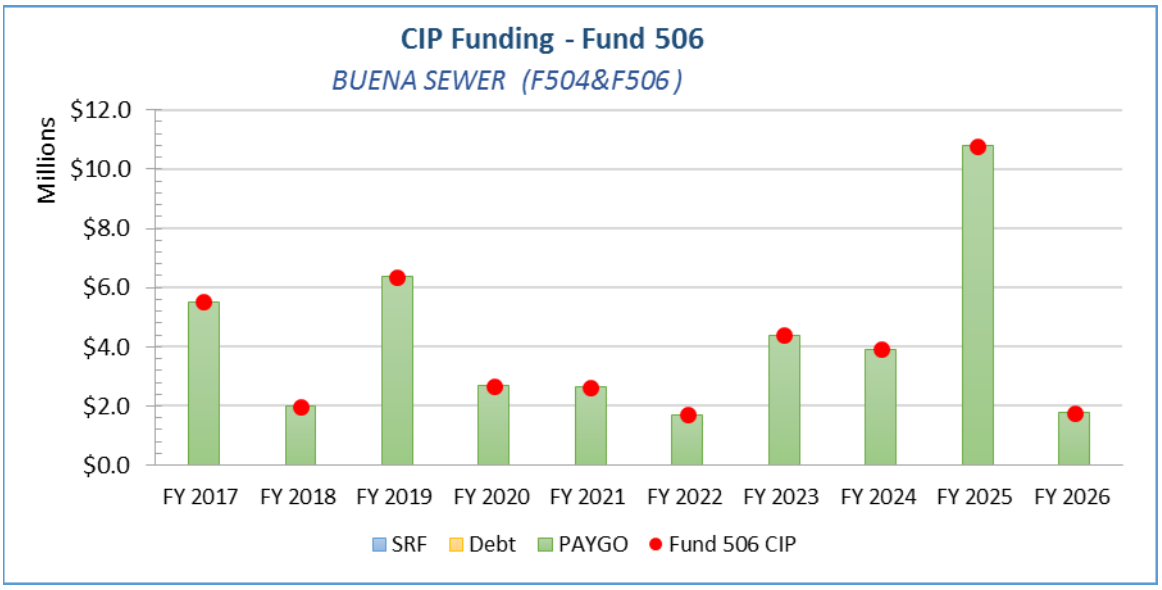


Figure 4-1 shows the CIP to be funded by Buena Sewer Fund (the red dots) and the funding source. In the presented scenario, all CIP will be funded by rates.

4.4 STATUS QUO FINANCIAL PLAN

Table 4-11 displays the District's pro forma under the current rate structure over the study period. No rate adjustments are assumed. The pro-forma also includes the data on current rate revenues (Table 4-5), operation expenses (Table 4-8) and inflated CIP expenditures (Figure 4-1).

Under the 'status-quo' scenario, revenues generated from rates and other miscellaneous revenues are sufficient to fund the expenses of the sewer system. Although there are several years with negative net cash flow, the level of reserves is enough to cover it and the end balances remain above the target end balances.

[16] CIP in 2017 dollars is inflated to incorporate the price increase in the future years

Figure 4-2 Buena Sewer Fund Operating Financial Plan

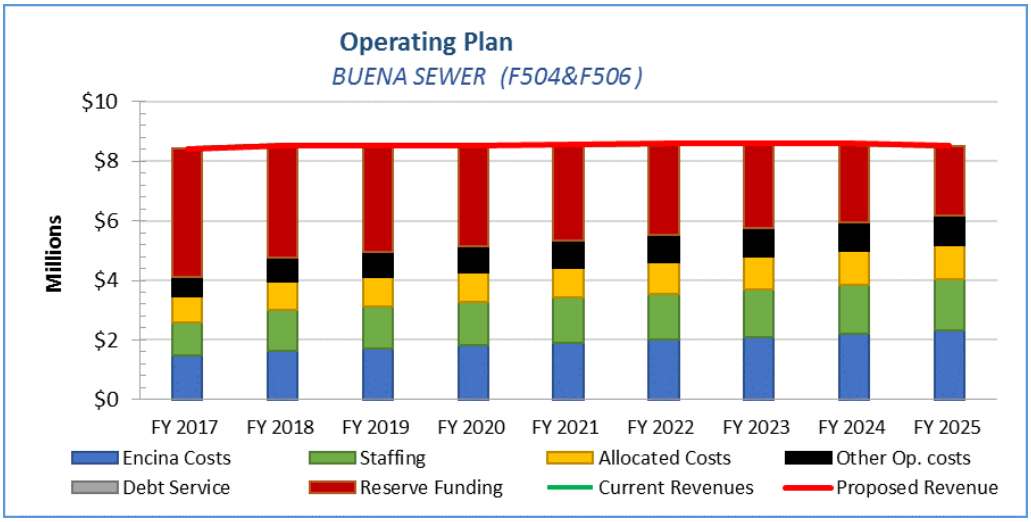


Figure 4-3 Buena Sewer Fund End Balances

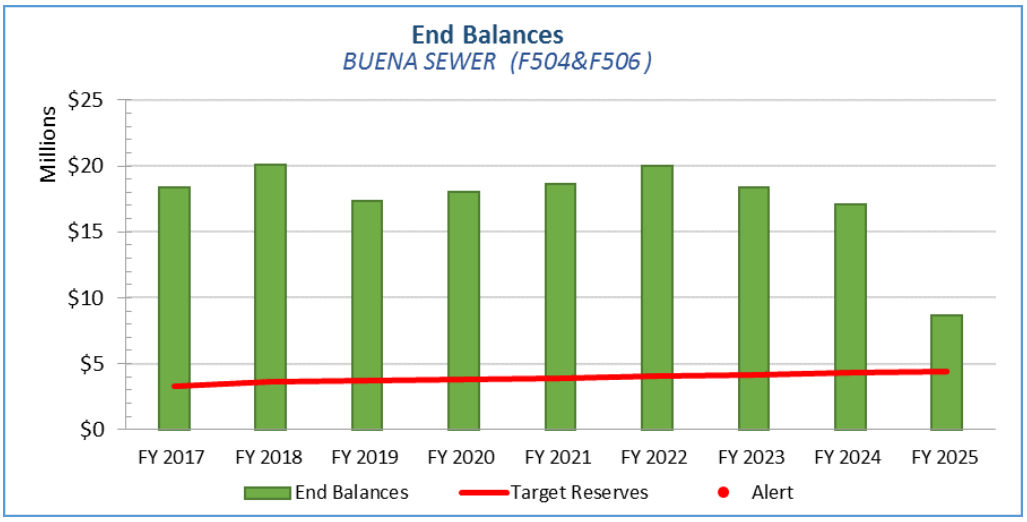


Table 4-11 Status Quo Financial Plan

		Source/Notes	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
1.											
2.	REVENUE										
3.	Rate & Excess EDUs Revenue	*Table* 4-5	$8,459,065	$8,184,144	$8,195,550	$8,206,977	$8,218,425	$8,229,896	$8,241,387	$8,252,901	$8,264,437
4.	Other Revenues	*Table 4-6*	-$45,013	$356,253	$348,758	$333,312	$343,004	$357,401	$355,854	$334,704	$262,139
5.	**TOTAL REVENUE**	***[2]+{3}***	**$8,414,052**	**$8,540,397**	**$8,544,308**	**$8,540,288**	**$8,561,429**	**$8,587,297**	**$8,597,241**	**$8,587,605**	**$8,526,576**
6.	**TOTAL O&M EXPENSES**	*Table 4-8*	**$4,127,933**	**$4,781,548**	**$4,959,153**	**$5,144,231**	**$5,337,125**	**$5,538,194**	**$5,747,814**	**$5,966,383**	**$6,194,315**
7.											
8.	**NET REVENUE**	***[5]+[6]***	**$4,286,119**	**$3,758,849**	**$3,585,155**	**$3,396,057**	**$3,224,304**	**$3,049,103**	**$2,849,427**	**$2,621,222**	**$2,332,261**
9.											
10.	**CIP EXPENDITURES**	*Figure 4-1*	**$5,511,966**	**$1,982,150**	**$6,371,909**	**$2,685,816**	**$2,634,213**	**$1,706,826**	**$4,401,311**	**$3,912,304**	**$10,790,993**
11.											
12.	**NET CASH FLOW**	**[8]-[10]**	**-$1,225,847**	**$1,776,698**	**-$2,786,754**	**$710,241**	**$590,091**	**$1,342,277**	**-$1,551,884**	**-$1,291,082**	**-$8,458,733**
13.	**BEGINNING BALANCES**		**$19,560,670**	**$18,334,823**	**$20,111,521**	**$17,324,767**	**$18,035,008**	**$18,625,099**	**$19,967,376**	**$18,415,492**	**$17,124,410**
14.	**ENDING BALANCES**		**$18,334,823**	**$20,111,521**	**$17,324,767**	**$18,035,008**	**$18,625,099**	**$19,967,376**	**$18,415,492**	**$17,124,410**	**$8,665,677**
15.	**TARGET RESERVES**	*Table 3-5*	**$3,273,367**	**$3,608,994**	**$3,709,950**	**$3,816,789**	**$3,925,914**	**$4,042,115**	**$4,160,576**	**$4,284,194**	**$4,413,210**
16.	Operating Cash Flow		$2,063,967	$2,390,774	$2,479,577	$2,572,116	$2,668,562	$2,769,097	$2,873,907	$2,983,191	$3,097,157
17.	Rate Stabilization		$209,401	$218,220	$230,374	$244,674	$257,351	$273,018	$286,669	$301,002	$316,052
18.	Emergency Reserve Target		$1,000,000	$1,000,000	$1,000,000	$1,000,000	$1,000,000	$1,000,000	$1,000,000	$1,000,000	$1,000,000

5. CAPITAL EXPANSION FUND

The Capital Expansion Fund (Fund 505) was set to collect the capacity fees from new customers. Since FY 2017, those revenues have been directed to the Capital Facility Fund (Fund 510). In FY 2018, the Capital Expansion Fund will begin to collect the charges from customers who exceed their purchased sewer capacity (the current "excess usage charge") from both areas Buena–City and Buena--County. These charges are intended to cover the cost of capital facilities associated with excess usage, and the proceeds will be used to finance capital projects that improve the sewer capacity.

Projections of the excess capacity usage are based on the actual excess usage (in EDUs) in FY 2016 and assumed annual changes over the study period. The billing system of Buena Sanitation District uses FY 2014 water consumption to estimate the excess usage charge in FY 2016. Therefore, the extra usage charge revenue projections for FY 2017 and FY 2018 should account for the drought in 2015 and 2016, respectively, when excess usage is expected to have shrunk by 15%. After that, it is expected to remain stable until the end of the projection horizon (Table 3-2). The projected excess capacity usage in terms of EDU is shown in Table 4-3.

The extra capacity usage fee per 1 EDU is 10 percent of the capacity fee per 1 EDU[17]. Capacity fees are inflated annually by the annual ENR CCI.

Table 5-1 Excess Usage Charge Revenue Projection

		FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
1.	Annual percentage change	-15%	-15%	0%	0%	0%	0%	0%	0%	0%
2.	Total number of excess capacity usage (EDUs)	454	386	386	386	386	386	386	386	386
3.										
4.	Effective Excess Usage Capacity Fee per EDU	$565.10	$573.50	$594.10	$606.50	$619.20	$632.10	$645.30	$658.80	$672.60
5.										
6.	**Excess Capacity Usage Revenues [2]x[4]**	$256,508	$221,273	$229,221	$234,005	$238,905	$243,882	$248,975	$254,184	$259,508

The District does not plan any CIP funding from the Capital Expansion Fund throughout the projection period. Table 5-2 summarizes the financial plan for the Capital Expansion Fund. The projected capital inflows and outflows reveal that the main revenue sources are the excess fees revenues and interest earnings from the accumulated ending balances.

[17] Municipal Code, Section 14.06.060

Table 5-2 Capital Expansion Fund Financial Plan

	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
Cash Inflow									
Sewer Capacity Charges	$0	$0	$0	$0	$0	$0	$0	$0	$0
Excess Capacity Usage Charge	$0	$221,273	$229,221	$234,005	$238,905	$243,882	$248,975	$254,184	$259,508
Investment Earnings	$5,592	$7,235	$10,722	$14,357	$18,119	$22,012	$26,038	$30,203	$34,508
GASB 31 Adjustment	-$13,458	$0	$0	$0	$0	$0	$0	$0	$0
Total Cash Inflow	**-$7,866**	**$228,507**	**$239,943**	**$248,362**	**$257,024**	**$265,894**	**$275,014**	**$284,387**	**$294,017**
Total Cash Outflow	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Net Cash Flow	**-$7,866**	**$228,507**	**$239,943**	**$248,362**	**$257,024**	**$265,894**	**$275,014**	**$284,387**	**$294,017**
Beginning Balances	$379,547	$371,681	$600,189	$840,132	$1,088,494	$1,345,518	$1,611,412	$1,886,426	$2,170,812
Ending Balances	**$371,681**	**$600,189**	**$840,132**	**$1,088,494**	**$1,345,518**	**$1,611,412**	**$1,886,426**	**$2,170,812**	**$2,464,829**

6. CAPITAL FACILITY FUND

The revenue projection for the Capital Facility Fund is based on the expected purchases of new capacity (in terms of EDUs) per year. The District's staff expects a stable small increase of about 0.2% of residential capacity (in terms of EDU) per year throughout the projection period.

Table 6-1 New Sewer Purchases (in EDUs)

	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
SFR (EDUS)	11.1	11.2	11.2	11.2	11.2	11.2	11.3	11.3
MFR (Units)	8.2	8.3	8.3	8.3	8.3	8.3	8.3	8.3

The revenues of the Capital Facility Fund are calculated by multiplying the amount of new capacity to be purchased by the capacity fee per EDU for each of the residential categories. The City does not envision financing of investment programs from the Capital Facility Fund.

Table 6-2 Buena Sanitation District Capacity Fees Projection[18]

	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
Capacity Fee per 1EDU (SFR)	$5,941	$6,065	$6,192	$6,321	$6,453	$6,588	$6,726	$6,867
Capacity Fee per 0.7 EDU (MFR)	$4,159	$4,246	$4,334	$4,425	$4,517	$4,612	$4,708	$4,807

Table 6-3 shows the pro forma for the Capital Facility Fund. Since currently the District does not project cash outflows from this fund, it is expected to accumulate about $3.5M in reserves by the end of the study period.

Table 6-3 Capital Facility Fund Financial Plan

	FY 2017 [19]	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
Cash Inflow									
Sewer Capacity Charges	$273,560	$100,418	$102,710	$105,060	$107,458	$109,906	$112,414	$114,981	$117,608
Investment Earnings	$3,709	$6,569	$8,191	$9,873	$11,615	$13,419	$15,288	$17,223	$19,225
Total Cash Inflow	**$277,269**	**$106,987**	**$110,901**	**$114,933**	**$119,072**	**$123,325**	**$127,702**	**$132,204**	**$136,834**
Total Cash outflow	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Net Cash Flow	**$277,269**	**$106,987**	**$110,901**	**$114,933**	**$119,072**	**$123,325**	**$127,702**	**$132,204**	**$136,834**
Beginning Balances	$110,488	$387,757	$494,744	$605,645	$720,578	$839,650	$962,975	$1,090,677	$1,222,881
Ending Balances	**$387,757**	**$494,744**	**$605,645**	**$720,578**	**$839,650**	**$962,975**	**$1,090,677**	**$1,222,881**	**$1,359,714**

[18] The capacity fees are inflated annually by the annual ENR CCI in March. RFC projection for ENR CCI is based on 5-year average annual index.
[19] Actual data.

7. COST OF SERVICE

This section of the Report discusses the allocation of O&M expenses and capital costs to the appropriate cost causation components consistent with industry standards, the determination of unit costs, and calculation of costs by customer class.

The total cost of sewer service is analyzed by system function, so that it can be distributed equitably among the various classes of customers. The approach to allocating the cost of service adopted in this report is consistent with the guidelines in the WEF Manual of Practice No. 27, Financing and Charges for Wastewater Systems, 2004. In particular, wastewater rates are calculated for FY 2018, referred to as the test year. The test year revenue requirements are used for the cost allocation process. It is recommended that the District carries out a cost of service analysis at least once in every five years to ensure that the rates are consistent with the cost of providing service.

The COS analysis of Buena Sanitation District sewer system includes the following steps:

1. Determine non-residential customer flow and strength loadings based on water usage
2. Conduct plant balance to estimate the flow and strength of the residential customer class with consideration for infiltration and inflow (I&I)
3. Functionalize O&M and capital costs into functional categories such as Collection, Treatment, and Billing and Customer Service, etc.
4. Determine revenue requirements and allocate them using functional categories into cost components such as Flow, Strength, and Billing and Customer Service, etc.
5. Develop customer class characteristics by cost component
6. Calculate the unit cost of service by dividing the total cost in each cost component in Step 4 by the customer class characteristics in Step 5
7. Calculate the cost by customer class by multiplying the unit cost in Step 6 by the customer class characteristics in Step 5

7.1 CURRENT CUSTOMER CLASSES

The sewer utility's two primary classes are residential (SFR and MFR) and commercial. As discussed in section **4.1.1,** both customer classes are billed annually; residential customers pay a fixed charge, while commercial customers pay a combination of fixed and flow charges. The flow charges for commercial customers have three categories based on the strength of the discharged wastewater. Commercial customers are classified into one of the three strength levels shown in Table 7-1 below. The classification of each commercial customer is based on inputs from the District. The strength chart is presented in Appendix. The District wishes to maintain a fixed and variable annual rate structure for commercial sewer service customers and a fixed annual rate for residential customers, similar to how its customers are currently billed.

Table 7-1 Strength Description

Commercial customer classes	Description	BOD mg/L	SS mg/L
Low strength commercial	*Light users:* offices, groceries markets, schools	200	200
Medium strength commercial	*Medium users*: manufacturing, hotels, auto repair shops	450	240
High strength commercial	*Heavy users:* restaurants, breweries, manufacturing – dairy or chemical products	1,000	600

.

7.2 PLANT MASS BALANCE

The plant mass balance analysis is used to estimate and validate the sewage load (flow and strength) generated by each customer class. RFC's assessment draws on the flow and strength loads found in the Disrict's strength chart. Commercial customer flows can be estimated based on their water usage. The strength loads are based on the nature of the customer's business. The infiltration and inflow (I&I) is estimated by the Distict's staff to 4 percent of total wastewater. The remaining loadings (calculated as total wastewater less I&I and commercial customer's discharge) are assigned to residential customers.

Based on this mass balance, the estimated residential flow for a single family residential customer is determined to be 143 gallons per day or 43 gallons per capita per day[20]. This is lower than the average industry estimate of the amount of indoor water usage per person (55 gallons per capita per day). The estimated residential strength concentration is 364 and 258 milligrams per liter (mg/l) for BOD and TSS, respectively.

[20] Based on the average number of persons per household in City of Vista of 3.13

Table 7-2 Mass Balance 2018

	FY 2018	Number of EDUs	Water Usage (hcf)	RTS	BOD mg/L	TSS mg/L	Est. flow in MGY	BOD lb/year	TSS lb/year
A	B	C	D	E	F	G	H	I	J
1.								*F× H × 8.3432 × 365*	*G × H × 8.3432 × 365*
2.	Total Plant Effluent		868,525		372	261	650	2,014,720	1,414,661
3.	Less: I&I		34,741		150	150	26	32,532	32,532
4.	**Net Plant Effluent *[6]+[11]***		**833,784**		**381**	**266**	**624**	**1,982,188**	**1,382,129**
5.									
6.	**Buena (City)**								
7.	Commercial - Low		102,333	100%	200	200	77	127,768	127,768
8.	Commercial - Med		65,815	100%	450	240	49	184,890	98,608
9.	Commercial - High		38,308	100%	1,000	600	29	239,150	143,490
10.	**Commercial *[7]+[8]+[9]***	**3,957.8**	**206,456**				**154**	**551,809**	**369,866**
11.	**Buena (County)**								
12.	Commercial - Low		19,373	100%	200	200	14	24,188	24,188
13.	Commercial - Med		6,057	100%	450	240	5	17,015	9,074
14.	Commercial - High		5,075	100%	1,000	600	4	31,680	19,008
15.	**Commercial *[12]+[13]+[14]***	**433.1**	**30,504**				**23**	**72,883**	**52,271**
16.	**TOTAL BUENA COMMERCIAL [10]+[15]**	**4,390.9**	**236,960**				**177**	**624,691**	**422,137**
17.									
18.	**Buena (City)**								
19.	Single Family	3,059.4	204,638	100%	364	258	153	465,455	329,160
20.	Multi Family	1,766.6	118,168	100%	364	258	88	268,777	190,073
21.	**Residential *[19]+[20]***	**4,826.0**	**322,805**				**241**	**734,232**	**519,233**
22.	**Buena (County)**								
23.	Single Family	2,820.2	188,641	100%	364	258	141	429,071	303,429
24.	Multi Family	1,276.4	85,377	100%	364	258	64	194,194	137,330
25.	**Residential *[23]+[24]***	**4,096.6**	**274,018**				**205**	**623,264**	**440,759**
26.	**TOTAL BUENA RESIDENTIAL [21] +[25]**	**8,922.7**	**596,824**				**446**	**1,357,496**	**959,992**

The estimated loadings by customer class are shown in Table 7-2, including the assumed BOD and TSS loadings. The numbers shown in Table 7-2 are derived as follows:

- **Number of EDUs** represents the purchased capacity in terms of EDUs and is based on provided actual data for commercial and residential customers in 2016. The number of EDUs shown Table 7-2 coincides with the projections for FY 2018 shown in Table 4-3. The MFR units (one unit is equal to 0.7EDU) are converted in number of EDUs as follows:

  Buena—City: *2,524 MFR units* 0.7 =1,767 EDU*
  Buena –County: *1823MFR units*0.7=1,276 EDU*

- **Water usage** for commercial customers is projected from actual water use data reflected in the FY 2016 bill calculations. The water use data shown in Table 7-2 coincide with the projections for FY 2018 shown in Table 4-3 .
- **Return-to-sewer factor (RTS)** is the percentage of water used that enters the sewage collection system. The return-to-sewer factor is assumed to be 100% for all commercial customers (all water usage enters sewer system).
- **BOD (mg/L)**, or biochemical oxygen demand, is the amount of oxygen required to break down the organic material present in the wastewater. Higher strength wastewater requires higher amounts of oxygen and therefore is more costly to treat.

- **TSS (mg/L)**, or suspended solids, is the measure of the suspended solids in wastewater. Higher suspended solids are also more costly to treat. Similar to BOD, TSS is also a measure of wastewater strength.
- **Estimated flow (MGD)** is the estimated sewage flow converted from hundred cubic feet (hcf) to million gallons per day (MGD). The estimated flow is derived from the total effluent and projected commercial flows and strength.

7.3 COST ALLOCATIONS

The sewer utility is comprised of various facilities, each designed and operated to fulfill a specific function. In order to provide adequate service to its customers at all times, the utility must be capable of collecting and conveying the total amount of wastewater generated.

Sewer utility functions:

1. Wastewater treatment
2. Wastewater collection
3. Water quality protection
4. General

The functionalization of costs enables the allocation of the functionalized costs to the cost causation components:

1. Flow
2. Inflow and Infiltration (I&I)
3. Biochemical oxygen demand (BOD)
4. Suspended Solids (SS)
5. General
6. Water Quality Protection

7.3.1 O&M Cost Allocation

Raftelis used the classification of operating costs by sub-fund (Table 4-9) to allocate them to functional cost components. The wastewater treatment costs (payments to the Encina Wastewater Authority) are allocated to flow, BOD and TSS. This is because the costs of treatment is a function of these causation components, and are derived from the actual invoices from EWA for FY 2016.

Sewer engineering and maintenance expenses are related to the wastewater collection system. Therefore, the bulk of those costs is allocated to the flow component. Administrative and water quality costs are allocated to the general component, reflecting staff' time needed to maintain the collection system and provide water quality protection services to all customers. The resulting allocation is shown in Table 7-3.

The total allocation of each cost components is shown in the last row of the table. The total O&M expense is in line with the totals shown in Table 7-3 and Table 4-9**.**

Table 7-3 Allocating O&M Expenses to Cost Causation Components

O&M Expenses	FY 2018	I&I	Flows	BOD	TSS	General	Water Quality Protection[21]
Encina Cost	$1,646,978		48%	40%	12%		
Sewer engineering and maintenance	$2,427,685	4%	76%	10%	10%		
Admin. Expenses	$336,197					100%	
Water Quality Protection (Refund from Buena)	$370,688						100%
TOTAL	**$4,781,548**	**$97,107**	**$2,632,889**	**$909,033**	**$435,634**	**$0**	**$336,197**
O&M Allocation Factors (%)		**2%**	**55%**	**19%**	**9%**	**0%**	**7%**

7.3.2 Capital Cost Allocation

The sewer capital costs (by acquisition value) are assigned based on the actual usage of the respective asset. For example, the capital cost associated with the ownership in Encina's Unit I (treatment plant) is allocated to flow, BOD and TSS[22] since the plant operation is dependent on the flow and strength of the effluent. The acquisition costs of Unit I and J are based on Buena Sanitation District ownership shares[23]. The District's capital assets[24] are limited to flow (collection) and general (general service) components.

Table 7-4 Capital Cost Allocation Factors

FIXED ASSETS	Acquisition Cost	I&I	Flows	BOD	TSS	General	Water Quality Protection
Encina Unit I	$15,572,793		34%	37%	29%		
Encina Unit J- Ocean outfall	$978,215		100%				
Building	$320,762					100%	
Improvements	$5,706,754					100%	
Machinery/Equipment	$698,077					100%	
Vehicles	$462,364					100%	
Sewer Lines	$30,324,369		100%				
Developer Sewer Lines	$6,388,338		100%				
TOTAL	**$60,451,670**	**$0**	**$42,985,670**	**$5,761,933**	**$4,516,110**	**$7,187,957**	**$0**
Capital Cost Allocation Factors (%)		**0%**	**71%**	**10%**	**7%**	**12%**	**0%**

7.3.3 Revenue Requirements Determination

Based on the proposed financial plan, the cost of service analysis translates the revenue requirement into the cost to serve each customer class. An important component of the cost of service analysis is determining how much revenue needs to be collected from rates. The methodology underlying this estimate is based on the premise that the utility must generate annual revenues that are enough to cover its estimated annual O&M expenses, reserve targets, debt service and capital investment.

To determine the revenue requirement from current rates, the calculation starts with the total revenue requirements for the functioning of the sewer utility including O&M expenses, capital expenditures, debt service, etc. (see Table 7-5). Next, several adjustments are made to the total revenue requirements to account

[21] Water quality protection services are provided to the customers of Buena--City area only.
[22] Allocation provided by District's staff.
[23] EWA Comprehensive Annual Financial Report 2016
[24] Provided by District's staff.

for non-rate revenues. Revenues from non-rate revenue sources, such as investment earnings, must be backed out from the total revenue requirement. The negative annual operating reserve funding reduces the total costs as it represents non-rate funding of the sewer utility. The annual reserve funding is the net operating revenues less debt service. The revenue to be collected from rates to support operating and capital needs is shown in row 10, column B of Table 7-5.

Using the operation and capital cost allocation factors derived in Table 7-3 and Table 7-4, the revenue requirements are allocated to cost causation components. For example, of the total CIP expenditures ($1,982,150) using capital assets allocation factors, about 71 percent are allocated to the flow cost causation component ($1,409,457), about 10 percent to BOD ($188,928), about 8 percent to TSS ($148,079) and about 12 percent to general ($235,686) (see Table 7-5).
The I&I cost are entirely reallocated to flow cost component as they do not increase wastewater strength but puts a burden on the collection system.

Finally, the cost allocated to the general cost component (calculated in row 10 of Table 7-5) is broken down into flow, BOD and TSS cost components, based on the ratios of the already allocated cost for flow, BOD and TSS (72:18:10 – calculated in row 11 of Table 7-5).

Table 7-5 Revenue Requirement Determination 2018

		Total rev. requirements	Allocation factor	I&I	Flows	BOD	TSS	General	Water Quality Protection
	A	B	C	D	E	F	G	H	
1.	*O&M Allocation Factor*			*2%*	*55%*	*19%*	*9%*	*0%*	*7%*
2.	*Capital Cost Allocation Factor*			*0%*	*71%*	*10%*	*7%*	*12%*	*0%*
3.									
4.	O&M Expenses	$4,781,548	O&M Allocation (%)	$97,107	$2,632,889	$909,033	$435,634	$336,197	$370,688
5.	CIP Expenditures	$1,982,150	Capital Cost Allocation (%)	$0	$1,409,457	$188,928	$148,079	$235,686	$0
6.	Reserve Funding	$1,776,698	Capital Cost Allocation (%)	$0	$2,495,157	$334,459	$262,143	$417,234	$0
7.	Other revenues	-$356,253	Capital Cost Allocation (%)	$0	-$253,322	-$33,956	-$26,614	-$42,360	$0
8.	**Total Rev. Requirements from Current Rates**	**$8,184,144**		**$97,107**	**$5,052,390**	**$1,233,351**	**$689,829**	**$740,780**	**$370,688**
9.	Allocation of I&I Cost				97,107				
10.	Allocation of General Cost (%)	$0		0%	72%	18%	10%	0%	0%
11.	Allocation of General Cost ($)	$0		$0	$536,545	$130,977	$73,257	-$740,780	$0
12.	**Total Allocated Rev. Req. from Current Rates**	**$8,184,144**			**$5,686,042**	**$1,364,328**	**$763,086**		**$370,688**

In order to allocate the cost of service to different customer classes, a unit cost of service needs to be developed for each rate component. The unit cost of service can be calculated as follows:

$$Unit\ cost\ of\ service = \frac{Total\ revenue\ requirement\ by\ cost\ component}{Total\ annual\ units\ of\ service}$$

This calculation is repeated for all components, namely flow, BOD, TSS and Buena—City Surcharge. Table 7-6 shows the total revenue requirement for each rate component which is then divided by its respective total annual units of service (Line 3) to obtain the unit cost of service for each rate component (row 4). The units of

service for flow component are equal to annual flow of wastewater discharge in hundred cubic feet. The units of service for strength components are the annual content (in pounds) of BOD and TSS.

RFC recommends the water quality protection service costs to be distributed among the Buena-City customers. The units of service are the sum of residential and commercial capacity in terms of EDU (3,958+4,826=8,784 EDU, source: Table 7-2). Hence, the Buena—City surcharge is calculated to be $42.00 and it will be added to residential and commercial charges per EDU in Buena--City area.

Table 7-6 Unit Cost of Service

		Source	Flow	BOD	TSS	Buena—City Surcharge
1.	Units of service		Flow (HCF)	BOD (lb/yr)	TSS (lb/yr)	EDUs Buena (City)
2.	Revenue requirements	*Table 7-5*	$5,686,042	$1,364,328	$763,086	$370,688
3.	Total units of service	*Table 7-2*	833,784	1,982,188	1,382,129	8,784
4.	**Units cost of service**	*[2]/[3]*	**$6.82**	**$0.69**	**$0.56**	**$42.00**[25]

[25] Rounded down to the nearest dollar

8. RATES DESIGN AND CUSTOMER IMPACT

Proposition 218 requires a nexus between the rates charged and the cost of providing service. In the previous sections, calculations were provided to demonstrate how much revenue needs to be collected from rates and how it is allocated by cost causation components. In this section, the revenue requirements by cost component will be allocated to customer classes and will be used as a base for the rate calculations.

8.1 DISTRIBUTING COSTS TO CUSTOMER CLASSES

In order to calculate the rates per customer class, the revenue requirement that needs to be raised by each customer class should be determined. The unit cost of service from **Table 7-6** are applied to the units of service by customer class to get the respective customer class contribution in the total revenue requirement (see **Table 8-1**).

Table 8-1 Cost of Service Allocation by Customer Class

		Units of Service by Customer Class			Revenue Requirements by Customer Class			
		FLOW (hcf)	BOD (lb/yr)	TSS (lb/yr)	Flow	BOD	TSS	Total
A	B	C	D	E	F	G	H	I
1.	*Unit Cost*	$6.82	$0.69	$0.56				
2.					*Line 1 x Column C*	*Line 1 x Column D*	*Line 1 x Column E*	*F+G+H*
3.	Commercial - Low	121,706 hcf	151,956	151,956	$830,033	$104,850	$85,096	$1,019,979
4.	Commercial - Med	71,871 hcf	201,905	107,682	$490,162	$139,314	$60,302	$689,779
5.	Commercial - High	43,383 hcf	270,830	162,498	$295,872	$186,873	$90,999	$573,744
6.	**Commercial**	**236,960 hcf**	**624,691**	**422,137**	**$1,616,067**	**$431,037**	**$236,397**	**$2,283,501**
7.	Single Family	393,279 hcf	894,526	632,589	$2,682,160	$617,223	$354,250	$3,653,633
8.	Multi Family	203,545 hcf	462,971	327,403	$1,388,178	$319,450	$183,346	$1,890,974
9.	**Residential**	**596,824 hcf**	**1,357,496**	**959,992**	**$4,070,338**	**$936,673**	**$537,596**	**$5,544,607**
10.	**TOTAL**				**$5,686,406**	**$1,367,710**	**$773,992**	**$7,828,108**

8.2 RATES CALCULATION

8.2.1 Commercial Customers' Rates

The revenue requirement for the commercial customer class is $2,283,501 (Table 8-1, column I). The District plans to keep the existing rate structure for commercial customers which includes a fixed and a variable component. The fixed rate is per purchased EDU and the volumetric component is based on the discharged flow and its strength. The COS based fixed rate is proposed to be equal to the adopted fixed rate for FY 2018 of $158.

Therefore, as there are 4,391 EDU[26] of purchased capacity by commercial customers (see Table 7-2), the proposed fixed charge will recover $693,762 from the total revenue requirement by commercial customers of $2,283,501 (or 30.4%). The remaining $1,589,739 will need to be recovered by volumetric rates.
Table 8-2 provides details on the revenue to be collected from different strength categories (column D). The cost of service based rates per strength category are calculated by dividing the revenue requirement by the annual flow for each strength category (column F).

[26] The number in the text is rounded.

Table 8-2 Commercial Customers Rate Calculation

		Total	Fixed Charge (Share 30.4%)	Variable Rate (Share=69.6%)	Flow (hcf)	Variable Rates (COS based)
	A	B (*Table 8-1*)	C=B*30.4%	D=B*69.6%	E(*Table 8-1)*	F=D/E
1.	**Commercial Customers**	$2,283,501	$693,762	$1,589,739	236,960 hcf	
2.	Commercial - Low	$1,019,979	$309,885	$710,094	121,706 hcf	$5.83
3.	Commercial - Med	$689,779	$209,565	$480,214	71,871 hcf	$6.68
4.	Commercial - High	$573,744	$174,312	$399,432	43,383 hcf	$9.21

8.2.2 Residential Customers' Rates

The District plans to keep the current annual billing schedule per EDU for residential customers. The single-family residences are billed 1 EDU,[27] while multi-family residences are billed per unit (1 unit equals 0.7 EDU). To determine the cost of service based rates for these two customer categories, the estimated revenue requirement is divided by the number of EDUs (for SFR) and by the number of units (for MFR).

Table 8-3 Residential Rates Calculation

	Revenue requirements *Table 8-1*	Number of Units *Table 4-3*	COS Based Rates[28]
A	B	C	D=B/C
Single Family	$3,653,633	5,880	$621.00
Multi Family	$1,890,974	4,347	$434.00

8.2.3 Extra Strength Surcharge

The District applies surcharges for extra strength to commercial customers who discharge wastewater with strength concentrations that are in excess of 500 milligrams per liter of BOD or 500 milligrams per liter of total suspended solids. The surcharges are levied per pound of biochemical oxygen demand and suspended solids. RFC proposes the extra strength surcharges per pound of BOD and TSS to be equal to the calculated unit cost of service of $0.69 and $0.56 for BOD and TSS (Table 7-6), respectively.

In addition, RFC recommends to the District to update the extra strength surcharge threshold for BOD from 500 mg/L to 1000 mg/L and for TSS from 500 mg/L to 600 mg/L in line with the cost of service evaluations and the average wastewater strength of high strength commercial customers.

8.2.4 Proposed Rates Comparison

Table 8-4 summarizes the proposed rates for FY 2019 and the percentage difference from the adopted rates in FY 2018. The Buena—City Surcharge of $42.00 is added to Buena—City fixed charges for residential and commercial customers. The financial plan projections imply that there is no need for rate increase in the next five years.

[27] The EDU (equivalent dwelling unit) is the estimated sewer flow of the average single family household. Average SFR customers are assigned the value of 1.0; multi-family residencies are assigned 0.7 EDU and commercial customers purchase sewer flow capacity in terms of EDUs.
[28] Rounded down to the nearest dollar.

Table 8-4 COS Based Rates

	Current Rates FY 2018	Proposed Rates FY 2019-FY 2023	% change
Buena--City			
Commercial Fixed Cahrge (per EDU owned)	$158.00	**$200.00**	26.6%
Commercial Flow Rate by Strength Class (per hcf)			
Commercial - Low	$5.66	**$5.83**	3.0%
Commercial - Med	$6.42	**$6.68**	4.0%
Commercial - High	$7.94	**$9.21**	16.0%
Single Family	$711.00	**$663.00**	-6.8%
Multi Family	$498.00	**$463.00**	-7.0%
Buena--County			
Commercial Fixed Charge (per EDU owned)	$158.00	**$158.00**	0.0%
Commercial Flow Rate by Strength Class (per hcf)			
Commercial - Low	$4.85	**$5.83**	20.2%
Commercial - Med	$5.61	**$6.68**	19.1%
Commercial - High	$7.12	**$9.21**	29.4%
Single Family	$632.00	**$621.00**	-1.7%
Multi Family	$442.00	**$434.00**	-1.8%
Extra Strength Surcharge			
BOD Rate per lb	$0.84	**$0.69**	-17.9%
TSS Rate per lb	$0.37	**$0.56**	51.4%

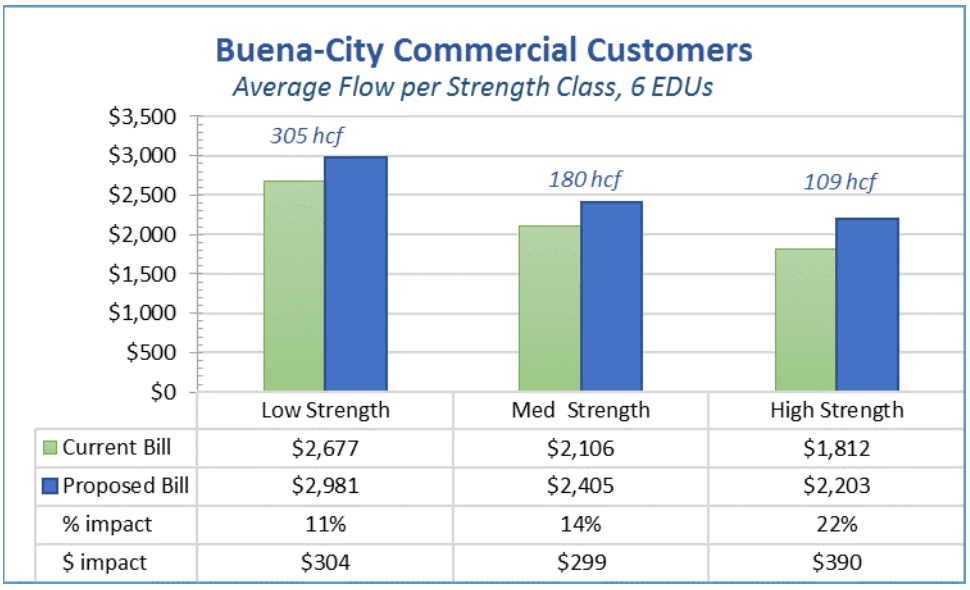
8.2.5 Customer Impact

Residential customers in Buena-City and Buena-County are expected to see 6.8 percent and 1.7 percent reduction, respectively, in their wastewater bills. Commercial customers' bills will increase but the magnitude of the increase will depend on the number of purchased capacity (in terms of EDU), the flow and the strength of the discharged wastewater.

The figure below displays the impact on bills assuming 6 EDUs of purchased capacity[29] and the average flow for low, medium and high strength flows. The calculated bills do not include extra strength or capacity rental charges.

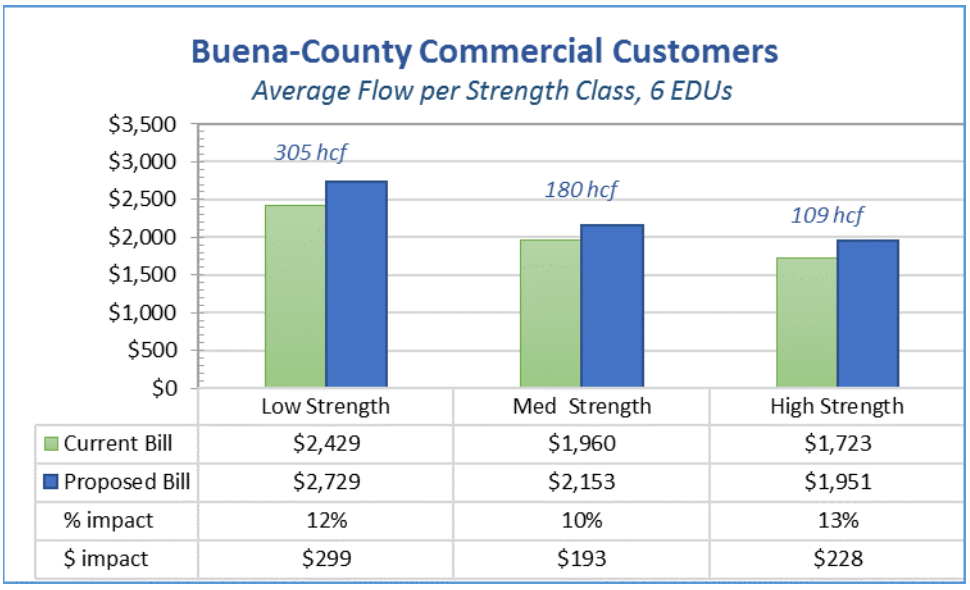
[29] The average purchased capacity by commercial customers of Buena Sanitation District.

Figure 8-1 Buena-City Commercial Customers Impact



	Low Strength	Med Strength	High Strength
Current Bill	$2,677	$2,106	$1,812
Proposed Bill	$2,981	$2,405	$2,203
% impact	11%	14%	22%
$ impact	$304	$299	$390

Figure 8-2 Buena-County Commercial Customers Impact



	Low Strength	Med Strength	High Strength
Current Bill	$2,429	$1,960	$1,723
Proposed Bill	$2,729	$2,153	$1,951
% impact	12%	10%	13%
$ impact	$299	$193	$228

Currently, the commercial customers are charged the commercial fixed rate based on owned EDU capacity regardless of excess wastewater capacity used (in terms of EDUs). After discussion with District's staff, RFC proposed that the fixed charge be calculated on the owned and excess wastewater capacity used (in terms of EDUs). In addition, the commercial customers whose discharge is above the owned capacity will be charged a capacity rental charge (in EDU) for the excess capacity used.

9. CAPACITY RENTAL CHARGE

The District staff requested RFC to redefine the existing excess usage charge for commercial customers. In the rate ordinance[30], the excess usage is based on the number of capacity EDUs being used in excess of the paid sewer capacity[31]. The excess usage charge per 1 EDU represents 10 percent of the Buena Sanitation District capacity fee and it is intended to cover the cost of capital facilities for excess usage.

RFC determined that customers who exceed their purchased EDU capacity are essentially "renting" additional capacity; hence, that charge should be modeled after the framework that private water/wastewater utilities follow for return on investment, known as "utility basis approach".

The utility basis approach entitles the owner of the utility "to earn a reasonable return from nonowner customers based on the value of its plant investment required to serve those customers"[32]. As a first step in estimating the rate of return from the plant investment, RFC had to calculate the annual rate of return of capital. There are two components of the annual rate of return: (i) rate of return to capital less depreciation and (i) the annual depreciation.

The rate of return of capital is derived from the total replacement cost less depreciation (RCLD) multiplied by the industry specific average cost of capital (see line 3, Table 9-1). The replacement cost of capital plant investment includes Buena Sanitation District fixed assets and the investment in the form of ownership in Encina Wastewater Authority. Consequently, the annual depreciation on the Buena sanitation District fixed assets and the share of Buena in Encina's annual depreciation.

The total rate of return (line 5, Table 9-1) is divided by the total numbers of permit EDUs (both commercial and residential) in FY 2014 to get the annual rate of return per EDU. Next, the FY 2014 annual rate of return is inflated to FY 2019 dollars using the actual and projected ENR annual index.

RFC proposes that the Excess Usage Charge be renamed to Capacity Rental Charge. The new charge will be applied to wastewater capacity usage above the purchased capacity (in terms of EDU). The charge per EDU will be equal to the calculated annual rate of return per EDU. This is estimated to be $285 in FY 2019. After discussion with the District staff, it was decided to be adjusted by 2 percent annually to compensate for inflation[33]. The capacity rental charge will be applied in addition to the fixed and volumetric charges to those customers who exceed their owned capacity.

[30] Details on the excess usage capacity calculation for commercial customers are provided Ordinance 95-7 from Jun 27, 1995, section 13.04.130
[31] Details on the excess usage capacity calculation for commercial customers are provided in Municipal Code, Section 14.06.040
[32] AWWA, Manual of Water Supply Practices, M1, page 14
[33] ENR CCI 5-year annual average is 2.09 percent.

Table 9-1 Capacity Rental Charge Calculation

			Source:
1	Weighted Average Cost of Capital (WACC)	4.92%	*Cost of Capital by Sector (US)*
2	Replacement Cost Less Depreciation (in FY2014)	$41,318,837	*RFC Buena Sanitation District Capacity Charge Report 2015, p.14*
3	**Rate of Return [1]x[2]**	**$2,032,887**	
4	Annual Depreciation incl. ownership in EWA (in FY2014)	$1,553,859	*City of Vista CAFR 2014, EWA CAFR 2014*
5	**Total Rate of Return [3]+[4]**	**$3,586,746**	
6			
7	**Total number of EDUs (FY 2014)**	**14,097**	*RFC Buena Sanitation District Capacity Charge Report 2015, p.15*
8	**Annual rate of Return per EDU (FY 2014)**	**$254.43**	
9	ENR index, March 2016/March 2014	105.57%	*Engineering News Record*
10	Annual Rate of Return per EDU (FY 2016) [8]x[9]	$268.59	
11	Projected ENR index increase 2017-2019	106.4%	*Table 3-1*
12	**Annual Rate of Return per EDU [34] (FY 2019) [10]x[11]**	**$285.00**	

[34] Rounded down to the nearest dollar.

10. APPENDIX

APPENDIX Table 1 Buena Sanitation District Capital Improvement Program

Project number	Name of the project/Funding Source	Financing Fund	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
8131	Buena Outfall Force Main Extension	505									
		506									
8175	Pipe Rehab Phase 1	506									
8200	B1: Green Oak Trunk Sewer	506	1,650,000								
8202	B2:Thibido to Watson Way	505									
		506									
		504									
8207	Pipeline Rehab Phase 2	506									
8245	Buena Creek PS - Wet Well	506									
8246	S Santa Fe - Robelini	506									
8259	Buena Creek PS - Electrical	506	(358,780)								
8274	Pipe Rehab Phase 3	506	1,800,000	(500,000)							
8275	Buena Creek PS - Rehab	506	798,500								
8284	Encina Canyon Access	506									
8188	Sewer Mitigation Program	505									
		506									
8157	Encina Capital Improvements	506	972,246	1,105,914	1,596,188	1,627,681	1,151,736	1,052,887	2,046,420	1,673,030	1,224,873
8261	Buena Outfall Odor Control	506	250,000								
8292	Buena Yard Improvements	506	400,000		1,595,000						
NEW	Buena Creek PS Pressure Surge	506			200,000	700,000					
NEW	El Valle Opulento Capacity Improvements	506				60,000	300,000				
NEW	Buena Creek PS Bypass	506		800,000							
NEW	Smilax-Mimosa Capacity Improvements	506		500,000	2,500,000						
NEW	Small Diameter Rehabilitation FY 20/21	506					800,000				
NEW	Grand Ave Connection Upsize	506						50,000	100,000		
NEW	Sycamore Ave Trunk Sewer Capacity Improv	506						300,000		1,300,000	
NEW	Buena Creek PS Redundant Force Main	506							1,332,000		6,660,000
	TOTAL CIP (uninflated)		5,511,966	1,905,914	5,891,188	2,387,681	2,251,736	1,402,887	3,478,420	2,973,030	7,884,873

APPENDIX Table 2 Strength Chart

City of Vista and Buena Sanitation District
Compilation of Published Data on Sewer User Strength Classifications

User Classification Description	SIC Code	Proposed Strength (mg/L) BOD	SS	Weighted Average	Percent of Single Family	Data Source
Strength Weighting Factor		50%	50%			
Residential Single Family	881	200	200	200	100%	SWRCB
LOW STRENGTH CLASSICATION						
Low I Strength:						
Soft Water Service	494	3	55	29	15%	SWRCB
Office With Public Access	738	80	80	80	40%	SWRCB
Car Wash	550	20	150	85	43%	SWRCB
Veterinarian	74	130	80	105	53%	Los Angeles
Business Equipment Rental	735	130	80	105	53%	Los Angeles
Business Services -- Other	730	130	80	105	53%	Los Angeles
Office (Finance, Insurance, etc.)	600	130	80	105	53%	Los Angeles
Office (No Public Access)	871	130	80	105	53%	SWRCB
Office (Medical Services)	807	130	80	105	53%	Los Angeles
Personal Services (Other)	720	130	80	105	53%	Los Angeles
Photo & Portrait Studios	722	130	80	105	53%	Los Angeles
Manufacturing - Textile Mill Products	220	115	115	115	58%	Metcalf & Eddy
Schools	821	130	100	115	58%	SWRCB
Low II Strength:						
Laundromat-Public	721	150	110	130	65%	SWRCB
Landscaping Services	70	150	150	150	75%	Los Angeles
Amusement & Recreation: Indoor & Out	790	150	150	150	75%	Los Angeles
Auto Parking	752	150	150	150	75%	Los Angeles
Barber Shop	724	150	150	150	75%	Los Angeles
Beauty Shop	723	150	150	150	75%	Los Angeles
Church (No Kitchen)	866	150	150	150	75%	Los Angeles
Community Center (No Kitchen)	864	150	150	150	75%	Los Angeles
Grocery Market (No Butcher or Baker)	541	150	150	150	75%	Los Angeles
Health Spa	805	150	150	150	75%	Los Angeles
Kennel	75	150	150	150	75%	Los Angeles
Malls/Dept. Stores (No Food Svcs)	531	150	150	150	75%	SWRCB
Manufacturing (Other)	200	150	150	150	75%	Los Angeles
Manufacturing (Apparel & Other Textiles)	230	150	150	150	75%	Los Angeles
Manufacturing (Furniture)	250	150	150	150	75%	Los Angeles
Membership Organizations	860	150	150	150	75%	Los Angeles
Museum/Art Gallery	840	150	150	150	75%	Los Angeles
Nursery/Greenhouse	526	150	150	150	75%	Los Angeles
Office (Construction)	150	150	150	150	75%	Los Angeles
Massage Parlor	805	150	150	150	75%	Los Angeles
Retail Apparel and Accessory Store	560	150	150	150	75%	Los Angeles
Retail Bldg. (Materials & Gardening)	520	150	150	150	75%	Los Angeles
Retail (Packaged) Food (No Sewer Disposal)	540	150	150	150	75%	Los Angeles
Retail Furniture & Home Furnishings	570	150	150	150	75%	LACSD
General Merchandise -- Retail/Wholesale	530	150	150	150	75%	SWRCB

City of Vista and Buena Sanitation District
Compilation of Published Data on Sewer User Strength Classifications Continued

User Classification Description	SIC Code	Proposed Strength (mg/L)			Percent of Single Family	Data Source
		BOD	SS	Weighted Average		
Retail Trade -- Misc. (Except Food/Drink)	590	150	150	150	75%	SWRCB
Storage, Warehouse & Outdoor	422	150	150	150	75%	Los Angeles
Studio/Recording Sound Stage	781	150	150	150	75%	Los Angeles
Theater/Auditorium (No Food)	780	150	150	150	75%	Los Angeles
Low III (Residential) Strength:						
Convalescent Homes	836	250	100	175	88%	SWRCB
Hospital	806	250	100	175	88%	SWRCB
Other Health Services	800	250	100	175	88%	SWRCB
Transp. & Utilities (SIC 400 through 489)	400	200	150	175	88%	Metcalf & Eddy
Agricultural Production	10	150	250	200	100%	Metcalf & Eddy
Agricultural Services - Other	70	250	150	200	100%	Metcalf & Eddy
Bar Without Restaurant	581	200	200	200	100%	SWRCB
Restaurant -- Preprocessed Only	581	200	200	200	100%	Los Angeles
Social Services	830	200	200	200	100%	SWRCB
MEDIUM STRENGTH CLASSICATION						
Medium I Strength:						
Hotel (No Restaurant)	700	310	120	215	108%	SWRCB
Prison With Food Service	704	310	120	215	108%	Los Angeles
Auto Repair (No Steam Cleaning)	753	180	280	230	115%	SWRCB
Auto Service Station (No Steam Cleaning)	554	180	280	230	115%	SWRCB
Agricultural Services -- Animal	75	350	150	250	125%	Metcalf & Eddy
Auto/Vehicle Sales	550	300	200	250	125%	Metcalf & Eddy
Repair Services -- Misc.	760	250	250	250	125%	Metcalf & Eddy
Manufacturing -- Rubber/Plastic Products	300	200	350	275	138%	Metcalf & Eddy
Medium II Strength:						
Manufacturing -- Electric/Electronic Equipme	360	300	350	325	163%	Metcalf & Eddy
Manufacturing - Instruments	380	300	350	325	163%	Metcalf & Eddy
Manufacturing -- Fabricated Metal Products	340	300	350	325	163%	Metcalf & Eddy
Manufacturing -- Transport Equipment	370	400	250	325	163%	Metcalf & Eddy
Laundromat, Commercial	721	450	240	345	173%	SWRCB
Transportation -- Bus/Air Terminal	417	350	350	350	175%	Metcalf & Eddy
Medium III Strength:						
Malls/Shopping (Including Food Sales)	541	400	400	400	200%	Los Angeles
Manufacturing -- Machine Shops	350	290	550	420	210%	Los Angeles
Manufacturing -- Metal Industry	330	290	550	420	210%	Los Angeles
Manufacturing -- Lumber & Wood Products	240	431	431	431	216%	Los Angeles
Manufacturing -- Stone, Clay, Glass Product	320	200	700	450	225%	Metcalf & Eddy
Reproduction/Mailing Service	733	500	400	450	225%	Metcalf & Eddy
Hotel (With Restaurant)	701	500	600	550	275%	SWRCB
Manufacturing -- Paper/Containers	260	700	500	600	300%	Metcalf & Eddy
Manufacturing -- Printing & Publishing	270	700	500	600	300%	Metcalf & Eddy
Laundry (Industrial)	721	670	680	675	338%	SWRCB

City of Vista and Buena Sanitation District
Compilation of Published Data on Sewer User Strength Classifications Continued

User Classification Description	SIC Code	Proposed Strength (mg/L)			Percent of Single Family	Data Source
		BOD	SS	Weighted Average		
HIGH STRENGTH CLASSICATION						
High I Strength:						
Agricultural Production - Livestock	20	1,200	350	775	388%	Metcalf & Eddy
Mortuary	726	800	800	800	400%	SWRCB
Grocery (W/Butcher or Baker)	542	800	800	800	400%	SWRCB
Manufacturing -- Baked Foods	205	1,000	600	800	400%	SWRCB
Restaurant/Bar (W/Food Preparation)	581	1,000	600	800	400%	SWRCB
Manufacturing -- Beverages	208	1,500	300	900	450%	Metcalf & Eddy
Manufacturing -- Paint	285	1,300	1,100	1,200	600%	Metcalf & Eddy
Manufacturing -- Other Chemical Products	280	1,300	1,100	1,200	600%	Metcalf & Eddy
High II Strength:						
Manufacturing -- Dairy Products	202	2,369	922	1,646	823%	Los Angeles
Steam Cleaning -- Auto	754	1,150	2,150	1,650	825%	SWRCB
Manufacturing -- Other Food Products	209	2,213	1,453	1,833	917%	Los Angeles
High III Strength:						
Septage	495	5,400	12,000	8,700	4350%	SWRCB