



FINAL REPORT



Calaveras County Water District

Sewer Rate Study

April 2018





May 28, 2018

Mr. Jeffrey Meyer
Director of Administrative Services
Calaveras County Water District
120 Toma Court
P.O. Box 846
San Andreas, California 95249

Subject: Comprehensive Sewer Rate Study Report

Dear Mr. Meyer:

HDR Engineering, Inc. (HDR) is pleased to present to the Calaveras County Water District (District) the final report for the 2017 comprehensive sewer rate study. The District's comprehensive study was developed to provide a financial plan and rates that generate sufficient revenue to fund the operating and capital needs of the sewer utility. More specifically, the study was designed to develop cost-based and equitable sewer rates for the District's customers. This report outlines the overall approach used to achieve these objectives, along with our findings, conclusions, and recommendations.

The District owns and operates the sewer system. It conveys and treats wastewater generated within the District's service area. The costs associated with providing sewer service to the District's customers has been developed based on the District's sewer system data and information and is discussed in more detail within this report. This study was developed utilizing generally accepted sewer industry rate setting principles and methodologies. This report provides the basis for developing and implementing sewer rates which are cost-based, equitable, and legally defensible to the District's customers.

We appreciate the assistance provided by the District's project team in the development of this study. More importantly, HDR appreciates the opportunity to provide these technical and professional services to Calaveras County Water District.

Sincerely yours,
HDR Engineering, Inc.

A handwritten signature in black ink, appearing to read 'Shawn Koorn'.

Shawn Koorn
Associate Vice President

hdrinc.com

929 108th Ave NE, Suite 1300, Bellevue, WA 98004
T 425-450-6200

Table of Contents

EXECUTIVE SUMMARY	1
INTRODUCTION.....	1
OVERVIEW OF THE RATE STUDY PROCESS.....	1
SUMMARY OF THE SEWER REVENUE REQUIREMENT ANALYSIS	2
SUMMARY OF THE SEWER COST OF SERVICE ANALYSIS	6
SUMMARY OF THE SEWER RATE DESIGNS.....	7
SUMMARY OF THE SEWER RATE STUDY	7
1. INTRODUCTION AND OVERVIEW	9
1.1 INTRODUCTION.....	9
1.2 GOALS AND OBJECTIVES.....	9
1.3 OVERVIEW OF THE RATE STUDY PROCESS	10
1.4 ORGANIZATION OF THE STUDY.....	11
1.5 SUMMARY	11
2. OVERVIEW OF RATE SETTING PRINCIPLES	2
2.1 INTRODUCTION.....	12
2.2 GENERALLY ACCEPTED RATE SETTING PRINCIPLES.....	12
2.3 DETERMINING THE REVENUE REQUIREMENT	12
2.4 ANALYZING COST OF SERVICE.....	13
2.5 DESIGNING UTILITY RATES.....	14
2.6 ECONOMIC THEORY AND RATE SETTING.....	14
2.7 SUMMARY	15
3. DEVELOPMENT OF THE REVENUE REQUIREMENT ANALYSIS	16
3.1 INTRODUCTION.....	16
3.2 DEVELOPMENT OF THE SEWER REVENUE REQUIREMENT ANALYSIS	16
3.2.1 <i>Establishing a Time Frame and Approach</i>	16
3.2.2 <i>Projection of Rate and Other Miscellaneous Revenues</i>	17
3.2.3 <i>Projection of Operation and Maintenance Expenses</i>	18
3.2.4 <i>Projection of Taxes and Transfer Payments</i>	19
3.2.5 <i>Projection of Capital Improvement Funding Needs</i>	19
3.2.6 <i>Projection of Debt Service</i>	21
3.2.7 <i>Reserve Funding</i>	21
3.2.8 <i>Summary of the Sewer Revenue Requirement</i>	22
3.3 CONSULTANT’S REVENUE REQUIREMENT CONCLUSIONS AND RECOMMENDATIONS	23
3.4 SUMMARY OF THE SEWER REVENUE REQUIREMENT ANALYSIS.....	23
4. DEVELOPMENT OF THE COST OF SERVICE ANALYSIS.....	24
4.1 INTRODUCTION.....	24



4.2	OBJECTIVES OF A COST OF SERVICE ANALYSIS	24
4.3	DETERMINING THE CUSTOMER CLASSES OF SERVICE	25
4.4	GENERAL COST OF SERVICE PROCEDURES	25
4.4.1	<i>Functionalization of Costs</i>	25
4.4.2	<i>Classification of Costs</i>	25
4.4.3	<i>Development of the Allocation Factors</i>	27
4.5	SUMMARY OF THE SEWER COST OF SERVICE ANALYSIS	28
4.6	SUMMARY OF THE AVERAGE UNIT COSTS	29
4.7	CONSULTANT’S COST OF SERVICE CONCLUSIONS AND RECOMMENDATIONS.....	30
4.8	SUMMARY	30
5.	DEVELOPMENT OF THE PROPOSED SEWER RATE DESIGNS.....	31
5.1	INTRODUCTION.....	31
5.2	RATE DESIGN CRITERIA AND CONSIDERATIONS	31
5.3	DEVELOPMENT OF COST-BASED SEWER RATES	31
5.4	CURRENT INDUSTRY SEWER RATE STRUCTURE APPROACH.....	32
5.5	OVERVIEW OF THE PRESENT SEWER RATE STRUCTURE.....	33
5.6	DEVELOPMENT OF THE PROPOSED SEWER RATES.....	33
5.7	CONSULTANT’S RATE DESIGN CONCLUSIONS AND RECOMMENDATIONS	34
5.8	SUMMARY	34
	TECHNICAL APPENDIX – SEWER TECHNICAL ANALYSIS.....	

Introduction

HDR was retained by the Calaveras County Water District (District) to conduct a comprehensive sewer rate study. The main objectives of the study were:

- Review the District’s previously adopted sewer rates which were adopted through the Proposition 218 process.
- Develop a financial plan for projecting operating and capital costs for the sewer utility for planning purposes.
- Provide the framework and methodology, based on generally accepted industry best practices, for the development of cost-based sewer rates.

The District owns and operates several collection and treatment systems throughout the District’s service area. The District is independent from the County government but rather is governed by an elected five member board. There are nine treatment plant within five areas including Ebbetts Pass, Copperopolis, Valley Spring, West Point and Wallace. While these systems are isolated, they are operated as one system with the same rates regardless of the service area. In total the District serves approximately 4,848 connections and the sewer service area differs from their water service area. In total the collection system is comprised of 130 miles of gravity and force mains and 49 lift stations.

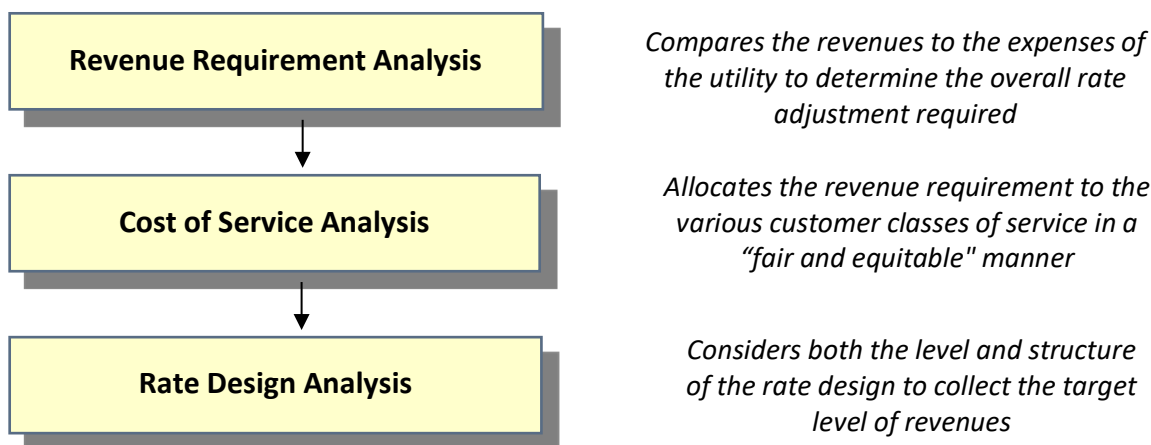
“There are nine treatment plant within 5 areas including Ebbetts Pass, Copperopolis, Valley Spring and West Point.”

The costs associated with providing sewer services to the District’s sewer customers has been developed based on information provided by District and it has been utilized in the development of the proposed sewer rates.

Overview of the Rate Study Process

A comprehensive rate study uses three interrelated analyses to address the adequacy and equity of the utility’s rates. These three analyses are a revenue requirement analysis, a cost of service analysis, and a rate design analysis. These three analyses are illustrated below in Figure ES - 1.

Figure ES – 1
Overview of the Comprehensive Sewer Rate Analyses



Shown above is the basic analytical framework that was utilized in the development of this study for reviewing and evaluating the District’s sewer rates.

Summary of the Sewer Revenue Requirement Analysis

A revenue requirement analysis is the first analytical step in the comprehensive sewer rate study process. This analysis determines the adequacy of the current rates to fund annual operating expenses and capital improvement needs. From this analysis, a determination can be made as to the overall level of sewer rate (revenue) adjustments needed to provide adequate and prudent funding for the District’s sewer system.

As a practical matter, a multi-year time frame is recommended in an attempt to identify and plan for any major expenses that may be on the horizon. By anticipating future financial requirements, the District can begin planning for these changes sooner, thereby minimizing short-term rate impacts while also stabilizing long-term rates.

For the revenue requirement analysis a “cash basis” approach was utilized. The “cash basis” approach is the most commonly methodology used by municipal and special district utilities to set their revenue requirement and in its most basic form, it is composed of O&M expenses, taxes / transfer payments, annual debt service payments, and rate funded capital projects. The primary inputs for the District’s revenue requirement analysis were obtained from the District’s budget documents, the historical billed customer data, and the sewer capital improvement plan. Budgeted O&M expenses were projected using inflationary factors for the District’s various expenses to provide sewer collection and treatment services over the projected time period.

The proper and adequate funding of capital projects is important to help maintain existing facilities, provide consistent levels of service and minimize rate impacts over time. A general

financial guideline states that, at a minimum, a utility should fund an amount equal to or greater than annual depreciation expense through current rate revenue. Annual depreciation expense reflects the current investment in plant being depreciated or “losing” its useful life. Therefore, this portion of plant investment needs to be replaced or repaired to maintain the existing level of infrastructure (and service levels). However, it must be kept in mind that, in theory, annual depreciation expense reflects an investment in infrastructure that was placed in service an average of 15 years ago, assuming a 30-year useful (i.e., depreciable life). It is important to note and understand that depreciation expense is not the same as replacement cost. Thus, funding an amount which exceeds the sewer utilities’ share of depreciation expense is reasonable and appropriate target to aspire to as the utility becomes more fiscally sound. In developing this financial plan, HDR and the District have attempted to minimize rate impacts while funding the planned capital improvement projects.

To address the system capital funding needs the District has created a Renovation & Replacement (R&R) fund and defined a component of their rate that is specifically designated for capital needs. This component of the rate is referred to as the Renovation & Replacement rate, or R&R rate and is approximately 20% of the overall rate and is held in R&R fund separate from the operations fund. This rate was established in the last rate study which revealed a critical deficiency of available funds for capital projects. As this study has progressed it was decided that this study would focus on operational needs and keeping the R&R component at its current level. The sewer systems annual depreciation expenses is approximately \$1.2 million which, also is approximately equal to the amount of revenue collected from the R&R component of the Districts sewer rates.

The District also maintains Expansion Funds for each of their service areas which are funded from connection fees for use on expansion type projects.

In the past the District has utilized debt to finance capital projects. While this funding mechanism is an option for the District, no debt was assumed during the analysis period.

The District has received grants in the past and has assumed projects in its capital plan that are wholly or partially funded from grants.

Shown below in Table ES – 1 is a summary of the capital improvement plan for the projected five-year review period.

ES – 1					
Overview of the Sewer Capital Improvement Plan (\$000s)					
Description	2018-19	2019-20	2020-21	2021-22	2022-23
Wallace - Plant Renovations/SCADA/Electrical	\$200	\$0	\$0	\$0	\$0
Vallecito - Title 22 / TSTAN Project	140	0	0	0	0
Vallecito - I&I Equalization Improvements	200	0	0	0	0
Copper Cove - Pond 6 Enlargement/Expansion	1,000	4,200	0	0	0
West Point - Wilseyville Consolidation Grant	2,500	2,000	0	0	0
Poker Flat - Lift Station 8, 12 & 13 Bypass	1,000	200	0	0	0
Lake Tulloch - Lift Station 15 & 18 Renovations	500	200	0	0	0
Various - Pipeline/Force main Replacement	75	75	0	0	0
Total Capital Outlays	\$5,615	\$6,675	\$0	\$0	\$0
Funding Sources					
R&R Funds	\$1,448	\$2,342	\$0	\$0	\$0
Expansion Funds	1,417	2,333	0	0	0
Grant Funds	2,590	2,000	0	0	0
Other Funding	160	0	0	0	0
Total Funding	\$5,615	\$6,675	\$0	\$0	\$0

As shown in Table ES-1, the District’s Capital Improvement Plan are a combination of renovation and replacement and expansion projects. The current plan does not have projects beyond 2020-21 so the funds designated for R&R projects are placed in the R&R fund for projects to be designated at a later date.

Given the projection of O&M and capital improvement funding, the sewer revenue requirement analysis was completed. Table ES - 2 provides a summary of the revenue requirement for the District’s sewer utility.

**Table ES - 2
Summary of the Revenue Requirement Analysis (000's)**

	Budget		Projected				
	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
Sources of Funds							
Rate Revenue[1]	\$5,485	\$5,476	\$5,531	\$5,586	\$5,642	\$5,698	\$5,755
Other Revenues	<u>892</u>	<u>932</u>	<u>934</u>	<u>949</u>	<u>965</u>	<u>981</u>	<u>996</u>
Total Sources of Funds	\$6,377	\$6,408	\$6,465	\$6,535	\$6,607	\$6,679	\$6,751
Applications of Funds							
Total O&M Expenses	\$6,109	\$5,872	\$5,724	\$5,858	\$6,038	\$6,224	\$6,416
CIP from Rates	1,166	1,176	1,188	1,200	1,212	1,224	1,236
Debt Service	479	541	682	618	618	221	221
Change Working Capital	<u>(643)</u>	<u>(841)</u>	<u>(902)</u>	<u>(674)</u>	<u>(539)</u>	<u>4</u>	<u>159</u>
Total Applications of Funds	\$7,112	\$6,748	\$6,691	\$7,003	\$7,330	\$7,673	\$8,032
Balance/(Deficit) Funds	(\$734)	(\$341)	(\$227)	(\$467)	(\$723)	(\$994)	(\$1,281)
Cumulative Bal./(Def.) of Rates	13%	6%	4%	8%	13%	17%	22%
Proposed Adjustment	0.0%	0.0%	4.1%	4.1%	4.1%	4.1%	4.1%
Add'l Revenue with Rate Increase	\$0	\$0	\$227	\$467	\$723	\$994	\$1,281

[1] Rate Revenue includes both R&R and Operational Rate Components.

As can be seen above, the revenue requirement has summed the O&M, taxes / transfers, rate funded capital, net debt service, and the change in working capital. The total revenue requirement is then compared to the total sources of funds which include the sewer rate revenues, at present rate levels, and other miscellaneous sewer revenues. From this comparison a balance or deficiency of funds in each year can be determined. This balance or deficiency of funds is then compared to the rate revenues to determine the level of rate adjustment needed to meet the revenue requirement.

“During the projected time period, the District’s rates appear to be deficient for FY 2019 through FY 2023.”

During the projected time period, the District’s rates appear to be deficient for FY 2019 through FY 2023. The total overall deficiency is approximately 22%. To address that deficiency, annual sewer rate adjustments are proposed for FY 2019 through FY 2023 as outlined in the table above.

A more detailed discussion of the development of the revenue requirement analysis can be found in Section 3.2. Detailed technical exhibits of the sewer revenue requirement analysis have been included within the Technical Appendices.

Summary of the Sewer Cost of Service Analysis

A cost of service analysis determines the equitable allocation of the revenue requirement to the various customer classes of service (i.e., residential and non-residential, etc.). The objective of the sewer cost of service analysis is different from determining the sewer revenue requirement analysis. A revenue requirement analysis determines the utility’s overall financial needs, while the cost of service analysis determines the fair and equitable (i.e., proportional) manner to collect the overall total revenue requirement. For the District’s study, the cost of service was performed with an assumed 4.1% rate adjustment. This means that in total the rate revenue will increase 4.1% while individual customer classes may increase or decrease at a rate greater or less than the overall rate adjustment shown in the revenue requirement.

In summary form, the sewer cost of service analysis began by functionalizing the revenue requirement for the sewer system. Functionalizing the data sorts it into major functions (e.g., power, materials, treatment, administrative, etc.). Functionalization of the data was accomplished via the District’s system of accounting. The functionalized sewer revenue requirement was then classified into their various cost components (volume, strength, customer-related). The individual classification totals were then equitably allocated to the various customer classes of service based on the appropriate and proportional allocation factors. The allocated expenses for each customer class were then aggregated to determine each customer class’s overall revenue responsibility. These steps follow generally accepted industry methodologies and are outlined in the Water Environment Federation Manual of Practice No. 27, *Financing and Charges for Wastewater System*. Shown below in Table ES - 3 is a summary of the sewer cost of service analysis results by customer class of service.

Customer Class	Present Rate Revenue (FY 2019-20)	Allocated Revenue Requirement	Bal. / (Def.) of Funds	Required % Change in Rates
Residential	\$4,751	\$4,961	(\$209)	4.4%
Non-Residential	779	797	(18)	2.3%
Total	\$5,531	\$5,758	(\$227)	4.1%

The above results indicate that residential should go up by 4.4% and Non-residential should go up 2.3%. Overall these results are very close and indicate that cost to serve residential is relatively close to the cost to serve non-residential. This close relationship is because there is not a significant difference in wastewater strength as well as non-residential being charged on a Single Family equivalent (SFDE) basis. As the name indicates SFDE is a process of billing that expresses non-residential customers as a multiple of an average single family unit. The multiple assigned to a non-residential is multiplied by the base rate to arrive at the customer’s monthly bill. It is important to note that a cost of service study is an analysis of a point in time and the District’s costs, customer consumption patterns and total usage change over time. In that

respect, a cost of service is a static analysis of a dynamic and ever-changing situation. If the customer based were to change to, say, higher strength wastewater that would effect the cost of service calculation.

While Table ES – 3 summarized the results of the sewer cost of service analysis by customer class of service, the cost of service analysis also contains sufficient detail to understand costs by fixed charges and by consumptive use. These unit costs, or cost-based rates, form the basis for the final proposed sewer rates by customer class of service. The Technical Appendices contains the various exhibits associated with the District’s cost of service analysis.

Summary of the Sewer Rate Designs

The final step of the comprehensive sewer rate study process is the design of the sewer rates to collect the appropriate levels of revenue. The appropriate levels of revenue have been determined based on the results of the revenue requirement and cost of service analysis. The revenue requirement analysis provided a set of recommendations related to annual rate adjustments, while the cost of service results indicated that minor interclass adjustments were needed at this time.

Provided below in Table ES – 4 are the present and proposed sewer rates for the District. This study has not recommended any changes to the overall rate structure. However, the relationships between classes of services were adjusted to reflect their relative cost of services.

Table ES-4 Current and Proposed Rates						
	Present Rates	2018-19	2019-20	2020-21	2021-22	2022-23
Service Charge (Bi-Monthly)						
Residential	\$172.32	\$179.92	\$187.24	\$194.78	\$202.58	\$210.64
Non-Residential (per ERU)	172.32	176.25	183.38	190.74	198.33	206.18

As can be seen, the District has two rate schedules; residential, and Non-Residential. The rate structure is composed of a fixed monthly charge for both residential and non-residential customers. Section 4 of this study provides a more detailed discussion of the present and proposed sewer rates.

Summary of the Sewer Rate Study

This completes the overview of the development of the comprehensive sewer rate study for the District. The focus of this study has been the prudent and adequate funding of the District’s sewer utility, along with the development of equitable and cost-based sewer rates by customer class of service.

The results of the study were presented to the District Board on May 23, 2018 at a public hearing. At the conclusion of the public hearing the Board adopted the proposed rates as developed within this report.

A full and complete discussion of the development of the District's comprehensive sewer rate study and the proposed sewer rates can be found in the following sections and exhibits of this report.



1. Introduction and Overview

1.1 Introduction

HDR was retained by the Calaveras County Water District (District) to conduct a comprehensive sewer rate study. The objective of the study was to review the District’s operating and capital costs in order to develop a financial plan and cost-based rates for the District’s sewer customers. This study determined the adequacy of the existing sewer rates and provides the framework and cost-basis for any needed future sewer rate adjustments.

The District owns and operates several collection and treatment systems throughout the District’s service area. The District is independent from the County government and is governed by an elected five member board. There are nine treatment plant within five areas including Ebbetts Pass, Copperopolis, Valley Spring, West Point and Wallace. While these systems are isolated, they are operated as one system with the same rates regardless of the service area. In total the District serves approximately 4,848 connections and the sewer service area differs from their water service area. In total the collection system is comprised of 130 miles of gravity and force mains and 49 lift stations.

The State of California has certain well established legal constraints regarding utility ratemaking, of which California Constitution article XIII D, section 6 (commonly referred to as “Proposition 218”)¹ is at the forefront. At its very core, Proposition 218 requires a sewer (and water) utility to establish cost-based rates for the services provided.

“At its very core, Proposition 218 requires a sewer utility to establish cost-based rates for the services provided.”

This study has been designed and intended to comply with the legal requirements of Proposition 218, as they are currently understood. This study has been developed using industry accepted sewer rate setting methodologies and best practices, along with District specific sewer system data and information.

1.2 Goals and Objectives

The District had a number of key objectives in developing the sewer rate study. These key objectives provided a framework for policy decisions in the analysis that follows. These key objectives were as follows:

- Develop the sewer study in a manner that is consistent with the principles and methodologies established by the Water Environment Federation (WEF), Manual of Practice No. 27, Financing and Charges for Sewer Systems.

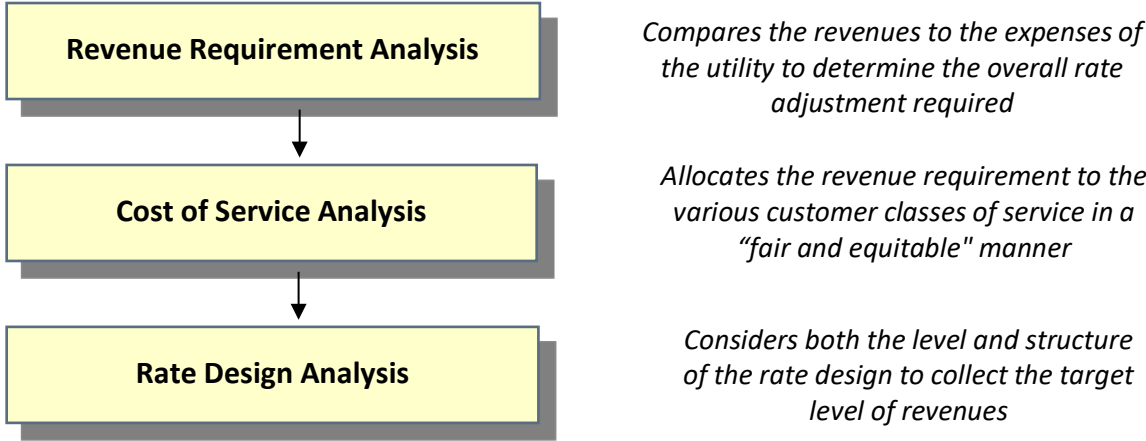
¹ Proposition 218, enacted by California's voters in 1996, imposes certain procedures, requirements and voter approval mechanisms for local government assessments, fees and charges.

- In financial planning and establishing the District’s rates, review and utilize best industry practices, while recognizing and acknowledging the specific and unique characteristics of the District’s sewer system and facilities.
- Review the District’s rates utilizing “generally accepted” rate making methodologies to determine adequacy and equity of the utility rates.
- Meet the District’s financial planning criteria and goals, such as debt service coverage ratios, adequate funding of capital infrastructure, and maintenance of adequate and prudent reserve levels.
- Develop a final proposed financial plan which adequately supports the sewer utility’s funding requirements, while attempting to minimize overall impacts to rates.
- Provide rates designed to meet the legal requirements of Article XIII D and recent legal decisions related to Article XIII D.
- Develop proposed rates that are cost-based reflective of the District’s specific costs.

1.3 Overview of the Rate Study Process

User rates must be set at a level where a utility’s operating and capital expenses are met with the revenues received from customers. This is an important point, as failure to achieve this objective may lead to insufficient funds to maintain system integrity. To evaluate the adequacy of the existing sewer rates, a comprehensive rate study is often performed. A comprehensive rate study consists of three interrelated analyses. Figure 1 - 1 provides an overview of these analyses.

**Figure 1 – 1
Overview of the Comprehensive Sewer Rate Analyses**



The study conducted by HDR included the three technical analyses discussed above. In establishing cost-based rates, the revenue requirement analysis determines the overall revenue needs of the utility. Next, the cost of service analysis provides an equitable allocation of the costs to the different types of customers served, while also providing per unit costs which become the cost-basis for the final rate designs. Finally, the rate design analysis utilizes the average unit costs

from the cost of service analysis to establish the revised cost-based rates. Each of these elements of the technical analysis is discussed in more detail within this report.

1.4 Organization of the Study

This report is organized in a sequential manner that first provides an overview of utility rate setting principles, followed by sections that detail the specific steps used to review the District's sewer rates. The following sections comprise the District's sewer cost of service study report:

- Section 2 – Overview of Rate Setting Principles
- Section 3 – Development of the Revenue Requirement Analysis
- Section 4 – Development of the Cost of Service Analysis
- Section 5 – Development of the Proposed Sewer Rate Designs

Technical Appendices are attached at the end of this report which details the various technical analyses that were undertaken in the preparation of this study.

1.5 Summary

This report will review the various technical analyses undertaken by HDR and the District to review their current sewer rates. The objective of this study is to develop cost-based sewer rates which are compliant with the legal requirements of Proposition 218, as it is currently understood.



2. Overview of Rate Setting Principles

2.1 Introduction

This section of the report provides background information about the sewer rate setting process, including descriptions of generally accepted principles, types of utilities, methods of determining a revenue requirement, the cost of service analysis, and rate design. This information is useful for gaining a better understanding of the details presented later in this report.

2.2 Generally Accepted Rate Setting Principles

As a practical matter, all utilities should consider setting their rates around some generally accepted or global principles and guidelines. Utility rates should be:

- Cost-based, equitable, and set at a level that meets the utility's full revenue requirement.
- Easy to understand and administer.
- Designed to conform to "generally accepted" rate setting techniques.
- Stable in their ability to provide adequate revenues for meeting the utility's financial, operating, and regulatory requirements.
- Established at a level that is stable from year-to-year from a customer's perspective.

2.3 Determining the Revenue Requirement

Most public utilities use the "cash basis" approach for establishing their revenue requirement and setting rates. This approach conforms to most public utility budgetary requirements and the calculation is easy to understand. A public utility totals its cash expenditures for a period of time to determine required revenues. The revenue requirement for a public utility is usually comprised of the following costs or expenses:

- **Total Operating Expenses:** This includes a utility's operation and maintenance (O&M) expenses, plus any applicable taxes or transfer payments. Operation and maintenance expenses include the materials, electricity, labor, supplies, etc., needed to keep the utility functioning.
- **Total Capital Expenses:** Capital expenses are calculated by adding debt service payments (principal and interest) to capital improvements financed with rate revenues. In lieu of including capital improvements financed with rate revenues, a utility sometimes includes depreciation expense to stabilize the annual revenue requirement.

Under the "cash basis" approach, the sum of the total O&M expenses plus the total capital expenses equals the utility's revenue requirement during any selected period of time (historical or projected).

Note that the two portions of the capital expense component (debt service and rate funded capital) are necessary under the cash basis approach because utilities generally cannot finance all their capital facilities with long-term debt. At the same time, it is often difficult to pay for

capital expenditures on a “pay-as-you-go” basis given that some major capital projects may have significant rate impacts upon a utility, even when financed with long-term debt. Many utilities have found that some combination of pay-as-you-go funding and long-term financing will often lead to minimization of rate increases over time.

Public utilities typically use the “cash basis”² approach to establish their revenue requirements. An exception occurs if a public utility provides service to a wholesale or contract customer. In that situation, a public utility could use the “utility basis” approach (see Table 2 - 1) regarding earning a fair return on its investment.

Table 2 – 1 Cash versus Utility Basis Comparison			
Cash Basis		Utility Basis (Accrual)	
+	O&M Expenses	+	O&M Expenses
+	Taxes/Transfer Payments	+	Taxes/Transfer Payments
+	Capital Improv. Funded From Rates (≥ Depreciation Expense)	+	Depreciation Expense
+	Debt Service (Principal + Interest)	+	Return on Investment
=	Total Revenue Requirement	=	Total Revenue Requirement

For purposes of this discussion, the District has utilized the cash basis methodology for the establishment of the revenue requirement analysis. Of these two generally accepted methodologies, the use of the cash basis methodology for the District is the most appropriate.

2.4 Analyzing Cost of Service

After the total revenue requirement is determined, it is equitably allocated to the users of the service. The allocation, usually analyzed through a cost of service analysis, reflects the cost relationships for providing sewer services. A cost of service analysis requires three analytical steps:

1. Costs are *functionalized* or grouped into the various cost categories related to providing service (collection, treatment, etc.). This step is largely accomplished by the utility’s accounting system.
2. The functionalized costs are then *classified* to specific cost components. Classification refers to the arrangement of the functionalized data into cost components. For example, a utility’s sewer costs are typically classified as volume, strength, or customer-related.

² “Cash basis” as used in the context of rate setting is not the same as the terminology used for accounting purposes and recognition of revenues and expenses. As used for rate setting, “cash basis” simply refers to the specific cost components to be included within the revenue requirement analysis.

3. Once the costs are classified into components, they are proportionally *allocated* to the customer classes of service (e.g., residential and non-residential). The allocation is based on each customer class' proportional contribution to the cost component (i.e., benefits received from, and burdens placed on the system and its resources). For example, customer-related costs are allocated to each class of service based on the total number of customers in that class of service. Once costs are allocated, the revenues from each customer class of service required to achieve cost-based rates can be determined.

At the conclusion of the cost of service analysis, two key pieces of information are provided. First, the cost of service provides an understanding of the total revenues to be collected from each class of service. In other words, assuming the sewer revenue requirement is \$6.7 million the cost of service provides an equitable method to assign that total cost between the various sewer customer classes of service (e.g., residential and non-residential). The other important piece of information provided by the cost of service analysis is the average unit costs. Average unit costs are the allocated costs divided by the appropriate usage. This provides an understanding of the cost on a \$/customer/month and \$/hundred cubic feet (100 CF)³ basis. These average unit costs are essentially the cost-based sewer rates. While the District does not charge its customers on a volumetric basis, the generally accepted cost of service methodology allocates costs on wastewater volume and characteristics which results in a per-unit cost per hundred cubic feet. Understanding the differences in customer costs on a volume basis provides insight into how customers utilize the system and the costs the utility incurs to service customers.

2.5 Designing Utility Rates

Rates that meet the utility's objectives are designed based on the findings and conclusions from both the revenue requirement and cost of service analysis. This approach results in rates that are strictly cost-based and does not consider other non-cost based goals and objectives (economic development, ability to pay, revenue stability, etc.). In designing rates, factors such as revenue stability, continuity of past rate philosophy, ease of administration, and customer understanding may typically be taken into consideration. However, in order to meet the legal requirements of Proposition 218, the rates must take into consideration each customer class's proportional share of costs allocated through the cost of service analysis. Given this, the utility's ability to take goals and objectives other than cost-based is limited. However, in the design of the rate structure, the utility's goals and objectives can frame the approach for setting cost-based rates.

2.6 Economic Theory and Rate Setting

One of the major justifications for a comprehensive cost of service study is founded in economic theory. Economic theory suggests that the price of a commodity must roughly equal its cost if equity among customers is to be maintained. This statement's implications on utility rate designs are significant. For example, a sewer utility usually incurs strength-related costs to treat wastewater. It

“Economic theory suggests that the price of a commodity must roughly equal its cost if equity among customers is to be maintained.”

³ A 100 CF = one-hundred cubic feet. One (1) 100 CF of water = 748 gallons of water

follows that the customers who have high strength wastewater and create the need for greater treatment to address the strength of the wastewater should proportionally pay a higher rate to address the strength of their wastewater. When costing and pricing techniques are refined, consumers have a more accurate understanding of what the commodity costs to produce and deliver. This price-equals-cost concept provides the basis for the subsequent analysis and comments.

2.7 Summary

This section of the report has provided a brief introduction to the general principles, techniques, and economic theory used to set sewer rates. These principles and techniques will become the basis for the District's comprehensive cost of service study.



3. Development of the Revenue Requirement Analysis

3.1 Introduction

This section describes the development of the revenue requirement analysis for the District's sewer system. The revenue requirement analysis is the first analytical step in the comprehensive rate study process. From this analysis a determination can be made as to the overall level of rate adjustments needed to provide adequate and prudent funding for both operating and capital needs of the sewer utility. The prior section of the report provided an overview of the general approach and methodology to be used within this portion of the analysis.

3.2 Development of the Sewer Revenue Requirement Analysis

There are a number of steps associated with the development of the sewer revenue requirement analysis. In developing the District's sewer revenue requirement, the utility must financially "stand on its own" and be properly funded. Setting up the sewer utility to stand on its own has been the primary focus of this study since costs have risen faster than revenue leaving the sewer utility unable to fully cover its operations and maintenance costs. For this study sewer rates have been increased over the 5 year period to a level to fully fund operations. To allow the rates to be evenly phased in over time a loan from the water fund was used to cover short fall and will be paid back over a 10 year period. Provided below is a more detailed discussion of the development of the sewer revenue requirement analysis for District.

“ . . . the revenue requirement analysis, as developed herein, assumes the full and proper funding needed to operate and maintain the District's sewer system on a financially sound and prudent basis. ”

3.2.1 Establishing a Time Frame and Approach

The first step in calculating the revenue requirement for the District's sewer system was to establish a time frame for the revenue requirement analysis. The review of the five year period of FY 2018-19 through FY 2022-23 was determined to be an appropriate time period for the analysis and financial plan. The financial plan was developed based on the District's FY 2018 budget and capital plan. Reviewing a multi-year time period is recommended since it attempts to identify any major expenses that may be on the horizon. By anticipating future financial requirements, the District can then begin planning for these changes sooner, thereby minimizing short-term rate impacts and overall long-term rates.

The second step in determining the revenue requirement was to decide on the basis of accumulating costs. In this particular case, for the revenue requirement analysis a "cash basis" approach was utilized. As noted in Section 2, the "cash basis" approach or methodology is the most commonly used methodology by municipal and special district utilities to set their revenue requirement. This is also the methodology that the District has historically used to establish their sewer revenue requirements. Table 3 - 1 provides a summary of the "cash basis" approach and cost components used to develop the District's sewer revenue requirement.

Table 3 – 1
Overview of the District’s “Cash Basis” Sewer Revenue Requirements

+	Sewer Operation and Maintenance Expenses
✓	Power Costs
✓	Administrative Expenses
✓	Materials and Maintenance (includes Metro O&M)
✓	Labor and Benefits
+	Taxes and Transfers
+	Rate Funded Capital
+	Debt Service (P + I) – Existing and Future
±	<u>To / (From) Reserves</u>
=	Total Sewer Revenue Requirement
–	<u>Miscellaneous Revenues</u>
=	Net Revenue Requirement (Balance Required from Rates)

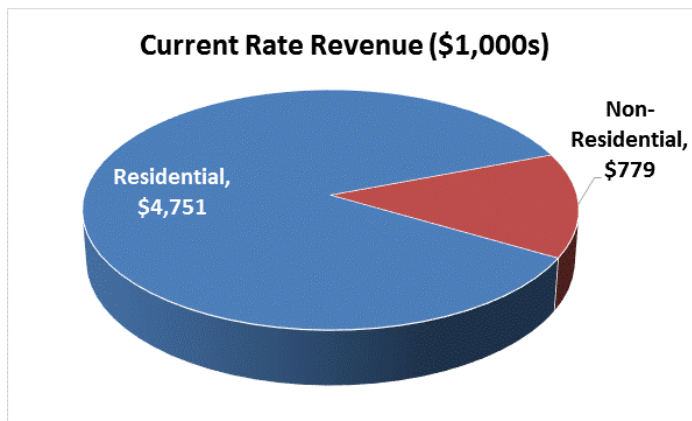
Given a time period around which to develop the revenue requirement and a method to accumulate the costs; the focus shifts to the development and projection of the revenues and expenses of the District’s sewer system.

The primary financial inputs in the development of the revenue requirement were the District’s current budget documents, customer billing data, and capital improvement plan. Presented below is a detailed discussion of the steps and key assumptions contained in the development of the projections of the District’s sewer revenue requirement analysis.

3.2.2 Projection of Rate and Other Miscellaneous Revenues

The first step in developing the District’s sewer revenue requirement was to develop a projection of the sewer rate revenues, at the present rate levels. In general, this process involved developing projected billing units for each customer group (rate schedule). The billing units (accounts and billed volumes) for each customer group were then multiplied by the corresponding sewer rates.

This method of independently calculating revenues links the projected revenues used within the analysis to the projected billing units. Additionally, it aids in confirming that the billing units used within the study are reasonable for purposes of projecting future revenues, allocating costs, and ultimately establishing the proposed rates. For FY 2018, it is calculated that the District will receive approximately \$5.5 million in rate revenues for the sewer utility, with



the vast majority of those revenues being received from the residential customer class of service. With assumed customer growth on the system, by FY 2022-23, rate revenues are projected to increase to approximately \$5.8 million.

In addition to rate revenues, the District also receives other revenue ranging from \$930,000 in 2018-19 to \$1 million in 2022-23. This revenue includes other fees, non-operating revenue and other miscellaneous revenue sources. The bulk of this revenue comes from two sources, property tax and power sales. Property tax revenue is the largest component of the other revenue at approximately \$600,000 per year. Power sales from the North Fork and New Hogan hydroelectric projects operated by the District is expected to be approximately \$200,000 per year throughout the analysis period. The remainder of the other revenue is less substantial and consists of several smaller revenue items including account establishment fees and delinquency fees.

In total, including rate and miscellaneous revenue sources, the sewer utility is projected to collect approximately \$6.5 million in total revenues in FY 2018-19. The total revenues are projected to increase slightly over time and be approximately \$6.8 million by FY 2022-23.

3.2.3 Projection of Operation and Maintenance Expenses

Operation & maintenance (O&M) expenses are incurred by the District to perform the daily operations & maintain the sewer collection and treatment systems. While from a customer perspective the rate appears to a single bi-monthly charge, the District's rate is actually two components, an O&M component and a renovation & replacement (R&R) component.

The starting point for the projection of the District's sewer O&M expenses was the District's budget. Budgeted O&M expenses were projected over the rate study time period based on both historical inflationary factors and known future inflationary factors. These factors took into consideration the District's historical cost increases and projected increases. Depending upon the specific cost, the escalation factors for each year ranged from 1.0% to 7.0% for the various types of expenses (e.g., labor, benefits, and materials). With the various escalation factors used being higher or lower depending on the type of expense, the resulting overall average O&M increase was approximately 3%.

"A major O&M expense for the District is wastewater treatment from Metro."

O&M consists of three main categories, Administrative – General, Maintenance Expense and Minor capital outlays. Over half of the total O&M costs were in the Administrative and General category which consisted of salaries and benefits, ranging from \$3.4 million in 2018-19 to \$3.8 million in 2022-23. Maintenance Expense is the cost category that contains the non labor type costs such as utilities, chemicals, vehicle expense, federal, state and county water and sewer fees among other smaller costs. Maintenance costs range from \$2.2 million in 2018-19 to \$2.4 million in 2022-23. Capital outlays is a small category that contains funding for small capital costs such as vehicle and equipment costs ranging from \$185,000 in 2018-19 to \$220,000 in 2022-23.

In total the utilities O&M expenses are growing at approximately 3% ranging from \$5.7 million in 2018-19 to \$6.4 million in 2022-23.

3.2.4 Projection of Taxes and Transfer Payments

The District's sewer utility does not pay taxes or payment in lieu of taxes (PILOT) to any other governmental entity. The District does have several transfer payments made to and from the operating fund. These transfers consist of transfers to the operations from fund 108 and the R&R fund to cover portions of the debt service and add to or transfer excess revenue to the Operating fund.

There are however several transfers between the operating fund to cover revenue shortfalls or to transfer excess revenue, R&R fund and Fund 108 to pay for some debt service.

3.2.5 Projection of Capital Improvement Funding Needs

Capital improvements are funded in a variety of ways but primarily by the R&R component of the rate. Based on present rates the R&R rate comprises approximately 20% of the total sewer rates. CIP Projects other than R&R projects are funded from the expansion funds or through the use of grants.

In general, there are three types of capital projects that the District may need to fund. These include the following types:

- Renovation and replacement projects
- Expansion projects
- Regulatory-related projects

An R&R project is essentially maintaining the existing system that is in place today. As the existing plant becomes worn out, obsolete, etc., the District should be making continuous investments to maintain the integrity of its sewer facilities. In contrast to this, the District may make capital investments to expand the capacity of facilities to accommodate future customers. Finally, certain projects may be a function of a regulatory requirement in which the Federal and / or State government mandates the need for an improvement to the system to meet a regulatory standard.

In contrast to this, expansion projects may be funded through the collection of a connection fee (i.e., growth-related charges) in which new development pays a proportional and equitable share of the cost of improvements required as a result of their connection (impact).

The District has separate expansion funds to hold connection fees for each of its service areas so that fees are used to fund projects in the area in which they were collected. Finally, regulatory projects may be funded by a variety of different means, which may include rates, long-term debt, grants, etc.

Generally, while the total amount of a project may vary from year to year, the sewer capital funding plan should be developed in an attempt to provide a consistent funding source for the

utility. The District does provide a consistent level of funding for R&R projects since it is funded through a specific component of the sewer rate.

A desirable funding target for rate funded capital is an amount equal to or greater than annual depreciation expense. Depreciation expense reflects the amount of capital infrastructure that is becoming worn out or obsolete. It is important to note and understand that depreciation expense is not the same as replacement cost. Thus, funding an amount which exceeds depreciation expense is considered to be both prudent and appropriate target to attain as the utility becomes more fiscally stable.

The District's rates have two parts, an operations component that is approximately 80% of the total rate and an R&R component that is approximately 20% of the total rate. These two components are held in separate accounts, an operating account for the operations component and an R&R Fund for the R&R component so that those costs are used for the purpose they were intended. The total revenue collected through the R&R rate component closely matches the District's current annual depreciation expense.

HDR and the District have attempted to minimize rate impacts while funding the planned capital improvement projects of the District. To that end the District has decided to focus this study on funding the District's operations cost. As rates for the operations are increased the R&R amount will remain the same but the proportion will reduce over time.

The balancing of R&R and expansion funds and grant funding provides the District with a method to fund capital over the long-term and minimize rates to the greatest extent possible. Shown below in Table 3 – 2 is summary of the District's capital improvement plan that was used in the development of the sewer revenue requirement.

**Table 3-2
Overview of the Sewer Capital Improvement Plan (\$000s)**

Description	2018-19	2019-20	2020-21	2021-22	2022-23
Wallace - Plant Renovations/SCADA/Electrical	\$200	\$0	\$0	\$0	\$0
Vallecito - Title 22 / TSTAN Project	140	0	0	0	0
Vallecito - I&I Equalization Improvements	200	0	0	0	0
Copper Cove - Pond 6 Enlargement/Expansion	1,000	4,200	0	0	0
West Point - Wilseyville Consolidation Grant	2,500	2,000	0	0	0
Poker Flat - Lift Station 8, 12 & 13 Bypass	1,000	200	0	0	0
Lake Tulloch - Lift Station 15 & 18 Renovations	500	200	0	0	0
Various - Pipeline/Force main Replacement	75	75	0	0	0
Total Capital Outlays	\$5,615	\$6,675	\$0	\$0	\$0
Funding Sources					
R&R Funds	\$1,448	\$2,342	\$0	\$0	\$0
Expansion Funds	1,417	2,333	0	0	0
Grant Funds	2,590	2,000	0	0	0
Other Funding	160	0	0	0	0
Total Funding	\$5,615	\$6,675	\$0	\$0	\$0

3.2.6 Projection of Debt Service

The District currently has several debt issues of varying amounts and length for the sewer utility which have funded the Districts past capital program. This analysis is not assuming new debt funding for the capital program at this time. However, a loan from the Water utility was used to fund past and projected cash short falls while the rate in gradually increased to fully fund operation.

3.2.7 Reserve Funding

The final component of the revenue requirement analysis is the change in working capital line item which transfers funds between funds including the R&R, expansion and the Operating fund. Currently the sewer operating fund has a zero balance. Operating funds usually contain unrestricted funds used pay its ongoing obligations such as salaries and other general expenses.

Operating ending fund balance target minimum is often set at a level that provides adequate cash to handle cash fluctuations due to the utilities business cycle. A typical target is 90 days of operations and maintenance expense. Many utilities such as the District collect rate revenue bi-monthly while ongoing expenses are paid monthly and salaries are paid a few times a month. This discrepancy between cash collection and obligations can lead to a cash shortfall during the year if the operation fund is not adequately funded. During the analysis period operating reserve balance fluctuates from year to year but is expected to stabilize at the end of the analysis when the rate transition plan is complete.

3.2.8 Summary of the Sewer Revenue Requirement

Given the above projections of revenues and expenses, a summary of the sewer revenue requirement analysis can be developed. In developing the revenue requirement analysis, consideration was given to the financial planning considerations of the District. In particular, emphasis was placed on attempting to minimize rates, yet still have adequate funds to support the operational activities and capital projects throughout the projected time period.

The revenue requirement has summed the O&M, taxes and transfers, rate funded capital, net debt service and the reserve funding. The total revenue requirement is then compared to the total sources of funds which include the rate revenues, at present rate levels, and other miscellaneous revenue sources. From this comparison a balance or deficiency of funds in each year can be evaluated. This balance or deficiency of funds is then compared to the rate revenues to determine the level of rate adjustment needed to meet the revenue requirement (i.e., support cost-based levels). Table 3 – 3 provides a summary of the revenue requirement analysis for the District’s sewer utility.

Table3 -3							
Summary of the Revenue Requirement Analysis (000's)							
	Budget			Projected			
	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
Sources of Funds							
Rate Revenue	\$5,485	\$5,476	\$5,531	\$5,586	\$5,642	\$5,698	\$5,755
Other Revenues	<u>892</u>	<u>932</u>	<u>934</u>	<u>949</u>	<u>965</u>	<u>981</u>	<u>996</u>
Total Sources of Funds	\$6,377	\$6,408	\$6,465	\$6,535	\$6,607	\$6,679	\$6,751
Applications of Funds							
Total O&M Expenses	\$6,109	\$5,872	\$5,724	\$5,858	\$6,038	\$6,224	\$6,416
CIP from Rates (R&R Revenue)	1,166	1,176	1,188	1,200	1,212	1,224	1,236
Debt Service	479	541	682	618	618	221	221
Change Working Capital	<u>(643)</u>	<u>(841)</u>	<u>(902)</u>	<u>(674)</u>	<u>(539)</u>	<u>4</u>	<u>159</u>
Total Applications of Funds	\$7,112	\$6,748	\$6,691	\$7,003	\$7,330	\$7,673	\$8,032
Balance/(Deficit) Funds	(\$734)	(\$341)	(\$227)	(\$467)	(\$723)	(\$994)	(\$1,281)
Cumulative Bal./(Def.) of Rates	13%	6%	4%	8%	13%	17%	22%
Proposed Adjustment	0.0%	0.0%	4.1%	4.1%	4.1%	4.1%	4.1%
Add'l Revenue with Rate Increase	\$0	\$0	\$227	\$467	\$723	\$994	\$1,281

As can be seen in the above table, the revenue requirement analysis indicates over time, there are deficiencies within the revenue requirement analysis. Over the five-year projected period, and in FY 2023, the District’s sewer rates are projected to be deficient by approximately \$1.3 million or 22% of the present rates. This implies that over the five-year period rates should be



adjusted by an overall 22%. These deficiencies are caused for the most part due to the overall current deficiency of its operating rate at the beginning of the analysis and the deficiency grows as O&M costs increase due to general inflationary increases.

3.3 Consultant’s Revenue Requirement Conclusions and Recommendations

The revenue requirement analysis has clearly demonstrated the projected deficiencies for the sewer utility. HDR concludes that the District’s sewer rates should be adjusted to adequately meet the District’s revenue requirements. Failure to adjust the rates could potentially lead to reduced O&M activities and the need to borrow additional funds from the water department.

To mitigate the funding deficiencies shown in Table 3-3, a rate transition plan was developed which proposes rate adjustments over the five year period. The proposed rates were intentionally phased in over the analysis period to reduce the impact to rate payers.

As can be seen at the bottom of Table 3-3, with these proposed adjustments, the additional revenue generated by the rate adjustment in each year balances to the deficiencies shown in that year. In that way, the rate adjustments for each year balance to revenue requirements developed for each year.

A repayment of a \$700,000 loan over a 10 year period from the water utility for past deficiencies was included in the revenue requirement. The Board elected to transition the needed sewer rate adjustments over a few years to minimize the impact to customers. As a result of the phase-in the rate adjustments, there is expected to be a deficiency of approximately \$329,000. To cover this shortfall the analysis has assumed a loan from the Water utility, but this shortfall may also be funded by additional expenditure reductions.

The revenue requirement analysis for the District was developed to meet the financial planning and policy objectives of the District. More specifically, the revenue requirements are designed to adequately and prudently fund the District’s sewer operating and capital needs.

3.4 Summary of the Sewer Revenue Requirement Analysis

This section of the report has provided a discussion of the District’s sewer revenue requirement analysis. As a part of the revenue requirement analysis, a proposed rate transition plan was developed to support the District’s operating and capital needs. The proposed sewer rate adjustments are designed to be cost-based and balance the total revenues to the total revenue requirement in each year.

The next section of the report will discuss the development of the sewer cost of service analysis for District.



4. Development of the Cost of Service Analysis

4.1 Introduction

In the previous section, the revenue requirement analysis focused on the total sources and application of funds required to adequately fund the District’s sewer system. This section of the report will provide an overview of the sewer cost of service analysis developed for the District.

The sewer cost of service analysis is concerned with the equitable allocation of the total sewer revenue requirement between the various sewer customer classes of service (e.g., residential, Non-Residential). The sewer revenue requirement developed in Section 3 was utilized in the development of the sewer cost of service analysis. For the District’s study, the cost of service was performed with an assumed 4.1% rate adjustment. This means that while individual customer class rates may increase or decrease, the overall rate revenue will adjust according to the 4.1% described in the revenue requirement.

“The sewer cost of service analysis is concerned with the equitable allocation of the total sewer revenue requirement between the various potable water customer classes of service (e.g., residential, multi-residential, and commercial).”

4.2 Objectives of a Cost of Service Analysis

There are two primary objectives in conducting a sewer cost of service study:

- Allocate the District’s revenue requirement among the customer classes of service
- Derive average unit costs for subsequent rate designs

The objectives of the cost of service analysis are different from determining the District’s revenue requirement. As noted in the previous section, a revenue requirement analysis determines the utility’s overall financial needs, while the cost of service analysis determines the fair and equitable manner to proportionately collect the revenue requirement from the District’s various customer classes of service.

The second rationale for conducting a cost of service analysis is to ensure that proposed rates are designed such that it properly reflects the costs incurred by the District. For example, a sewer utility typically incurs costs related to flow (wastewater volumes), strength, and customer cost components. Each of these types of costs may be collected in a slightly different manner as to allow for the development of rates that collect costs in the same manner as they are incurred.

4.3 Determining the Customer Classes of Service

The first step in a cost of service analysis is to determine the customer classes of service. Based on the District’s current rate schedules, the customer classes of service used within the District’s sewer cost of service analysis were as follows:

- Residential
- Non-Residential

The District Currently has one rate but two rate classes, single family residential and all other customers or non-residential. The difference between these two classes is that the residential (single family) is charged a flat rate while the non-residential is charged that rate times their Single Family Dwelling Equivalent (SFDE).

4.4 General Cost of Service Procedures

In order to determine the cost to serve each customer class of service on the District’s sewer system, a cost of service analysis is conducted. A cost of service study utilizes a three-step approach to review costs. These steps take the form of functionalization, classification and allocation. Provided below is a detailed discussion of the sewer cost of service study conducted for the District, and the specific steps taken within the analysis.

4.4.1 Functionalization of Costs

The first analytical step in the cost of service process is called functionalization. Functionalization is the arrangement of expenses and asset (plant) data by major operating functions (e.g., collection, pumping). Within this study, there was a limited amount of functionalization of the cost data, as the District’s records functionalized a majority of the costs.

4.4.2 Classification of Costs

The second analytical task performed in a sewer cost of service study is the classification of the costs. Classification determines why the expenses were incurred or what type of need is being met. The following cost allocators were used to develop the cost of service analysis:

- **Volume-Related Costs:** Volume related costs are those costs which tend to vary with the total quantity of wastewater collected and treated.

Terminology of a Sewer Cost of Service Analysis

Functionalization – The arrangement of the cost data by functional category (e.g. collection, pumping, treatment).

Classification – The assignment of functionalized costs to cost components (e.g. volume, strength, and customer related).

Allocation – Allocating the classified costs to each class of service based upon each class’s proportional contribution to that specific cost component.

Volume-Related Costs – Costs that are classified as volume related vary with the total flow of wastewater (e.g., power for pumping).

Strength-Related Costs – Costs classified as strength related refer to the wastewater treatment function. Typically, strength-related costs are further defined as biochemical oxygen demand (BOD) and suspended solids (SS). Different types of customers may have high wastewater strength characteristics and high strength wastewater costs more to treat. Treatment facilities are often designed and sized around meeting these costs.

Customer-Related Costs – Costs classified as customer related vary with the number of customers on the system, e.g., billing costs.

Direct Assignment – Costs that can be clearly identified as belonging to a specific customer group or group of customers.

- **Strength-Related Costs:** Strength related costs are those costs associated with the additional handling and treatment of high “strength” wastewater. Strength of wastewater is typically measured in biochemical oxygen demand⁴ (BOD) and total suspended solids⁵ (SS). Increased levels of BOD or SS generally equate to increased treatment costs.
- **Customer-Related Costs:** Customer-related costs vary with the addition or deletion of a customer or a cost which is a function of the number of customers served. Customer related costs typically include the costs of billing, collecting, and accounting.
- **Revenue-Related Costs:** Some costs associated with the utility may vary with the amount of revenue received by the utility. An example of a revenue related cost would be a utility tax which is based on gross utility revenue.

As a part of this study, the District’s plant in service (assets) were functionalized and classified. Provided below in Table 4-1 is a summary of the functionalization and classification of plant in service.

Table 4 - 1 Summary of the Functionalization and Classification of the District’s Sewer Plant in Service					
Asset Category	Volume Related	Strength BOD Related	Strength Sus. Solids Related	Customer Related	Revenue Related
Collection	50.0%	25.0%	25.0%	0.0%	0.0%
Treatment	100.0%	0.0%	0.0%	0.0%	0.0%
Controls	100%	0.0%	0.0%	0.0%	0.0%
General Plant	88.0%	6.0%	6.0%	0.0%	0.0%
Total Net Plant In Service	88.0%	6.0%	6.0%	0.0%	0.0%

The classification of plant in service was based upon generally accepted cost of service principles. The details of the functionalization and classification of plant in service can be found on Exhibit 5 of the Technical Appendix.

The classification of the total revenue requirements followed a similar approach as the plant in service. As a general cost of service rule, the expense for a plant item should follow the corresponding classification of the related plant item. For example, the operation and maintenance of collection lines should be classified in the same manner as the corresponding plant in service (e.g., collection plant). This approach has been used within this cost of service

⁴ BOD is the amount of dissolved oxygen that must be present in water in order for microorganisms to decompose the organic matter in the wastewater.

⁵ TSS is the entire amount of organic and inorganic particles dispersed in wastewater.

analysis. Treatment plant was primarily classified as 50% volume related, 25% BOD and 25% SS related. The remainder of the plant assets were classified as 100% volume related. As a whole plant assets were classified as provided below in Table 4-2.

Total	Volume (VOL)	Biochemical Oxygen Demand (BOD)	Suspended Solids (SS)	Customer Related (AC + WCA)	Revenue Related (RR)
\$5,757	\$5,040	\$359	\$359	\$0	\$0
100.0%	88.0%	6.0%	6.0%	0.0%	0.0%

The detailed exhibit of the functionalization and classification of the District’s sewer revenue requirement can be found on Exhibit 11.1 of the Technical Appendix.

4.4.3 Development of the Allocation Factors

Once the classification process is complete, and the customer groups have been defined, the various classified costs were then allocated to each customer class of service. The District’s classified costs were allocated to the customer classes of service using the following allocation factors.

- **Volume Allocation Factor:** Volume-related costs are generally allocated on the basis of the estimated contribution to wastewater flows. Unlike water usage, wastewater is not metered and must be estimated. The basis for estimating wastewater contributions is a customer’s water consumption data.
- **Strength Allocation Factor:** Strength-related costs are classified between BOD and SS. Both of these types of costs are allocated to each of the classes of service based upon the assumed domestic strength level of 168 mg/l for BOD and 237 mg/l for SS. For the non-residential customer class, 174 mg/l for BOD and 248 mg/l SS was used. The detailed strength allocation factor developed for this cost of service can be found on Exhibit 4 of the Technical Appendix.
- **Customer Allocation Factor:** Customer costs within the cost of service analysis are allocated to the various customer classes of service based upon their respective customer counts. Two types of customer allocation factors were developed; actual and weighted. The actual customer allocation factor assumes that there is no disproportionate cost associated with serving a customer (e.g., postage for bills is the same regardless of the size or usage of the customer) and is based on the number of actual accounts. In contrast, a weighted customer allocation factor assumes that there is some disproportionality associated with serving different types of customers and attempts to estimate the level of difference in serving the customers. The development of the customer allocation factors can be found on Exhibit 7 of the Technical Appendix.

- **Revenue-Related Allocation Factor:** The revenue-related allocation factor was developed from the projected rate revenues for FY 2018-19. The revenue-related allocation factor can be found on Exhibit 4 of the Technical Appendix.
- **Direct Assignment:** Any costs that can be identified or shown to be directly related to a specific customer class are directly assigned within the cost of service study. In this particular study, there were no direct assignments.

The development of allocation factors is based on generally accepted cost of service principles as discussed in the Water Environment Federation, Manual of Practice #27.

4.5 Summary of the Sewer Cost of Service Analysis

In summary form, the cost of service analysis began by functionalizing the District’s plant asset records and O&M expenses. The functionalized plant and expense accounts were then classified into their various cost components. Next, the individual classification totals were then allocated to the various customer groups based on the appropriate allocation factors. For example, volume-related costs were allocated based on each customer class’ share of total wastewater contributions. The total costs classified to each cost component were allocated between the customer classes using the allocation factors. Table 4 – 3 provides a summary of allocated cost components to each customer class of service.

Table 4 – 3 Summary of the Allocation of the Classified FY 2019 Revenue Requirements to the District’s Customer Classes of Service (\$000’s)						
	Total	Volume (VOL)	Bio-chemical Oxygen Demand (BOD)	Suspended Solids (SS)	Customer Related (AC + WCA)	Revenue Related (RR)
Residential	\$4,960	\$4,345	\$308	\$307	\$0	\$0
Non-Residential	<u>797</u>	<u>695</u>	<u>51</u>	<u>51</u>	<u>0</u>	<u>0</u>
Total	\$5,757	\$5,040	\$359	\$359	\$0	\$0

The distributed expenses for each customer group were then aggregated to determine each customer group’s overall revenue responsibility. Provided in Table 4-4 is a summary of the District’s sewer cost of service analysis.

**Table 4 – 4
Summary of the Sewer Cost of Service Analysis (\$000)**

Customer Class of Service	Revenues at Present Rates	Allocated Revenue Requirement	Bal. / (Def.) of Funds	Required % Change in Rates
Residential	\$4,751	\$4,960	(\$209)	4.4%
Non-Residential	<u>779</u>	<u>797</u>	<u>(18)</u>	<u>2.3%</u>
Total	\$5,531	\$5,757	(\$227)	4.1%

The above results indicate that the customer classes of service revenue collections are slightly different than what the cost of service results indicate and some minor adjustments can be made to better align costs with revenue collected. In making this statement, it is important to note that a cost of service study is an analysis of a point in time and the District’s sewer costs, customer consumption patterns and total wastewater volumes will vary and change over time.

4.6 Summary of the Average Unit Costs

As noted at the start of this section of the report, there are two key pieces of information which are derived from the cost of service analysis; the equitable allocation of the total revenue requirement (i.e., total costs) and the derivation of the average unit costs. Average unit costs are essentially cost-based rates in that they are derived from the classified costs within the cost of service study. Each classified cost is divided by the appropriate billing unit (number of accounts or wastewater volumes) and per unit charge or cost is derived. Provided below in Table 4 – 5 is a summary of the average unit costs for the District’s sewer cost of service analysis.

**Table 4 -5
Summary of the Cost of Service Unit Costs**

	Volume Costs (\$/100 CF)	Bio-Oxygen Demand Costs (\$/100 CF)	Suspended Solids Costs (\$/100 CF)	Total Unit Cost (\$/100 CF)
Residential	\$36.71	\$2.60	\$2.60	41.91
Non-Residential	36.71	2.69	2.69	42.08
System Average	\$36.71	\$2.61	\$2.61	41.93

The average unit costs shown in Table 4 – 5 can be informative when considering cost causation but since the sewer utility does not bill based on volume it does not provide guidance for development of the rate.

4.7 Consultant’s Cost of Service Conclusions and Recommendations

The sewer cost of service analysis conducted for the District utilized generally accepted cost of service principles and methodologies. The results indicated some cost differences between the various customer classes of service. It is recommended that the results of the cost of service be used in the development of the final proposed sewer rate designs. By using the results of the cost of service analysis the District’s rates will be cost-based and reflect the requirements of Proposition 218, as it is currently understood.

4.8 Summary

This section of the report has discussed the sewer cost of service analysis developed for the District. This analysis reflects the specific and unique characteristics of the District’s sewer system and was developed using generally accepted cost of service techniques and principles. The next section of the report will review the present and proposed sewer rates for the District.



5. Development of the Proposed Sewer Rate Designs

5.1 Introduction

The final step of the District's comprehensive sewer rate study is the design of proposed sewer rates to collect the desired levels of revenues, based upon the results of the revenue requirement and cost of service analyses. As previously mentioned, overall rate adjustments are designed to collect 4.1%, but individual customer classes are adjusting subject to the cost of service results.

5.2 Rate Design Criteria and Considerations

Prudent rate administration dictates that several criteria must be considered when setting utility rates. Some of these rate design criteria are listed below:

- Rates which are easy to understand from the customer's perspective
- Rates which are easy for the utility to administer
- Consideration of the customer's ability to pay
- Continuity, over time, of the rate making philosophy
- Policy considerations (encourage efficient use, economic development, etc.)
- Provide revenue stability from month-to-month and year-to-year
- Promote efficient allocation of the resource
- Equitable and non-discriminatory (cost-based)
- Compliance with any State laws or requirements

When developing the proposed rate designs, all the above-listed criteria were taken into consideration. However, it should be noted that it is difficult, if not impossible, to design a rate that meets all the goals and objectives listed above. For example, it may be difficult to design a rate that takes into consideration customers' ability to pay, and one which is cost-based. However, to meet the intent of Proposition 218, equitable and cost-based rates is the key criterion that needs to be considered when developing the District's proposed rates. However, the other goals and objectives may be taken into consideration to develop the rate structure, and proposed rates would be based on the cost of service analysis to meet the intent of Proposition 218.

5.3 Development of Cost-Based Sewer Rates

A key objective for this study is to meet the legal requirements of Proposition 218 and clearly document the steps taken to meet those requirements, which results in the development of cost-based and equitable sewer rates. Given this, the development of the District's proposed sewer rates have been closely reviewed to meet the legal requirements of California Constitution article XIII D, section 6 (Article XIII D). A key component of Article XIII D is the development of rates which reflect the cost of providing service and are proportionally allocated between the various customer classes of service. HDR would point out that there is no single methodology for

equitably assigning sewer costs to the various customer groups. The Water Environment Federation Manual of Practice No. 27 provides various and differing methodologies which may be used to establish cost-based sewer rates. Unfortunately, Article XII D is not prescriptive and does not provide a single or specific methodology for establishing legally compliant sewer rates. Given that, HDR conducted this study using generally accepted rate setting methodologies, tailored to the District's specific facilities and customers, in order meet the intent (i.e., requirements) of Article XIII D. Furthermore, the rate setting methodology used in the District's study are based on the WEF MOP #27 and are, therefore, reasonable and appropriate.

HDR is of the opinion that the proposed rates meet the legal requirements of Article XIII D. HDR reaches this conclusion based upon the following:

- **The revenue derived from sewer rates does not exceed the funds required to provide the property related service (i.e., sewer service).** The proposed rates are designed to collect the overall revenue requirement of the District's sewer system.
- **The revenues derived from sewer rates shall not be used for any purpose other than that for which the fee or charge is imposed.** The revenues derived from the District's sewer rates are used exclusively to operate and maintain the District's sewer system.
- **The amount of a fee or charge imposed upon a parcel or person as an incident of property ownership shall not exceed the proportional costs of the service attributable to the parcel.** This cost of service analysis, and this report, has focused on the issue of proportional assignment of costs to customer classes of service in accordance with generally accepted cost of service principles. The proposed rates have appropriately grouped customers into customer classes of service (e.g., residential and non-residential) that reflect the varying consumption patterns and system requirements (i.e., the benefits they receive from and burdens they place on the system) of each customer class of service. The grouping of customers and rates into these classes of service creates the equity and fairness expected under Proposition 218 by having differing rates by customer classes of service which reflect both the level of revenue to be collected by the utility, and the manner in which these costs are incurred and equitably assigned to customer classes of service based upon their proportional impacts.

5.4 Current Industry Sewer Rate Structure Approach

At the present time, there are no specific federal or state agencies or national association requirements/regulation on sewer rate structures. The vast majority of wastewater utilities follow the guiding principles of establishing cost-based rates that meet the utility's O&M and capital infrastructure requirements. The Environmental Protection Agency (EPA) provides pricing guidelines for wastewater utilities, but the focus is primarily on assuring adequate funding to maintain facilities, and not on a specific rate structure.

The California Water Efficiency Partnership (formerly the California Urban Water Conservation Council) does have Best Management Practices (BMP) encouraging the adoption of volumetric-based wastewater utilities. The Partnership and other water conservation experts believe that

having volume-based wastewater rates, where the billing is based upon water consumption, encourages water conservation. Whether the majority of consumers make the connection between the volumetric portion of their bill and their water consumption is unclear. Simply stated, most wastewater utilities do not adopt volume-based wastewater rates to encourage water conservation. Rather, most utilities view volumetric-based billing as a method that enhances customer/rate equity.

5.5 Overview of the Present Sewer Rate Structure

The District currently has two rate schedules; a residential rate schedule, and a non-residential rate schedule. Provided below is a more detailed discussion of the present rate structures by customer class of service.

Residential - The District’s current residential sewer rate is a flat monthly fixed charge. This is a generally-accepted sewer rate structure and it is used by sewer utilities across California and the U.S. A fixed charge provides revenue stability for the District as well as reflects the fact that the majority of the District’s costs are fixed in nature and not a function of the volume of wastewater contributed or conveyed on the system.

Non-Residential – Non-Residential customers also have a similar structure with a fixed monthly charge except in the non-residential customers case it is called a Single Family Dwelling Equivalent (SFDE) charge a multiplier is assigned to each customer that the charge is multiplied by to determine the customers total bill.

5.6 Development of the Proposed Sewer Rates

The revenue requirement analysis was used to determine the adequate and prudent level of funding needed to operate the District’s sewer system. The results of the revenue requirement analysis provided the recommended rate adjustments needed to fully fund the sewer utility.

Given the development of the overall revenue needs of the utility and the cost of service analysis the next component of the study is rate design. Provided below in Table 5-1 is a summary of the present and proposed sewer rates for the District.

Table 5-1 Current and Status Proposed Rates						
	Present Rates	2018-19	2019-20	2020-21	2021-22	2022-23
Service Charge (Bi-Monthly)*						
Residential	\$172.32	\$179.92	\$187.24	\$194.78	\$202.58	\$210.64
Non-Residential (per SFDE)	172.32	176.25	183.38	190.74	198.33	206.18

*The rates includes the R&R rate of \$37.32 per 2 month billing cycle in all years.

In viewing the present and proposed rate designs it should be noted that the structure of the rates has not changed. From the customers perspective the rates have increased but what has not changed is that there are two components of the rates, operations and R&R components. The current R&R component of the rate is \$37.32 per 2 month and while the overall rates might increase the R&R component remains the same at \$37.32 per 2 months of usage. Shown below in Table 5 – 2 is a summary of the allocated costs and the revenue that the proposed rates are calculated to produce.

Table 5 – 2			
Comparison of the FY 2019 Proposed Revenues and Allocated Costs (\$000's)			
	Present Revenues	Allocated Revenues	Proposed Revenues
Residential	\$4,751	\$4,960	\$4,960
Non-Residential	<u>779</u>	<u>797</u>	<u>797</u>
Total	\$5,531	\$5,757	\$5,757

5.7 Consultant’s Rate Design Conclusions and Recommendations

The development of the proposed sewer rates is based on the overall level of revenues developed as part of the revenue requirement analysis and the proportional allocation of costs to the customer classes of service based on the cost of service recommendations. HDR would recommend the adoption of the proposed rates which are cost-based, equitable, proportionate to the cost of service, and reflect the specific costs of the District’s sewer system.

5.8 Summary

This completes the comprehensive sewer rate study for the District. This study has provided a comprehensive review of the District’s sewer rates. The study is intended to provide to the District a set of cost-based rates that will allow the District to meet their current and projected sewer system financial obligations and major capital projects for the time period reviewed, while meeting the requirements of Proposition 218.

The results of the study were presented to the District Board on May 23, 2018 during a public hearing. At the completion of the study, given no majority protest, the Board adopted the proposed rates as outlined in this study.



Technical Appendix – Sewer Technical Analysis



Calaveras County Water District
 Sewer Utility - 500
 Revenue Requirement
 Exhibit 1 - Escalation Factors

ESCALATION FACTORS	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	Notes
Revenues:								
Residential	0.0%	0.5%	1.0%	1.0%	1.0%	1.0%	1.0%	
Residential-Multi	Budget	0.5%	1.0%	1.0%	1.0%	1.0%	1.0%	
Commercial	Budget	0.5%	1.0%	1.0%	1.0%	1.0%	1.0%	
Other	Budget	0.5%	1.0%	1.0%	1.0%	1.0%	1.0%	
Property Tax	Budget	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	
Electric Revenue	Budget	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	
Misc. Revenue	Budget	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Expenses								
Labor	Budget	Budget	2.0%	2.0%	3.0%	3.0%	3.0%	
Benefits	Budget	Budget	4.8%	4.8%	3.0%	3.0%	3.0%	
Materials & Supplies	Budget	Budget	3.0%	3.0%	3.0%	3.0%	3.0%	
Medical	Budget	Budget	4.0%	4.0%	3.0%	3.0%	3.0%	
Equipment	Budget	Budget	3.0%	3.0%	3.0%	3.0%	4.2%	
Miscellaneous	Budget	Budget	2.5%	2.5%	2.5%	2.5%	2.5%	
Power/Utilities	Budget	Budget	4.0%	4.0%	4.0%	4.0%	4.0%	
Services	Budget	Budget	2.5%	2.5%	2.5%	2.5%	2.5%	
Cell Phone	Budget	Budget	3.0%	3.0%	3.0%	3.0%	3.0%	
Permits	Budget	Budget	7.0%	7.0%	7.0%	7.0%	7.0%	
Growth	Budget	Budget	1.0%	1.0%	1.0%	1.0%	1.0%	
Flat	Budget	Budget	0.0%	0.0%	0.0%	0.0%	0.0%	
Investment Interest	0.50%	0.50%	0.50%	1.00%	1.00%	1.00%	1.00%	
Bond Interest Rate	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	
Bond Terms	20	20	20	20	20	20	20	
Loan Interest Rate	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	

Calaveras County Water District
Sewer Utility - 500
Revenue Requirement
Exhibit 2 - Sources & Application of Funds

	Budget		Projected					Notes
	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	
Sources of Funds								
Revenues								
Residential	\$4,625,519	\$4,704,292	\$4,751,335	\$4,798,849	\$4,846,837	\$4,895,306	\$4,944,259	As Residential
Residential-Multi	128,208	130,391	131,695	133,012	134,342	135,686	137,043	As Residential-Multi
Commercial	573,714	583,484	589,319	595,212	601,165	607,176	613,248	As Commercial
Other	56,784	57,751	58,329	58,912	59,501	60,096	60,697	As Other
Total Rate Revenues	\$5,484,679	\$5,475,919	\$5,530,679	\$5,585,985	\$5,641,845	\$5,698,263	\$5,755,246	
Other Revenues								
Fees								
Account Establishment Fees	\$2,850	\$2,700	\$3,000	\$3,000	\$3,000	\$3,000	\$3,000	As Misc. Revenue
Delinquent Account Fees	55,900	57,200	57,200	57,200	57,200	57,200	57,200	As Misc. Revenue
Repairs/Reimbursements	1,300	130	130	130	130	130	130	As Misc. Revenue
Install Water Meter	0	0	0	0	0	0	0	As Misc. Revenue
Other Installation Charges	130	0	0	0	0	0	0	As Misc. Revenue
Inspection Fees	6,440	4,250	5,100	5,100	5,100	5,100	5,100	As Misc. Revenue
Plan Check Fee	910	390	0	0	0	0	0	As Misc. Revenue
Backflow Certification	0	0	0	0	0	0	0	As Misc. Revenue
Wholesale/Irrigation/Hydrant Sales/Lancha Plana	0	0	0	0	0	0	0	As Misc. Revenue
Developer Reimbursements	8,310	6,500	6,500	6,500	6,500	6,500	6,500	As Misc. Revenue
Other	130	\$130	\$130	\$130	\$130	\$130	130	As Misc. Revenue
Non-Operating Revenue								
Stand-by Fees	\$34,450	\$34,450	\$34,450	\$34,450	\$34,450	\$34,450	34,450	As Misc. Revenue
Restricted Property Taxes (net of transfer to reserves)	\$339,823	\$351,812	\$358,846	\$366,024	\$373,345	\$380,812	388,428	As Property Tax
Unrestricted Property Taxes (net of transfer to reserve)	\$248,081	\$252,403	\$257,450	\$262,599	\$267,851	\$273,208	278,672	As Property Tax
Investment Income (allocated to operating)	0	0	0	0	0	0	0	As Misc. Revenue
Other:								
Power Sales, North Fork	\$136,916	\$140,400	\$143,208	\$146,072	\$148,786	\$151,973	\$153,493	As Other
Power Sales, New Hogan	39,000	59,020	45,500	45,500	45,500	45,500	45,955	As Other
Grants/OES Reimbursements	0	0	0	0	0	0	0	As Other
Sale of Surplus Equipment	0	0	0	0	0	0	0	As Other
Copies	26	0	0	0	0	0	0	As Other
Misc. Operating Revenue	6,760	3,900	3,900	3,900	3,900	3,900	3,939	As Other
Other District Reimbursements	3,900	2,600	2,600	2,600	2,600	2,600	2,626	As Other
Rental Income per schedule	7,560	15,775	15,808	16,016	16,432	16,432	16,596	As Other
Total Other Revenues	\$892,486	\$931,659	\$933,822	\$949,221	\$964,924	\$980,935	\$996,219	
Total Sources of Funds	\$6,377,165	\$6,407,578	\$6,464,501	\$6,535,206	\$6,606,769	\$6,679,199	\$6,751,465	

Calaveras County Water District
 Sewer Utility - 500
 Revenue Requirement
 Exhibit 2 - Sources & Application of Funds

	Budget			Projected				Notes
	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	
Applications of Funds								
Administration - General								
Salaries/Wages	\$2,040,386	\$1,877,549	\$1,935,140	\$1,984,970	\$2,044,519	\$2,105,855	\$2,169,031	As Labor
Overtime	56,825	70,292	82,366	84,560	87,096	89,709	92,401	As Benefits
Benefits	1,266,255	1,259,020	1,324,228	1,366,709	1,407,710	1,449,941	1,493,440	As Benefits
Medical/Dental Reimbursement	14,510	9,216	9,216	9,216	9,492	9,777	10,071	As Medical
Total Administrative - General	\$3,377,976	\$3,216,077	\$3,350,950	\$3,445,455	\$3,548,818	\$3,655,283	\$3,764,941	
Maintenance Expense								
Utilities	\$499,978	\$429,487	\$435,370	\$442,418	\$460,115	\$478,520	\$497,660	As Power/Utilities
Materials & Supplies	411,336	413,538	383,285	389,000	400,670	412,690	425,071	As Materials & Supplies
Safety Materials & Supplies	9,000	13,535	13,755	13,978	14,398	14,830	15,275	As Materials & Supplies
Administrative Technology	8,840	9,180	9,329	9,481	9,718	9,961	10,210	As Services
Chemicals	176,400	171,400	174,185	177,015	182,326	187,795	193,429	As Materials & Supplies
Outside Services/Repairs	67,381	58,496	59,446	60,412	61,923	63,471	65,057	As Services
Service Maintenance Contracts	117,032	114,466	116,002	117,884	120,831	123,852	126,948	As Services
Drug & Alcohol Testing	390	405	209	211	216	221	227	As Services
Building Repairs	780	1,350	1,372	1,394	1,436	1,479	1,524	As Labor
Recruiting	2,600	1,350	1,372	1,394	1,436	1,479	1,524	As Labor
Claims/Damages	1,300	1,350	1,372	1,394	1,429	1,465	1,501	As Miscellaneous
Computer Licenses and Maint Agreements	4,872	5,697	5,790	5,884	6,031	6,181	6,336	As Services
Janitorial Services	6,058	6,291	6,393	6,497	6,660	6,826	6,997	As Services
Laboratory Services	88,000	98,000	99,592	101,211	103,741	106,334	108,993	As Services
Outside Legal Fees	83,200	67,230	62,922	63,897	65,495	67,132	68,811	As Services
Accounting/Auditing	8,242	9,072	9,219	9,369	9,603	9,844	10,090	As Services
Advertising/Publicity	390	540	549	558	572	586	601	As Services
Elections	1,820	0	2,970	0	0	0	0	As Materials & Supplies
Professional Services	126,229	127,029	74,971	75,716	77,609	79,549	81,538	As Services
Vehicle Expense	158,750	131,250	133,383	135,550	139,616	143,805	149,898	As Equipment
Rental Exp/Vehicle and Equip.	4,900	9,900	10,061	10,224	10,531	10,847	11,307	As Equipment
Forms and Supplies	559	608	617	627	646	666	686	As Materials & Supplies
Permits & Licenses	8,400	4,000	4,065	4,131	4,234	4,340	4,449	As Miscellaneous

Calaveras County Water District
 Sewer Utility - 500
 Revenue Requirement
 Exhibit 2 - Sources & Application of Funds

	Budget			Projected				Notes
	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	
Postage	3,900	5,562	5,652	5,744	5,917	6,094	6,277	As Materials & Supplies
Publications and Subscriptions	1,395	703	579	587	602	617	632	As Miscellaneous
Dues and Memberships	32,034	30,253	30,661	31,158	31,937	32,735	33,554	As Miscellaneous
Recording Title Reports	0	0	0	0	0	0	0	As Services
Printing	260	68	1	0	0	0	0	As Equipment
Training, Conferences and Travel	27,224	31,582	22,130	22,463	23,024	23,600	24,190	As Services
Other Travel Costs	8,801	2,430	9,198	9,215	9,446	9,682	9,924	As Miscellaneous
Director Conf & Committee Expense	0	0	0	0	0	0	0	As Miscellaneous
Hogan Payment-Purchased Power	76,248	79,181	80,467	81,775	85,046	88,448	91,985	As Power/Utilities
Purchased Water	0	0	0	0	0	0	0	As Power/Utilities
Retired Employee Costs	306,566	153,360	155,852	158,384	163,136	168,030	173,071	As Labor
Bad Debt Expense	14,300	12,960	13,171	13,385	13,719	14,062	14,414	As Miscellaneous
Unemployment Claims	520	540	549	558	574	592	609	As Labor
Insurance	58,500	54,000	54,877	55,769	57,163	58,592	60,057	As Services
Fed, State & County Wtr/Swr Fees	185,000	175,000	177,843	180,733	185,251	189,883	194,630	As Miscellaneous
Federal Dam & Admin Fees	520	540	549	558	572	586	601	As Miscellaneous
State Water Right Fees	8,580	8,100	8,232	8,365	8,574	8,789	9,009	As Miscellaneous
Mandated Plans	0	9,450	154	73	75	77	79	As Miscellaneous
Strategic Plans/Updates.	26,000	18,509	301	144	147	151	155	As Services
Water Conservation	6,500	4,050	4,116	4,183	4,287	4,394	4,504	As Miscellaneous
Merchant Credit Card Discount	14,560	16,200	16,463	16,731	16,898	17,067	17,238	As Growth
Misc. Operating/Maint. Exp.	0	0	0	0	0	0	0	As Miscellaneous
Equipment Purchased	0	0	0	0	0	0	0	As Equipment
Agent Fees	520	540	549	558	572	586	601	As Miscellaneous
Calaveras County Fees	0	0	0	0	0	0	0	As Miscellaneous
Misc. Non-Operating Costs	2,283	2,236	(0)	0	0	0	0	As Miscellaneous
Total Maintenance Expense	\$2,560,169	\$2,279,435	\$2,187,573	\$2,218,629	\$2,286,176	\$2,355,857	\$2,429,657	
Capital Outlays								
Vehicles / Equipment	\$137,142	\$296,420	\$145,400	\$152,400	\$159,400	\$166,400	\$173,451	As Equipment
Projects	34,100	80,000	40,000	42,000	44,000	46,000	47,949	As Equipment
Total Capital Outlays	\$171,242	\$376,420	\$185,400	\$194,400	\$203,400	\$212,400	\$221,400	
Total Oper. & Maint. Expense	\$6,109,387	\$5,871,932	\$5,723,923	\$5,858,483	\$6,038,394	\$6,223,540	\$6,415,999	
Capital Expenditures Funding	\$1,166,082	\$1,175,919	\$1,187,679	\$1,199,555	\$1,211,551	\$1,223,666	\$1,235,903	

Calaveras County Water District
Sewer Utility - 500
Revenue Requirement
Exhibit 2 - Sources & Application of Funds

	Budget			Projected				Notes
	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	
Debt Service								
PERS Side Fund - Principal	\$0	\$81,065	\$69,395	\$0	\$0	\$0	\$0	Debt Schedule
PERS Side Fund - Interest	0	3,339	941	0	0	0	0	
BBVA Compass Bond Refinance - Principal	74,398	19,120	0	0	0	0	0	20 yrs @ 0.5%
BBVA Compass Bond Refinance - Interest	860	122	0	0	0	0	0	
Umpqua Capital R&R Loan - Principal	284,936	347,418	374,311	382,377	390,686	0	0	Debt Schedule
Umpqua Capital R&R Loan - Interest	36,754	30,321	22,699	14,634	6,324	0	0	
Vac-Con Loan - Principal	17,546	18,618	0	0	0	0	0	
Vac-Con Loan - Interest	788	319	0	0	0	0	0	
Wallace Loan Payoff - Principal	24,612	0	0	0	0	0	0	
Wallace Loan Payoff - Interest	1,795	0	0	0	0	0	0	
New Hogan (US Bureau of Reclamation Note 1970) - Pri	14,217	14,919	14,981	15,834	16,547	17,292	18,069	
New Hogan (US Bureau of Reclamation Note 1970) - Int	4,016	5,965	4,925	4,311	3,670	2,999	2,298	
Admin Building - Principal	0	0	154,100	157,952	161,901	165,949	170,097	Defer Principal until 2018-19
Admin Building - Interest	19,500	20,250	20,250	16,397	12,449	8,398	4,253	
New Vac Con -Principal	0	0	16,770	23,126	24,032	24,974	25,952	
New Vac Con -Interest	0	0	3,294	3,627	2,721	1,779	800	
USDA Reach 3a Bond - Principal	0	0	0	0	0	0	0	
USDA Reach 3a Bond - Interest	0	0	0	0	0	0	0	
New Revenue Bond - Principal	0	0	0	0	0	0	0	20 yrs @ 5.0%
New Revenue Bond - Interest			0	0	0	0	0	
Net Debt Service	\$479,422	\$541,456	\$681,667	\$618,259	\$618,330	\$221,390	\$221,469	
Change in Working Capital (+ = To Reserves / - = From Reserves)								
Operating Fund	(\$734,477)	(\$340,855)	(\$328,511)	(\$285,110)	(\$152,440)	(\$8,902)	\$143,210	
Repayment from Water Fund - Interest				34,770	31,594	28,355	25,052	10 years, @ 2%
Repayment from Water Fund - Principal				158,770	161,945	165,184	168,488	
BBVA Debt Service - Expansion Funds	(50,443)	(12,912)	0	0	0	0	0	
Capital R&R Debt Service - R&R Funds	(321,690)	(377,739)	(397,010)	(397,011)	(397,010)	0	0	
OP HQ Interest Payment - Fund 108	(19,500)	(20,250)	(20,250)	(16,397)	(12,449)	(8,398)	(4,253)	
operating funding gap	0	(106,626)	0	0	0	0	0	
Wallace Loan Payoff - Fund 108	(21,168)	0	0	0	0	0	0	
New Hogan O&M Costs	(27,300)	0	0	0	0	0	0	
Capital Equipment/Projects - Fund 108	(123,476)	(158,000)	0	0	0	0	0	
Capital R&R Projects - R&R Funds	(52,834)	(138,138)	(128,757)	(140,915)	(142,324)	(143,747)	(145,184)	
CIP Projects	(26,838)	(27,210)	(27,482)	(27,757)	(28,034)	(28,315)	(28,598)	
Total change in Working Capital	(\$1,377,727)	(\$1,181,729)	(\$902,011)	(\$673,651)	(\$538,718)	\$4,177	\$158,714	

Calaveras County Water District
 Sewer Utility - 500
 Revenue Requirement
 Exhibit 2 - Sources & Application of Funds

	Budget			Projected				Notes
	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	
Total Revenue Requirements	\$6,377,165	\$6,407,578	\$6,691,258	\$7,002,647	\$7,329,557	\$7,672,774	\$8,032,085	
Balance/(Deficiency) of Funds	\$0	\$0	(\$226,758)	(\$467,441)	(\$722,788)	(\$993,575)	(\$1,280,620)	
Rate Adjust. as a % of Rate Rev	0.0%	0.0%	4.1%	8.4%	12.8%	17.4%	22.3%	
Proposed Rate Adjustment	0.0%	0.0%	4.1%	4.1%	4.1%	4.1%	4.1%	
Addt'l Rev from Proposed Adjustments	\$0	\$0	\$226,758	\$467,441	\$722,788	\$993,575	\$1,280,620	
Net Bal/(Def) of Funds After Rate Adj.	0	0	0	(0)	0	0	0	
Additional Rate Increase Needed	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Debt Service Coverage Ratio								
Before Rate Adjustment	2.99	3.16	2.83	3.03	2.88	7.59	7.10	
After Rate Adjustment	2.99	3.16	3.16	3.79	4.05	12.07	12.88	
Average Residential (Bi-Monthly)	\$172.32	\$172.32	\$179.39	\$186.74	\$194.40	\$202.37	\$210.66	
\$ Change Per Month			7.07	7.35	7.66	7.97	8.30	
Cumulative \$ Change per Month			7.07	14.42	22.08	30.05	38.34	
Operating Fund								
Beginning Working Capital Balance [2]	\$0	(\$734,477)	(\$1,075,332)	(\$381,361)	(\$666,471)	(\$818,910)	(\$827,813)	
Plus: Change in Working Capital General	0	0	1,738,483	0	0	0	143,210	
Less: Uses of Funds	734,477	340,855	1,044,511	285,110	152,440	8,902	0	
Ending Balance	(\$734,477)	(\$1,075,332)	(\$381,361)	(\$666,471)	(\$818,910)	(\$827,813)	(\$684,603)	
Operating Fund Target Balance (90 Days O&M)		\$1,447,874	\$1,411,378	\$1,444,558	\$1,488,919	\$1,534,572	\$1,582,027	

[1] minimum balance = 90 days O&M plus taxes

[2] Beginning balances from Statement of Accounts

Calaveras County Water District
 Sewer Utility - 500
 Revenue Requirement
 Exhibit 3 - Capital Funding

	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	
<i>R&R Rate Revenue</i>								
Residential	\$1,001,766	\$1,010,217	\$1,020,319	\$1,030,523	\$1,040,828	\$1,051,236	\$1,061,749	As Residential
Residential-Multi	27,766	\$28,001	28,281	28,564	28,849	29,138	29,429	As Residential-Multi
Commercial	124,251	\$125,300	126,553	127,818	129,096	130,387	131,691	As Commercial
Other	12,298	\$12,402	12,526	12,651	12,777	12,905	13,034	As Other
Total R&R Rate Revenue	\$1,166,082	\$1,175,919	\$1,187,679	\$1,199,555	\$1,211,551	\$1,223,666	\$1,235,903	
Transfer to:								
R&R Funds for Operations								
Transfer to Ops for Capital R&R Debt Service - R&R Fund:	\$321,690	\$377,739	\$397,010	\$397,011	\$397,010	\$0	\$0	
Capital R&R Projects - R&R Funds	52,834	138,138	128,757	140,915	142,324	143,747	145,184	
Transfer to Ops for CIP Sal/ben	26,838	27,210	27,482	27,757	28,034	28,315	28,598	
Expansion Funds for Operations	50,443	12,912	0	0	0	0	0	

Calaveras County Water District
 Sewer Utility - 500
 Revenue Requirement
 Exhibit 3 - Capital Funding

		2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
Capital Outlays								
La Contenta	Master Plan	\$0	\$30,000	\$0	\$0	\$0	\$0	\$0
Copper Cove	Master Plan	0	55,000	0	0	0	0	0
Copper Cove	Report Waste Discharge/Permit	182,033	75,000	0	0	0	0	0
Wallace	Report Waste Discharge/Permit	0	25,000	0	0	0	0	0
Wallace	Plant Renovations/SCADA/Electrical	0	50,000	200,000	0	0	0	0
Vallecito	Title 22 / TSTAN Project	0	140,000	140,000	0	0	0	0
Vallecito	I&I Equalization Improvements	0	200,000	200,000	0	0	0	0
Copper Cove	Pond 6 Enlargement/Expansion	0	300,000	1,000,000	4,200,000	0	0	0
West Point	Wilseyville Consolidation Grant	0	250,000	2,500,000	2,000,000	0	0	0
Poker Flat	Lift Station 8, 12 & 13 Bypass	0	300,000	1,000,000	200,000	0	0	0
Lake Tulloch	Lift Station 15 & 18 Renovations	0	300,000	500,000	200,000	0	0	0
Forest Meadows	UV System Replacement	0	0	0	0	0	0	0
La Contenta	Secondary Clarifier	0	0	0	0	0	0	0
Arnold	Secondary Clarifier	0	0	0	0	0	0	0
Various	Arc Flash Assessments	0	0	0	0	0	0	0
Various	Lift Stations (LS2,WP,etc)	0	0	0	0	0	0	0
Various	Pipeline/Forcemain Replacement	0	0	75,000	75,000	0	0	0
Various	Road Repairs	0	0	0	0	0	0	0
Various	Biosolids/Sludge Handling/Disposal	0	0	0	0	0	0	0
Total Planned Capital Improvements		\$182,033	\$1,725,000	\$5,615,000	\$6,675,000	\$0	\$0	\$0
Unplanned Capital		0	0	0	0	0	0	0
Total Capital Outlays		\$182,033	\$1,725,000	\$5,615,000	\$6,675,000	\$0	\$0	\$0

Calaveras County Water District
 Sewer Utility - 500
 Revenue Requirement
 Exhibit 3 - Capital Funding

	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
Use of R&R Funds	\$182,033	\$760,000	\$1,448,333	\$2,341,667	\$0	\$0	\$0
Use of Expansion Funds	0	585,000	1,416,667	2,333,333	0	0	0
Use of Grant Funds	0	340,000	2,590,000	2,000,000	0	0	0
Other Funding	0	40,000	160,000	0	0	0	0
Transfers from Operating	0	0	0	0	0	0	0
Revenue Bonds	0	0	0	0	0	0	0
	\$182,033	\$1,725,000	\$5,615,000	\$6,675,000	\$0	\$0	\$0
R&R Funds							
Beginning Fund Balance	\$2,259,150	\$2,856,046	\$2,742,523	\$1,938,262	\$232,772	\$885,725	\$1,956,703
Plus:							
R&R Rate Revenue	\$1,166,082	\$1,175,919	\$1,187,679	\$1,199,555	\$1,211,551	\$1,223,666	\$1,235,903
Transfer from Operations	0	0	0	0	0	0	0
Interest Earnings	14,209	13,644	9,643	2,305	8,770	19,373	30,188
Less:							
Transfer to Operations	\$401,362	\$543,087	\$553,249	\$565,682	\$567,368	\$172,062	\$173,782
R&R Capital Projects	\$182,033	\$760,000	\$1,448,333	\$2,341,667	\$0	\$0	\$0
Ending Fund Balance	\$2,856,046	\$2,742,523	\$1,938,262	\$232,772	\$885,725	\$1,956,703	\$3,049,011
Expansion Funds:							
Beginning Fund Balance	\$2,312,713	2,312,713	1,727,713	311,046	(2,022,287)	(2,022,287)	(2,022,287)
Plus:							
Addition to Fund	0	0	0	0	0	0	0
Less:							
Expansion Capital Projects	0	585,000	1,416,667	2,333,333	0	0	0
Transfer to Operations							
Ending Fund Balance	\$2,312,713	\$1,727,713	\$311,046	(\$2,022,287)	(\$2,022,287)	(\$2,022,287)	(\$2,022,287)

Calaveras County Water District
 Sewer Utility - 500
 Development of Allocation Factors
 Exhibit 4 - Volume

	Volume			
	Usage (100 CF) [1]	I&I [2] 35%	Wastewater Flow (MGD)	% of Total
Residential	118,376	159,807	0.59	86.2%
Residential-Multi	3,562	4,809	0.02	2.6%
Commercial	13,983	18,877	0.07	10.2%
Other	1,384	1,868	0.01	1.0%
	-----	-----	-----	-----
Total Actual Flow	137,306	185,362	0.68	100.0%

Allocation Factor (VOL)

[1] 2016/17 Production Reports 0.67 MGD

[2] 2016/17 Production Report Inflow and Infiltration = % Change Avg Dry weather and Wet weather

Exhibit 4 - Wastewater Strength

	Annual Flow (100 CF)	Bio-Chemical Oxygen Demand			Total Suspended Solids		
		Avg Factor (mg/l)	Calculated lbs	% of Total	Avg Factor (mg/l)	Calculated lbs	% of Total
Residential	118,376	168	124,152	86%	237	175,142	86%
Residential-Multi	3,562	168	3,736	3%	237	5,271	3%
Commercial	13,983	175	15,277	11%	250	21,824	11%
Other	1,384	175	1,512	1%	250	2,160	1%
	-----	-----	-----	-----	-----	-----	-----
Total	137,306		144,676	100%		204,397	100%
	18,930			(BOD)			(TSS)

Calaveras County Water District
 Sewer Utility - 500
 Development of Allocation Factors
 Exhibit 4 - Customer

	Actual Customer		Customer Service & Accounting		
	Number of Billing Units	% of Total	Weighting Factor	Weighted Customer	% of Total
Residential	4,474	85.9%	1.00	4,474	85.9%
Residential-Multi	124	2.4%	1.00	124	2.4%
Commercial	555	10.7%	1.00	555	10.7%
Other	55	1.1%	1.00	55	1.1%
	-----	-----		-----	-----
Total	5,208	100.0%		5,208	100.0%
Allocation Factor		(AC)			(WCA)

Exhibit 4 - Fire Protection & Revenue Related

	Revenue Related	
	2018-19	
	Present Rates	% of Total
Residential	\$4,751,335	85.91%
Residential-Multi	131,695	2.38%
Commercial	589,319	10.66%
Other	58,329	1.05%
	-----	-----
Total	\$5,530,679	100.00%

Allocation Factor (RR)

Calaveras County Water District
Sewer Utility - 500
Functionalization & Classification of
Plant in Service
Exhibit 5 - Plant Allocation

Account Title	Total Plant 2006	Volume (VOL)	Bio-oxygen Demand (BOD)	Suspended Solids (TSS)	Customer Related		Revenue Related (RR)	Direct Assign. (DA)	Basis of Classification
					Actual Customer (AC)	Weighted for: Customer Acct/Svcs (WCA)			
Treatment Plant									
Aerator	\$79,974	\$39,987	\$19,994	\$19,994	\$0	\$0	\$0	\$0	50% (VOL)/ 25% (BOD)/ 25% (TSS)
Belt Press	250,427	125,213	62,607	62,607	0	0	0	0	50% (VOL)/ 25% (BOD)/ 25% (TSS)
Lagoons	10,174	5,087	2,544	2,544	0	0	0	0	50% (VOL)/ 25% (BOD)/ 25% (TSS)
Clarifier	17,299	8,650	4,325	4,325	0	0	0	0	50% (VOL)/ 25% (BOD)/ 25% (TSS)
Lab Equipment	23,982	11,991	5,996	5,996	0	0	0	0	50% (VOL)/ 25% (BOD)/ 25% (TSS)
Mixer	11,853	5,927	2,963	2,963	0	0	0	0	50% (VOL)/ 25% (BOD)/ 25% (TSS)
Polymer Blend Unit	23,040	11,520	5,760	5,760	0	0	0	0	50% (VOL)/ 25% (BOD)/ 25% (TSS)
Sludge Feed Pump	20,146	10,073	5,037	5,037	0	0	0	0	50% (VOL)/ 25% (BOD)/ 25% (TSS)
Treatment Plant	11,627,614	5,813,807	2,906,904	2,906,904	0	0	0	0	50% (VOL)/ 25% (BOD)/ 25% (TSS)
UV System	26,064	13,032	6,516	6,516	0	0	0	0	50% (VOL)/ 25% (BOD)/ 25% (TSS)
Overflow Tank	9,099	9,099	0	0	0	0	0	0	100% (VOL)

Total Source of Supply	\$12,099,673	\$6,054,386	\$3,022,644	\$3,022,644	\$0	\$0	\$0	\$0	
Collection									
Collection	\$4,351,028	\$4,351,028	\$0	\$0	\$0	\$0	\$0	\$0	100% (VOL)
Lift Station	5,047,264	5,047,264	0	0	0	0	0	0	100% (VOL)
Pumps	490,393	490,393	0	0	0	0	0	0	100% (VOL)
Flowmeter	4,348	4,348	0	0	0	0	0	0	100% (VOL)

Total Pumping Plant	\$9,893,032	\$9,893,032	\$0	\$0	\$0	\$0	\$0	\$0	

Calaveras County Water District
 Sewer Utility - 500
 Functionalization & Classification of
 Plant in Service
 Exhibit 5 - Plant Allocation

Account Title	Total Plant 2006	Volume (VOL)	Bio-oxygen Demand (BOD)	Suspended Solids (TSS)	Customer Related		Revenue Related (RR)	Direct Assign. (DA)	Basis of Classification
					Actual Customer (AC)	Weighted for: Customer Acct/Svcs (WCA)			
Control Systems									
Controls	\$29,116	\$29,116	\$0	\$0	\$0	\$0	\$0	\$0	100% (VOL)
SCADA	205,939	205,939	0	0	0	0	0	0	100% (VOL)
Software	5,305	5,305	0	0	0	0	0	0	100% (VOL)
	-----	-----	-----	-----	-----	-----	-----	-----	
Total Controls	\$240,360	\$240,360	\$0	\$0	\$0	\$0	\$0	\$0	
Unidentified Improvements	\$29,528,315	\$29,528,315	\$0	\$0	\$0	\$0	\$0	\$0	100% (VOL)
Plant Before General Plant	\$51,761,380	\$45,716,093	\$3,022,644	\$3,022,644	\$0	\$0	\$0	\$0	
General Plant									
Building & Lot	\$219,014	\$193,435	\$12,789	\$12,789	\$0	\$0	\$0	\$0	as Plant Before General
Office Equipment	187,568	165,662	10,953	10,953	0	0	0	0	as Plant Before General
Office Computer/Software	245,875	217,159	14,358	14,358	0	0	0	0	as Plant Before General
Vehicles	482,106	425,800	28,153	28,153	0	0	0	0	as Plant Before General
Shop & Garage Equip	172,231	152,116	10,058	10,058	0	0	0	0	as Plant Before General
Power Equipment	119,682	105,704	6,989	6,989	0	0	0	0	as Plant Before General
Communications Equip.	36,017	31,811	2,103	2,103	0	0	0	0	as Plant Before General
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Total General Plant	\$1,462,493	\$1,291,686	\$85,403	\$85,403	\$0	\$0	\$0	\$0	
TOTAL PLANT IN SERVICE	\$53,223,873	\$47,007,779	\$3,108,047	\$3,108,047	\$0	\$0	\$0	\$0	
Less: Accumulated Depreciation	\$5,582,124	\$4,930,180	\$325,972	\$325,972	\$0	\$0	\$0	\$0	as Total Plant in Service
	-----	-----	-----	-----	-----	-----	-----	-----	
Total Accumulated Depreciation	\$5,582,124	\$4,930,180	\$325,972	\$325,972	\$0	\$0	\$0	\$0	
TOTAL NET PLANT IN SERVICE	\$47,641,749	\$42,077,600	\$2,782,075	\$2,782,075	\$0	\$0	\$0	\$0	

Calaveras County Water District
 Sewer Utility - 500
 Functionalization & Classification of
 Revenue Requirements
 Exhibit 6 - Allocation of Expenses

	Total Expenses 2018-19	Volume (VOL)	Bio-oxygen Demand (BOD)	Suspended Solids (TSS)	Customer Related		Revenue Related (RR)	Direct Assign. (DA)	Basis of Classification
					Actual Customer (AC)	Weighted for: Customer Acct/Svcs (WCA)			
Applications of Funds									
Administration - General									
Salaries/Wages	\$1,935,140	\$1,709,132	\$113,004	\$113,004	\$0	\$0	\$0	\$0	as Plant Before General
Overtime	82,366	72,747	4,810	4,810	0	0	0	0	as Plant Before General
Benefits	1,324,228	1,169,569	77,329	77,329	0	0	0	0	as Plant Before General
Medical/Dental Reimbursement	9,216	8,140	538	538	0	0	0	0	as Plant Before General
Total Administrative - General	\$3,350,950	\$2,959,588	\$195,681	\$195,681	\$0	\$0	\$0	\$0	
Maintenance Expense									
Utilities	\$435,370	\$384,523	\$25,424	\$25,424	\$0	\$0	\$0	\$0	as Plant Before General
Materials & Supplies	383,285	338,520	22,382	22,382	0	0	0	0	as Plant Before General
Safety Materials & Supplies	13,755	12,148	803	803	0	0	0	0	as Plant Before General
Administrative Technology	9,329	8,240	545	545	0	0	0	0	as Plant Before General
Chemicals	174,185	153,842	10,172	10,172	0	0	0	0	as Plant Before General
Outside Services/Repairs	59,446	52,504	3,471	3,471	0	0	0	0	as Plant Before General
Service Maintenance Contracts	116,002	102,454	6,774	6,774	0	0	0	0	as Plant Before General
Drug & Alcohol Testing	209	185	12	12	0	0	0	0	as Plant Before General
Building Repairs	1,372	1,212	80	80	0	0	0	0	as Plant Before General
Recruiting	1,372	1,212	80	80	0	0	0	0	as Plant Before General
Claims/Damages	1,372	1,212	80	80	0	0	0	0	as Plant Before General
Computer Licenses and Maint Agreements	5,790	5,113	338	338	0	0	0	0	as Plant Before General
Janitorial Services	6,393	5,647	373	373	0	0	0	0	as Plant Before General
Laboratory Services	99,592	87,961	5,816	5,816	0	0	0	0	as Plant Before General
Outside Legal Fees	62,922	55,574	3,674	3,674	0	0	0	0	as Plant Before General
Accounting/Auditing	9,219	8,143	538	538	0	0	0	0	as Plant Before General
Advertising/Publicity	549	485	32	32	0	0	0	0	as Plant Before General
Elections	2,970	2,623	173	173	0	0	0	0	as Plant Before General
Professional Services	74,971	66,215	4,378	4,378	0	0	0	0	as Plant Before General
Vehicle Expense	133,383	117,805	7,789	7,789	0	0	0	0	as Plant Before General
Rental Exp/Vehicle and Equip.	10,061	8,886	588	588	0	0	0	0	as Plant Before General
Forms and Supplies	617	545	36	36	0	0	0	0	as Plant Before General
Permits & Licenses	4,065	3,590	237	237	0	0	0	0	as Plant Before General
Postage	5,652	4,992	330	330	0	0	0	0	as Plant Before General

Calaveras County Water District
 Sewer Utility - 500
 Functionalization & Classification of
 Revenue Requirements
 Exhibit 6 - Allocation of Expenses

	Total Expenses 2018-19	Volume (VOL)	Bio-oxygen Demand (BOD)	Suspended Solids (TSS)	Customer Related		Revenue Related (RR)	Direct Assign. (DA)	Basis of Classification
					Actual Customer (AC)	Customer Acct/Svcs (WCA)			
Publications and Subscriptions	579	511	34	34	0	0	0	0	as Plant Before General
Dues and Memberships	30,661	27,080	1,790	1,790	0	0	0	0	as Plant Before General
Recording Title Reports	0	0	0	0	0	0	0	0	as Plant Before General
Printing	1	1	0	0	0	0	0	0	as Plant Before General
Training, Conferences and Travel	22,130	19,546	1,292	1,292	0	0	0	0	as Plant Before General
Other Travel Costs	9,198	8,123	537	537	0	0	0	0	as Plant Before General
Director Conf & Committee Expense	0	0	0	0	0	0	0	0	as Plant Before General
Hogan Payment-Purchased Power	80,467	80,467	0	0	0	0	0	0	as Collection
Purchased Water	0	0	0	0	0	0	0	0	100% (VOL)
Retired Employee Costs	155,852	137,650	9,101	9,101	0	0	0	0	as Plant Before General
Bad Debt Expense	13,171	11,632	769	769	0	0	0	0	as Plant Before General
Unemployment Claims	549	485	32	32	0	0	0	0	as Plant Before General
Insurance	54,877	48,468	3,205	3,205	0	0	0	0	as Plant Before General
Fed, State & County Wtr/Swr Fees	177,843	157,073	10,385	10,385	0	0	0	0	as Plant Before General
Federal Dam & Admin Fees	549	485	32	32	0	0	0	0	as Plant Before General
State Water Right Fees	8,232	7,270	481	481	0	0	0	0	as Plant Before General
Mandated Plans	154	136	9	9	0	0	0	0	as Plant Before General
Strategic Plans/Updates.	301	266	18	18	0	0	0	0	as Plant Before General
Water Conservation	4,116	3,635	240	240	0	0	0	0	as Plant Before General
Merchant Credit Card Discount	16,463	14,540	961	961	0	0	0	0	as Plant Before General
Misc. Operating/Maint. Exp.	0	0	0	0	0	0	0	0	as Plant Before General
Equipment Purchased	0	0	0	0	0	0	0	0	as Plant Before General
Agent Fees	549	485	32	32	0	0	0	0	as Plant Before General
Calaveras County Fees	0	0	0	0	0	0	0	0	as Plant Before General
Misc. Non-Operating Costs	(0)	(0)	(0)	(0)	0	0	0	0	as Plant Before General
Total Maintenance Expense	\$2,187,573	\$1,941,481	\$123,046	\$123,046	\$0	\$0	\$0	\$0	
Capital Outlays									
Vehicles / Equipment	\$145,400	\$145,400	\$0	\$0	\$0	\$0	\$0	\$0	100% (VOL)
Projects	40,000	40,000	0	0	0	0	0	0	100% (VOL)
Total Capital Outlays	\$185,400	\$185,400	\$0	\$0	\$0	\$0	\$0	\$0	
Total Oper. & Maint. Expense	\$5,723,923	\$5,086,469	\$318,727	\$318,727	\$0	\$0	\$0	\$0	

Calaveras County Water District
 Sewer Utility - 500
 Functionalization & Classification of
 Revenue Requirements
 Exhibit 6 - Allocation of Expenses

	Total Expenses 2018-19	Volume (VOL)	Bio-oxygen Demand (BOD)	Suspended Solids (TSS)	Customer Related		Revenue Related (RR)	Direct Assign. (DA)	Basis of Classification
					Actual Customer (AC)	Weighted for: Customer Acct/Svcs (WCA)			
Debt Service									
PERS Side Fund - Principal	\$69,395	\$61,291	\$4,052	\$4,052	\$0	\$0	\$0	\$0	as Plant Before General
PERS Side Fund - Interest	941	831	55	55	0	0	0	0	as Plant Before General
BBVA Compass Bond Refinance - Principal	0	0	0	0	0	0	0	0	as Plant Before General
BBVA Compass Bond Refinance - Interest	0	0	0	0	0	0	0	0	as Plant Before General
Umpqua Capital R&R Loan - Principal	374,311	330,595	21,858	21,858	0	0	0	0	as Plant Before General
Umpqua Capital R&R Loan - Interest	22,699	20,048	1,326	1,326	0	0	0	0	as Plant Before General
Vac-Con Loan - Principal	0	0	0	0	0	0	0	0	as Plant Before General
Vac-Con Loan - Interest	0	0	0	0	0	0	0	0	as Plant Before General
Wallace Loan Payoff - Principal	0	0	0	0	0	0	0	0	as Plant Before General
Wallace Loan Payoff - Interest	0	0	0	0	0	0	0	0	as Plant Before General
New Hogan (US Bureau of Reclamation Note 1970) - Principal	14,981	13,231	875	875	0	0	0	0	as Plant Before General
New Hogan (US Bureau of Reclamation Note 1970) - Interest	4,925	4,350	288	288	0	0	0	0	as Plant Before General
Admin Building - Principal	154,100	136,102	8,999	8,999	0	0	0	0	as Plant Before General
Admin Building - Interest	20,250	17,885	1,183	1,183	0	0	0	0	as Plant Before General
New Vac Con -Principal	16,770	14,812	979	979	0	0	0	0	as Plant Before General
New Vac Con -Interest	3,294	2,910	192	192	0	0	0	0	as Plant Before General
USDA Reach 3a Bond - Principal	0	0	0	0	0	0	0	0	as Plant Before General
USDA Reach 3a Bond - Interest	0	0	0	0	0	0	0	0	as Plant Before General
New Revenue Bond - Principal	0	0	0	0	0	0	0	0	as Plant Before General
New Revenue Bond - Interest	0	0	0	0	0	0	0	0	as Plant Before General
Net Debt Service	\$681,667	\$602,054	\$39,806	\$39,806	\$0	\$0	\$0	\$0	
Total CIP From Rates	\$1,187,679	1,187,679	0	0	0	0	0	0	100% (VOL)
Change in Working Capital (+ = To Reserves / - = From Reserves)									
Operating Fund	(\$328,511)	(\$328,511)	\$0	\$0	\$0	\$0	\$0	\$0	100% (VOL)
BBVA Debt Service - Expansion Funds	0	0	0	0	0	0	0	0	100% (VOL)
Capital R&R Debt Service - R&R Funds	(397,010)	(397,010)	0	0	0	0	0	0	100% (VOL)
OP HQ Interest Payment - Fund 108	(20,250)	(20,250)	0	0	0	0	0	0	100% (VOL)
operating funding gap	0	0	0	0	0	0	0	0	100% (VOL)
Wallace Loan Payoff - Fund 108	0	0	0	0	0	0	0	0	100% (VOL)
New Hogan O&M Costs	0	0	0	0	0	0	0	0	100% (VOL)
Capital Equipment/Projects - Fund 108	0	0	0	0	0	0	0	0	100% (VOL)
Capital R&R Projects - R&R Funds	(128,757)	(128,757)	0	0	0	0	0	0	100% (VOL)
CIP Projects	(27,482)	(27,482)	0	0	0	0	0	0	100% (VOL)
Total Change in Working Capital	(\$902,011)	(\$902,011)	\$0	\$0	\$0	\$0	\$0	\$0	

Calaveras County Water District
 Sewer Utility - 500
 Functionalization & Classification of
 Revenue Requirements
 Exhibit 6 - Allocation of Expenses

	Total Expenses 2018-19	Volume (VOL)	Bio-oxygen Demand (BOD)	Suspended Solids (TSS)	Customer Related		Revenue Related (RR)	Direct Assign. (DA)	Basis of Classification
					Actual Customer (AC)	Weighted for: Customer Acct/Svcs (WCA)			
Total Revenue Requirements	\$6,691,258	\$5,974,191	\$358,534	\$358,534	\$0	\$0	\$0	\$0	
Less: Other Income									
Fees	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	100% (VOL)
Account Establishment Fees	3,000	3,000	0	0	0	0	0	0	100% (VOL)
Delinquent Account Fees	57,200	57,200	0	0	0	0	0	0	100% (VOL)
Repairs/Reimbursements	130	130	0	0	0	0	0	0	100% (VOL)
Install Water Meter	0	0	0	0	0	0	0	0	100% (VOL)
Other Installation Charges	0	0	0	0	0	0	0	0	100% (VOL)
Inspection Fees	5,100	5,100	0	0	0	0	0	0	100% (VOL)
Plan Check Fee	0	0	0	0	0	0	0	0	100% (VOL)
Backflow Certification	0	0	0	0	0	0	0	0	100% (VOL)
Wholesale/Irrigation/Hydrant Sales/Lancha Plana	0	0	0	0	0	0	0	0	100% (VOL)
Developer Reimbursements	6,500	6,500	0	0	0	0	0	0	100% (VOL)
Other	130	130	0	0	0	0	0	0	100% (VOL)
Non-Operating Revenue	0	0	0	0	0	0	0	0	100% (VOL)
Stand-by Fees	34,450	34,450	0	0	0	0	0	0	100% (VOL)
Restricted Property Taxes (net of transfer to reserves)	358,846	358,846	0	0	0	0	0	0	100% (VOL)
Unrestricted Property Taxes (net of transfer to reserves)	257,450	257,450	0	0	0	0	0	0	100% (VOL)
Investment Income (allocated to operating)	0	0	0	0	0	0	0	0	100% (VOL)
Other:	0	0	0	0	0	0	0	0	100% (VOL)
Power Sales, North Fork	143,208	143,208	0	0	0	0	0	0	100% (VOL)
Power Sales, New Hogan	45,500	45,500	0	0	0	0	0	0	100% (VOL)
Grants/OES Reimbursements	0	0	0	0	0	0	0	0	100% (VOL)
Sale of Surplus Equipment	0	0	0	0	0	0	0	0	100% (VOL)
Copies	0	0	0	0	0	0	0	0	100% (VOL)
Misc. Operating Revenue	3,900	3,900	0	0	0	0	0	0	100% (VOL)
Other District Reimbursements	2,600	2,600	0	0	0	0	0	0	100% (VOL)
Rental Income per schedule	15,808	15,808	0	0	0	0	0	0	100% (VOL)
Total Other Income	\$933,822	\$933,822	\$0	\$0	\$0	\$0	\$0	\$0	
Net Revenue Requirements	\$5,757,436	\$5,040,369	\$358,534	\$358,534	\$0	\$0	\$0	\$0	

Calaveras County Water District
Sewer Utility - 500
Cost of Service Summary
Exhibit 7 - Allocation by Component

Classification Components	2018-19	Residential	Non-Residential	Allocation Factor
Volume	\$5,040,369	\$4,345,479	\$694,890	(VOL)
Bio-Oxygen Demand	\$358,534	\$307,670	\$50,864	(BOD)
Suspended Solids	\$358,534	\$307,218	\$51,315	(TSS)
Customer Related				
Actual Customer	\$0	\$0	\$0	(AC)
Weighted for Cust. Acctg.	0	0	0	(WCA)
	-----	-----	-----	
Total Customer Related	\$0	\$0	\$0	
Revenue Related	\$0	\$0	\$0	(RR)
Direct Assignment	\$0	\$0	\$0	(DA)
NET REVENUE REQUIREMENT	\$5,757,436	\$4,960,367	\$797,069	

Calaveras County Water District
Sewer Utility - 500
Cost of Service Summary
Exhibit 7 - Summary of Cost Allocation

	2018-19 Total	Residential	Non-Residential	<i>Source</i>
Rate Revenue	\$5,530,679	\$4,751,335	\$779,343	
	-----	-----	-----	
Revenues at Present Rates	\$5,530,679	\$4,751,335	\$779,343	
Allocated Revenue Requirement	\$5,757,436	\$4,960,367	\$797,069	
	-----	-----	-----	
Subtotal Balance/(Deficiency) of Funds	(\$226,758)	(\$209,032)	(\$17,726)	
% Change Over Present Rates	4.1%	4.4%	2.3%	

[1] Residential includes residential and mini-minimum

[2] Commercial includes res/business, business, multi-business

Calaveras County Water District
 Sewer Utility - 500
 Cost of Service Summary
 Exhibit 7 - Average Unit Cost

	2018-19 Total	Residential	Non-Residential	Source
Volume Costs - \$/100 CF	\$36.71	\$36.71	\$36.71	
Strength				
Bio-Oxygen Demand Costs - \$/100 CF	\$2.61	\$2.60	\$2.69	
Total Suspended Solids Costs - \$/100 CF	\$2.61	\$2.60	\$2.69	
	-----	-----	-----	
Total - \$/100 CF	\$41.93	\$41.91	\$42.08	
Customer - \$ / customer / month	\$0.00	\$0.00	\$0.00	
Rate Rev \$/100 CF	\$40.28	\$40.14	\$41.17	
Allocated Rev Req \$/100 CF	\$41.93	\$41.90	\$42.11	
Rate Per Customer	92.13	89.95	88.12	
Basic Data				
Annualized Water Flows - 100 CF	137,306	118,376	18,930	
No. of Customers	5,208	4,474	734	

**Calaveras County Water District
Sewer Utility - 500**

Detailed Revenue Calculation - Present Rates

July 1, 2014 Resolution

	7/1/2015	8/1/2015	9/1/2015	10/1/2015	11/1/2015	12/1/2015	1/1/2016	2/1/2016	3/1/2016	4/1/2016	5/1/2016	6/1/2016	TOTAL
Residential													
# of Accounts	2,973	1,485	2,980	1,610	3,059	1,481	2,991	1,366	2,935	1,479	2,996	1,487	
Operating \$135.00	2,973	1,485	2,980	1,610	3,059	1,481	2,991	1,366	2,935	1,479	2,996	1,487	4,474
Capital R&R 37.32	2,973	1,485	2,980	1,610	3,059	1,481	2,991	1,366	2,935	1,479	2,996	1,487	4,474
Total Operating Revenues	\$401,392	\$200,480	\$402,329	\$217,293	\$412,922	\$199,966	\$403,794	\$184,432	\$396,261	\$199,685	\$404,441	\$200,757	\$3,623,753
Total Capital R&R Revenues	110,963	55,421	111,222	60,070	114,150	55,279	111,627	50,985	109,544	55,202	111,806	55,498	1,001,766
Total Residential Revenues	\$512,355	\$255,901	\$513,551	\$277,363	\$527,072	\$255,245	\$515,421	\$235,417	\$505,805	\$254,887	\$516,247	\$256,255	\$4,625,519
Residential-Multi													
# of Accounts	1	9	1	9	1	9	1	9	1	9	1	9	
Operating \$135.00	12	112	12	112	12	112	12	112	12	112	12	112	124
Capital R&R 37.32	12	112	12	112	12	112	12	112	12	112	12	112	124
Total Operating Revenues	\$1,620	\$15,120	\$1,620	\$15,120	\$1,620	\$15,120	\$1,620	\$15,120	\$1,620	\$15,120	\$1,620	\$15,120	\$100,442
Total Capital R&R Revenues	448	4,180	448	4,180	448	4,180	448	4,180	448	4,180	448	4,180	27,766
Total Residential-Multi Revenues	\$2,068	\$19,300	\$2,068	\$19,300	\$2,068	\$19,300	\$2,068	\$19,300	\$2,068	\$19,300	\$2,068	\$19,300	\$128,208

**Calaveras County Water District
Sewer Utility - 500**

Detailed Revenue Calculation - Present Rates

July 1, 2014 Resolution

	7/1/2015	8/1/2015	9/1/2015	10/1/2015	11/1/2015	12/1/2015	1/1/2016	2/1/2016	3/1/2016	4/1/2016	5/1/2016	6/1/2016	TOTAL
Commercial													
# of Accounts	276	256	296	276	296	266	291	257	291	265	294	265	
Operating \$135.00	276	256	296	276	296	266	291	257	291	265	294	265	555
Capital R&R 37.32	276	256	296	276	296	266	291	257	291	265	294	265	555
Total Operating Revenues	\$37,305	\$34,620	\$40,024	\$37,217	\$39,919	\$35,893	\$39,254	\$34,697	\$39,287	\$35,745	\$39,726	\$35,774	\$449,463
Total Capital R&R Revenues	10,313	9,571	11,064	10,288	11,036	9,923	10,851	9,592	10,861	9,882	10,982	9,890	124,251
Total Commercial Revenues	\$47,618	\$44,191	\$51,088	\$47,505	\$50,955	\$45,816	\$50,105	\$44,289	\$50,148	\$45,627	\$50,708	\$45,664	\$573,714
Other													
# of Accounts	6	4	6	4	6	4	6	4	6	4	6	4	
Operating \$135.00	35	20	35	20	35	20	35	20	35	20	35	20	55
Capital R&R 37.32	35	20	35	20	35	20	35	20	35	20	35	20	55
Total Operating Revenues	\$4,773	\$2,641	\$4,773	\$2,641	\$4,773	\$2,641	\$4,773	\$2,641	\$4,773	\$2,641	\$4,773	\$2,641	\$44,486
Total Capital R&R Revenues	1,320	730	1,320	730	1,320	730	1,320	730	1,320	730	1,320	730	12,298
Total Other Revenues	\$6,093	\$3,371	\$6,093	\$3,371	\$6,093	\$3,371	\$6,093	\$3,371	\$6,093	\$3,371	\$6,093	\$3,371	\$56,784