
Draft Report

Volume 3
Wastewater Rate and System
Development Charge Study

Prepared for
City of Woodburn

September 2009

Prepared by
CH2MHILL

Galardi Consulting, LLC



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Executive Summary

Introduction

This report presents an analysis of the City of Woodburn's wastewater system capital and operating costs, revenues, and user characteristics. This analysis has been used to develop a long-term (20-year) financial plan for the wastewater system, and a 5-year projection of rates based on a cost of service analysis. In addition, wastewater system development charges (SDCs) have been developed to recover from future development, an equitable share of costs associated with existing system facilities and planned capital improvements.

Financial Plan

Revenue Requirements

The financial plan provides the framework within which to analyze the overall impact on wastewater rates of implementing the capital improvements and operational needs recommended in the Facilities Plan. The building blocks of the financial plan are the projections of costs or "revenue requirements" that the City will incur during the planning period (FY2009/10 through FY2029/30) and the revenues, under existing rates, that the City expects to generate during the same period.

Operations and maintenance costs, including personnel, materials and services costs, and transfers to other funds, are projected for the study period based on the budgeted FY2009/10 amounts and escalation rates of 3-5 percent per year. Total estimated expenses for FY2009/10 are approximately \$2.8 million and are budgeted to increase to \$3.4 million in FY2014/15, or 4.3 percent on average.

Future capital expenditures for the wastewater system are based on the Facilities Plan-recommended capital improvement plan (CIP) through FY2029/30, and debt service schedules for existing outstanding loans. The total projected capital improvement costs for the wastewater system through FY2029/30 are \$94.5 million (2008 dollars) and are projected to be \$129 million, when adjusted for inflation.

Funding for the CIP will likely be provided primarily through revenue bond and loan proceeds, including DEQ loan proceeds of about \$8 million and a bank loan for land purchases of about \$1 million. Revenue from rates and SDCs is nominal (about 10 percent) for direct project expenses; however, additional rate and SDC revenue is used to repay the City's debt service. The bulk of project expenses are assumed to be funded through future revenue bond proceeds of about \$113 million over the 20-year period. The City is currently repaying loans based on a total principal amount of about \$34 million. The majority of these loans will be paid off in FY2020/21.

In addition to debt service to support the CIP, the wastewater fund will also need to repay the debt service for an interfund loan from the water fund used to pay for contract hauling

of biosolids. The interfund loan is assumed to be repaid over 5 years at an interest rate of 2.5 percent.

Revenue Requirements from Rates

When total requirements are reduced by nonrate revenues and existing reserves, revenue requirements from rates are estimated to be \$5.7 million in FY2010/11, and increase to \$8.7 million in FY2014/15. The City's last rate increase was 12 percent in July 2009. Revenue under existing rates is projected to be about \$4.9 million in FY2010/11, assuming moderate customer growth. Projected additional rate increases of 12 percent in FY2010/11 and 9.5 percent each year through FY2014/15 are needed to enable the City to fund the near-term capital investments and O&M requirements, in addition to meeting minimum reserves and debt coverage requirements. Subsequent years are projected to have either no rate increase or a modest increase of about 3.5 percent to meet annual requirements.

Cost of Service Analysis

A fundamental principle for developing an equitable system of user charges is to ensure that all users pay—through monthly charges for wastewater service, connection charges, taxes, or other fees—for their share of the total costs imposed on the system.

In terms of monthly charges for wastewater service, some costs to be recovered from customers are a function of their volume of wastewater discharged, while others are a function of the loads they place on the system. The utility also incurs certain costs associated with serving customers, regardless of the volume or strength of discharge, for example, customer serviced related costs. Classifying wastewater system costs in terms of the functions and service characteristics they support and then further allocating the costs to customer classes based on their service demands is referred to as a cost-of-service analysis.

The cost allocation methodology used in this study generally follows Environmental Protection Agency (EPA) and Water Environment Federation (WEF)-recommended methods. Under these methods, wastewater collection, treatment, and disposal costs are allocated to residential, multifamily, commercial, and industrial (including monitored industrial customers), in proportion to their estimated flows, loads, and accounts. The costs associated with receiving and treating septage are classified separately and recovered directly through rates charged to septic haulers.

Rates

Existing Rates

“Existing rates,” for the purposes of this report, refer to rates effective August 1, 2009, and are shown in Table ES-1. As the table indicates, existing rates include a minimum (fixed) monthly charge of \$28.38 for residential customers, including multifamily dwelling units, as well as a 5 hundred cubic feet (ccf) quantity allowance. Commercial and industrial minimum charges are \$35.88 and include 6 ccf. Monitored customers pay a minimum monthly charge of \$77.16, including 10 ccf.

TABLE ES-1
Existing and Projected Rates

Customer Class	Existing August 1, 2009	Projected Cost of Service Rates				
		FY2010/11	FY2011/12	FY2012/13	FY2013/14	FY2014/15
Usage Charges (\$/ccf)						
Residential	\$5.04	\$6.01	\$6.58	\$7.21	\$7.90	\$8.65
Multifamily	\$5.04	\$6.01	\$6.58	\$7.21	\$7.90	\$8.65
Commercial	\$7.71	\$8.84	\$9.74	\$10.67	\$11.69	\$12.80
Industrial	\$7.71	\$8.84	\$9.74	\$10.67	\$11.69	\$12.80
Monitored						
Flow (\$/ccf)	\$3.19	\$3.77	\$4.14	\$4.55	\$4.99	\$5.48
BOD (\$/lb)	\$1.19	\$0.79	\$0.85	\$0.92	\$1.01	\$1.10
TSS (\$/lb)	\$0.35	\$0.92	\$1.00	\$1.09	\$1.19	\$1.30
Minimum Charge (\$/EDU/Month)						
Residential	\$28.38	\$31.03	\$33.98	\$37.23	\$40.77	\$44.64
Multifamily	\$28.38	\$31.03	\$33.98	\$37.23	\$40.77	\$44.64
Commercial	\$35.88	\$42.28	\$46.11	\$50.30	\$54.89	\$59.87
Monitored	\$77.16	\$69.87	\$76.18	\$83.10	\$90.67	\$98.90
Industrial	\$35.88	\$42.28	\$46.11	\$50.30	\$54.89	\$59.87

The volume charge, per ccf of water use, also varies by class: residential customers pay \$5.04 per ccf over the minimum and commercial/industrial customers pay \$7.71 when customers exceed the minimum quantity allowance. The existing wastewater rates also include charges for monitored industrial users whose discharge is sampled and metered. The monitored rates are: \$3.19 per ccf for flow, and \$1.19 and \$0.35 per pound (lb) for BOD and TSS, respectively.

Projected Rates

Table ES-1 also shows rates based on the cost-of-service analysis (which includes the projected annual system-wide rate increases of 9.5 to 12.0 percent per year through FY2014/15). The revised rates are based on the same rate structure as the existing rates, however, they reflect some changes in the utility's cost structure – in other words, how costs relate to different functional and service categories. Most notably, the BOD unit costs are significantly lower under the revised cost of service (even with the 12.0 percent rate increase projected for FY2010/11), and TSS costs are significantly higher. Commercial and industrial volume rates continue to be higher than residential customer rates, reflecting higher average strength loadings. The minimum charges for these customers are also higher than residential, because of the additional 1 ccf included in the minimum charge.

Impact on Typical Bills

Table ES-2 shows sample monthly bills for a range of volumes within each customer class, based on existing and projected rates. Assuming an average monthly usage of 6 ccf, bills for most residential customers will increase 10.8 percent in FY2010/11 (slightly below the system average). Bills for small- and large-volume residential customers will increase by 9 and 17 percent, respectively, reflecting a relatively greater increase in the usage charge, compared with the minimum charge. Commercial/industrial customers will generally experience an average increase in bills of 14–16 percent in FY2010/11, based on the cost-of-service analysis. In subsequent years, most bills increase 9-10 percent, reflecting the projected system-wide rate increases.

TABLE ES-2
Sample Monthly Bills

Customer Class	EDUs	Monthly		Projected Rates				
		Use (ccf)	Existing	FY2010/11	FY2011/12	FY2012/13	FY2013/14	FY2014/15
Residential		3	\$28.38	\$31.03	\$33.98	\$37.23	\$40.77	\$44.64
Residential		6	\$33.29	\$36.89	\$40.40	\$44.26	\$48.48	\$53.07
Residential		20	\$103.98	\$121.25	\$132.74	\$145.41	\$159.25	\$174.31
Multifamily	3	10	\$85.14	\$93.08	\$101.93	\$111.68	\$122.32	\$133.91
Multifamily	12	69	\$383.51	\$423.59	\$463.83	\$508.18	\$556.60	\$609.33
Multifamily	40	400	\$2,143.20	\$2,444.01	\$2,675.93	\$2,931.53	\$3,210.61	\$3,514.53
Commercial		10	\$66.72	\$77.62	\$85.07	\$92.99	\$101.65	\$111.07
Commercial		26	\$191.30	\$220.40	\$242.49	\$265.45	\$290.56	\$317.88
Commercial		400	\$3,073.62	\$3,523.59	\$3,884.30	\$4,255.26	\$4,661.14	\$5,102.65
Industrial								
Flow			\$3.19	\$3.77	\$4.14	\$4.55	\$4.99	\$5.48
BOD			\$1.19	\$0.79	\$0.85	\$0.92	\$1.01	\$1.10
TSS			\$0.35	\$0.92	\$1.00	\$1.09	\$1.19	\$1.30
Septage Rates			\$235,000	\$347,209	\$358,142	\$372,933	\$389,642	\$407,102
Residential (\$/gal)			\$0.090	\$0.133	\$0.137	\$0.143	\$0.149	\$0.156
Commercial (\$/gal)			\$0.116	\$0.171	\$0.177	\$0.184	\$0.192	\$0.201
Residential Min.			\$35.00	\$51.71	\$53.34	\$55.54	\$58.03	\$60.63
Commercial Min.			\$44.00	\$65.01	\$67.06	\$69.83	\$72.95	\$76.22
Residential				9.3%	9.5%	9.6%	9.5%	9.5%
Residential				10.8%	9.5%	9.6%	9.5%	9.5%
Residential				16.6%	9.5%	9.5%	9.5%	9.5%
Multifamily				9.3%	9.5%	9.6%	9.5%	9.5%
Multifamily				10.5%	9.5%	9.6%	9.5%	9.5%
Multifamily				14.0%	9.5%	9.6%	9.5%	9.5%
Commercial/Indust.				16.3%	9.6%	9.3%	9.3%	9.3%
Commercial/Indust.				15.2%	10.0%	9.5%	9.5%	9.4%
Commercial/Indust.				14.6%	10.2%	9.6%	9.5%	9.5%
Flow				18.3%	9.6%	9.9%	9.8%	9.8%
BOD				-34.0%	8.2%	8.9%	9.0%	8.9%
TSS				163.1%	8.6%	9.2%	9.2%	9.2%
Septic				47.7%	3.1%	4.1%	4.5%	4.5%
System-Wide				12.00%	9.50%	9.50%	9.50%	9.50%

As noted previously, Table ES-2 also shows that the cost-of-service analysis yields significant changes in monitored industrial unit costs. The bill impact on each monitored customer depends on the respective flows and loads of that customer. Some bills may actually decrease for customers with high BOD loadings. Other bills will increase significantly because of the increase in flow and TSS costs.

The rates for septage increases by almost 48 percent in FY2010/11, as shown in Table ES-2. In future years, septage costs increase at a lower rate than other costs, reflecting the uniform amortization of capital costs for septage receiving station improvements.

System Development Charges

Methodology

Oregon legislation establishes that SDCs may be developed around two concepts: (1) a reimbursement fee, and (2) an improvement fee, or a combination of the two. The **reimbursement fee** is based on the costs of capital improvements *already constructed or under construction*. The methodology for establishing or modifying an **improvement fee** must demonstrate consideration of the *projected costs of capital improvements identified in an adopted plan and list*, that are needed to increase capacity in the system to meet the demands of new development. Revenues generated through improvement fees are dedicated to capacity-increasing capital improvements or the repayment of debt on such improvements. An increase in capacity is established if an improvement increases the level of service provided by existing facilities or provides new facilities.

The general methodology used to calculate wastewater SDCs begins with an analysis of system planning and design criteria to determine growth's capacity needs, and how they will be met through existing system available capacity and capacity expansion. Then, the capacity to serve growth is valued to determine the "cost basis" for the SDCs, which is then spread over the total growth capacity units to determine the system-wide unit costs of capacity. The final step is to determine the SDC schedule, which identifies how different developments will be charged, based on their estimated capacity requirements.

Existing and Proposed SDCs

The total reimbursement cost basis is about \$7.2 million, including \$3.5 million of treatment-related assets, \$0.1 million for pump stations, and \$3.6 million for collection lines. The cost of future capacity-increasing improvements (the improvement fee cost basis) is about \$62.8 million. Each improvement in the CIP was reviewed to determine the portion of costs that expand capacity for growth.

The cost basis is distributed over aggregate capacity through 2030 for treatment and buildout (estimated 2060) for collection, and the unit costs of capacity multiplied by the capacity requirements for an equivalent dwelling unit (EDU). Table ES-3 presents the calculation of the costs associated with the capacity requirement per EDU. The sum of the improvement and reimbursement portions is \$5,671, compared with the current SDC of \$2,977.

TABLE ES-3
Combined SDC per Equivalent Dwelling Unit

Component	Amount
Reimbursement SDC per EDU	\$623
Improvement SDC per EDU	\$5,048
Combined SDC per EDU	\$5,671
<i>Current SDC</i>	<i>\$2,977</i>
<i>Inflation Adjusted (2008–1995)</i>	<i>\$4,522</i>

Local governments are entitled to include, in the SDCs, a charge to recover costs associated with complying with the SDC law. Compliance costs include costs related to developing the SDC methodology and project list (i.e., a portion of master planning costs), and annual accounting costs. Table ES-4 shows the calculation of the compliance charge per EDU, which is estimated to be \$150, resulting in a total SDC per EDU of \$5,821.

TABLE ES-4
Compliance Charge

Component	Years	Total	Growth	Annualized
SDC Study	5	\$10,000	100%	\$2,000
Master Planning	10	\$835,000	66%	\$55,473
Auditing/Accounting	1	\$1,500	100%	\$1,500
Total Annual Costs		\$846,500		\$58,973
Compliance Charge/EDU				\$150

The City currently assesses SDCs to nonresidential customers based on estimated flow. Under the revised SDCs, the estimated flow per EDU is 219 gpd under average flow conditions. Therefore, the formula for calculating nonresidential EDUs will be:

$$\text{Estimated flow} / 219 \text{ gpd} = \text{EDUs} \times \$5,821 \text{ per EDU} = \text{total SDC}$$

Industrial customers are charged based on estimated flows and loads. Table ES-5 presents the unit costs from which industrial SDCs may be developed.

TABLE ES-5
Industrial SDCs

	Total	Collection Flow (gpd)	Treatment Flow (gpd)	BOD (ppd)	TSS (ppd)
Growth Cost	\$70,009,190	\$36,225,135	\$21,535,524	\$6,221,643	\$6,026,889
Growth Capacity Req.		4,260,000	1,720,000	3,504	3,164
Unit Cost		\$8.50	\$12.52	\$1,775.58	\$1,904.83
Total		\$21.02		\$1,775.58	\$1,904.83
Current SDCs		\$10.69		\$1,446.42	\$532.14

Recommendations

The recommended financial plan and rates presented in this report are based on a number of assumptions related to customer growth, cost escalation, debt financing, and other variables that have proved particularly volatile over the past year, reflecting the national and regional economic crisis. Therefore, an overarching recommendation is that the City monitor revenues and expenses semi-annually, and make adjustments to planned rate increases as necessary to ensure adequate revenue recovery annually to meet projected system needs and debt coverage and reserve requirements.

Financial Plan

Based on the analysis presented in this report, required annual rate increases over the next 5 years range from 9.5 percent (FY2011/12 through FY2014/15) to 12 percent (FY2010/11). These increases should be reviewed again, in the context of further development of the City's capital financing program. Specifically, the financial plan forecasts the need for the City to issue revenue bonds in FY2011/12, in order to fund the needed collection system and Natural Treatment System (NTS) improvements, and a portion of Phase 2A improvements at the treatment plant. In order to issue revenue bonds, the City will need to work with a finance team (including a financial adviser, bond counsel, and financial and engineering consultants) to structure the sale and complete a bond feasibility report prior to selling bonds. As part of that effort, the City should review and, if necessary, update the projected rate increases in light of actual customer growth and cost and revenue trends subsequent to this report, and then-current financial market conditions.

After the initial bond sale, it is recommended that the City continue to monitor the financial plan annually, and make adjustments to rates if needed. Of particular importance in determining the appropriateness of future rate levels will be the following:

- Rate of customer growth
- Implementation of the recommended SDCs
- Future costs and availability of borrowing

Significant changes in the sizing or timing of capital projects or support from alternative funding sources will have an impact on the revenue requirements from rates.

Rates

It is recommended that the City continue to charge based on a cost of service basis. Cost of service based rates reflecting the projected rate increases from the financial plan are shown in Table ES-1. Any changes to the system-wide rate increases developed as part of future financial plan updates (as noted previously), will require adjustment of the rates presented. It is critical that any deviations from the cost-of-service rates be reviewed for potential impact on other rates. For example, if the City does not move forward with the septic rate adjustments at the recommended levels, other rate components would need to be increased to make up for the lost revenue from septic haulers.

It is also recommended that the City consider future development and implementation of industrial pretreatment permit fees for monitored customers. The cost-of-service analysis identified the costs of the industrial pretreatment program to be about \$250,000 annually over the 5-year rate setting period. While some of the functions of this program benefit all wastewater system users, a significant portion of the costs is associated with the monitored customers specifically. Other communities recover a portion of these costs through direct charges to industry – either in the form of fixed monthly or annual charges, or through surcharges on the volume rates.

System Development Charges

It is recommended that the City implement the SDCs identified in Section 7, so that new customers pay for an equitable share of system improvements. It is further recommended that the City:

- Initiate the public notification process required by Oregon statutes to adopt a new SDC methodology. Specifically, the City must: (1) notify interested parties 90 days prior to the date on which the City Council will hold a public hearing to consider the methodology, and (2) make the SDC methodology available 60 days prior to the scheduled public hearing.
- Include a provision in the adopting resolution that will allow the City to index the SDCs to a construction cost index, so that the fees keep pace with future cost escalation. Most communities use the *Engineering News-Record* construction cost index – either the 20-city average or the Seattle index.

The financial plan presented in Section 3 assumes implementation of the revised SDCs by July 1, 2010. If the SDCs are implemented at a reduced level, the rates may need to be adjusted in order to meet the revenue needs of the utility.

Introduction

1.1 Authorization and Purpose

The City of Woodburn, Oregon (the City) authorized CH2M HILL and Galardi Consulting, LLC, to conduct a wastewater rate study. The purpose of the study was to develop rates that:

- Provide adequate revenue to meet the projected capital and operations and maintenance (O&M) costs of the system, as projected by the Wastewater Facilities Plan
- Equitably distribute costs among different types of system users
- Are consistent with industry standard practices

This report presents the results of the wastewater rate study.

1.2 Background

The City completed a wastewater master plan in 1995 that identified system improvements needed over a 20-year planning period. As a part of the master planning process, revised wastewater rates were developed and implemented to fund the \$38 million phase one upgrade to wastewater treatment facilities, which was completed in 2001. Rates from the 1995 study remained in place until 2007.

In January 2007, the City conducted a wastewater rate update study. The purpose of that study was to provide an interim update of rates, to reflect the following:

- Near-term (through fiscal year [FY] 2009/10) projected capital and O&M costs of the system
- Existing debt reserve requirements
- The rate increase strategy recommended by the Wastewater Rate Review Committee (WRRC)

The 2007 study resulted in system-wide rate increases of 12 percent per year for the 3-year period FY2007/08 through FY2009/10 in order to address the short-term operational and capital needs. In addition, a revised rate structure for hotel and motel customers was implemented. Subsequent phases of work—namely, development of a longer term financial plan and further evaluation of rate structure components—were to be conducted following completion of the wastewater master plan.

1.3 Report Organization

This report identifies the City's wastewater system revenue requirements and analyzes the costs of providing service to various user groups. It includes the following sections:

- **Section 2, Overview of the Wastewater Rate Determination Process**, describes the process for determining cost-based wastewater rates.
- **Section 3, Financial Plan**, presents the 20-year wastewater system financial plan, including projected costs, revenues, and rate increases.
- **Section 4, Wastewater User Characteristics**, presents the wastewater system usage characteristics and customer classification system.
- **Section 5, Cost Allocations**, describes the allocation of costs to system functions, service characteristics, and customer classes for the 5-year rate-setting period.
- **Section 6, Wastewater Rates**, presents the existing and revised rates.
- **Section 7, System Development Charges**, describes the methodology used to determine updated system development charges (SDCs) for the wastewater system, based on the growth-related capital improvements.
- **Section 8, Summary and Recommendations**, summarizes recommendations with respect to the financial plan, rates, and SDCs.

Appendixes A and B include additional details on data presented in the body of the report, particularly on the financial plan and cost allocations.

Overview of the Wastewater Rate Determination Process

2.1 Introduction

The process for developing cost-of-service wastewater rates is discussed below. The process follows standard ratemaking principles, as outlined by the Water Environment Federation (WEF) and the U.S. Environmental Protection Agency (EPA).

2.2 Step 1: Determine Revenue Requirements

Revenue requirements are the total costs of providing services to utility customers over a specific period of time (usually one year). These costs include O&M and capital costs. O&M costs are the routine costs of operating and maintaining a utility system in order to provide service. For the purpose of rate setting, revenue requirements are projected from budgeted expenses and adjusted based on historical cost trends and the expertise of public works staff. Examples of O&M costs are chemicals and electricity used at plants, skilled plant operator labor, and administrative expenses.

Capital costs, as defined for the purposes of this study, are the resources used to acquire or construct capital assets. These include current revenue funded (pay-as-you-go) improvements, planned annual contributions to funds for such purposes, and ongoing debt service requirements (principal and interest payments on outstanding revenue bonds, loans, and other obligations). Capital assets are defined as major assets that benefit more than a single fiscal period. Typical examples are land, improvements to land, easements, buildings, building improvements, vehicles, machinery, equipment, and other infrastructure. Capital costs are projected for the rate-setting period based on the capital improvement plan and the existing and projected capital financing program.

To determine the amount of revenue that rates must generate annually, the total revenue requirements are reduced by nonrate or other system revenues. Examples of other system revenues are unrestricted interest earnings, SDC revenues, and revenue from miscellaneous charges. Total requirements less other system revenues equal requirements from rates.

2.3 Step 2: Allocate Revenue Requirements to Customer Classes

Determination of the costs of service by customer class is a four-step process. These steps are referred to as functionalization, joint and specific groupings, classification, and allocation. Functionalization involves categorizing revenue requirements according to utility functions. Wastewater functions typically include treatment (often broken up by unit process), disposal, collection, pumping, and customer service. Utilities incur varying levels of costs to

perform the different system functions needed to handle customer discharges. Therefore, the first step in the cost allocation process is to determine what it costs the utility to perform different service functions. Next, functional costs are grouped by joint and specific categories. This process allows certain types of costs (e.g., septage receiving costs) to be allocated directly to benefiting customers. The majority of costs are generally joint, or common to all customers.

Following functionalization and joint and specific groupings, a classification process is undertaken. A fundamental objective in developing a rate system is to price utility services so that customers pay for the service they receive in proportion to their use. Some costs incurred by the utility are a function of the quantity of wastewater discharged by customers. Other costs are associated with serving customers regardless of the quantity that flows through the system. Water Environment Federation and EPA methods classify wastewater system costs according to flow (sanitary and infiltration and inflow), biochemical oxygen demand¹ (BOD) loadings, total suspended solids² (TSS) loadings, and customer services. Costs are classified among these service characteristics so that they may then be allocated to customer classes in proportion to wastewater characteristics.

Ideally, each customer would be charged according to the actual cost of providing service to his or her connection. However, it is impractical to estimate the cost of serving each individual customer (with the exception of large, monitored customers). Therefore, it is accepted practice in the utility industry to classify customers into relatively few, reasonably homogeneous groups, and then to develop rates for each group. In the final step of the cost allocation process, the characteristics of the utilities' customers are analyzed and costs are allocated to each class. For wastewater systems, user characteristics include wastewater flows, strengths, and the number of customer accounts.

The user characteristics serve as the basis for allocating costs by service characteristic to each customer class. For example, if residential customers represent half of the wastewater utility's flow, they will be allocated half of the utility's average flow-related costs. However, if this class is responsible for 25 percent of loadings, their allocation of these costs will be only one-quarter. The sum of each class's proportionate cost share of each service characteristic is that class's total cost of service.

2.4 Step 3: Determine Rate Structure and Develop Rates

The last step in the rate development process is the design of the rate structure and the development of rates. There are a variety of rate structure options available to meet a wide range of policy objectives. Rates generally are composed of a fixed charge per customer per billing period (usually one or two months), and a volume charge that varies based on water usage or estimated wastewater flow. However, the particular structure selected usually depends on considerations of rate equity, revenue stability, and administrative efficiency.

Once a rate structure is selected, rates are calculated based on the costs of service by class determined in Step 2. The end result of this rate development process is an equitable

¹ BOD is the quantity of oxygen used in the biochemical oxidation of organic matter in a specified time and at a specified temperature.

² TSS is solids that float on the surface of, or are in suspension in wastewater or other liquids, and are largely removable by laboratory filtering.

distribution of system revenue requirements to system users. This process is called cost-of-service ratemaking.

Financial Plan

3.1 Introduction

This section presents the long-term wastewater system financial plan. The financial plan provides the framework within which to analyze the overall impact on wastewater rates of implementing the capital improvements and operational needs recommended in the Facilities Plan. The building blocks of the financial plan are the projections of costs or "revenue requirements" that the City will incur during the planning period (FY2009/10 through FY2029/30) and the revenues, under existing rates, that the City expects to generate during the same period.

In order to develop adequate revenues from a system of wastewater rates, the annual revenue requirements of the utility must be determined. The basic revenue requirements are composed of the following:

- O&M costs
- Annual capital improvement projects funded by rates and reserves
- Debt service expenditures (principal and interest on wastewater utility-related debt)
- Transfers to the City's capital and other funds for indirect and direct services provided to the utility

In addition, annual requirements include a minimum contingency equal to 5 percent of annual O&M costs. However, 100 percent of annual contingencies are assumed to be unspent and roll forward to the subsequent year beginning balance.

Revenue requirements were projected for the current fiscal year (FY2009/10) through FY2029/30. For the City, nonrate revenue sources include interest income, other fees and charges (e.g., late fees), and miscellaneous revenue. Like revenue requirements, these nonrate revenue sources are forecast over the study period. As mentioned previously, they are then deducted from overall revenue requirements to determine rate requirements.

The following information provided by the City was used to develop the financial plan:

- Actual FY2008/09 and budgeted FY2009/10 revenues and expenditures for the wastewater operating and capital funds
- Existing and projected State Revolving Loan fund repayment schedules
- Customer billing data (customers and estimated wastewater flows) for FY2007/08

3.1.1 Key Forecast Assumptions

The financial plan is based on a set of overall assumptions related to timing, customer growth, inflation, and other factors, as well as the phasing of the City's CIP. The following is a list of key assumptions used in the forecast:

- The budget for the fiscal year ending June 30, 2010, was used as the base year.
- The annual customer growth rate is assumed to approximate 1.0 to 2.5 percent throughout the study period.
- O&M costs are assumed to grow at annual rates ranging from 3.5 to 5 percent. Specific escalation factors used are as follows:
 - Material and service costs – 5 percent
 - Personnel labor costs – 3.5 percent
 - Personnel benefit costs – 4.5 percent
- The average annual capital cost escalation is assumed to be 3 percent.
- The City will budget for a minimum operating fund contingency of 5 percent of O&M costs.
- Interest earnings on fund balances and reserves are estimated to accrue at an average rate of 2.5 percent annually.

3.2 Operations and Maintenance Costs

Operations and maintenance costs are shown in Table 3-1 and include all costs associated with operating and maintaining the system, including personnel, materials, and services costs, and transfers to other funds. O&M costs also include non-CIP-related capital outlays (e.g., routine equipment purchases). Wastewater system O&M costs are projected for the study period based on the budgeted FY2009/10 estimated totals and the assumed escalation rates presented previously.

TABLE 3-1
Operations and Maintenance Costs (\$)

Budget Item	Budget FY2009/10	Forecast FY2010/11	Forecast FY2011/12	Forecast FY2012/13	Forecast FY2013/14	Forecast FY2014/15
Wastewater (621)						
Salaries/Overtime	587,891	599,721	620,034	641,028	662,725	685,147
Intergovernmental Service	65,796	67,770	70,820	74,006	77,337	80,817
Benefits	262,481	270,355	282,521	295,235	308,520	322,404
Supply/Services	469,439	\$486,203	\$511,041	\$537,150	\$564,594	\$593,441
Chemicals	21,000	21,735	22,822	23,963	25,161	26,419
Lab	19,000	19,665	20,648	21,681	22,765	23,903
Electric/Gas	354,000	368,160	388,409	409,771	432,309	456,086
Subtotal	\$1,779,607	\$1,833,609	\$1,916,295	\$2,002,834	\$2,093,410	\$2,188,217

TABLE 3-1
Operations and Maintenance Costs (\$)

Budget Item	Budget FY2009/10	Forecast FY2010/11	Forecast FY2011/12	Forecast FY2012/13	Forecast FY2013/14	Forecast FY2014/15
Maintenance (631)						
Salaries/Overtime	127,199	129,743	134,284	138,984	143,848	148,883
Benefits	58,240	59,987	62,687	65,508	68,455	71,536
Supply/Services	63,321	65,537	68,814	72,255	75,868	79,661
Capital Outlay	50,000	81,500	83,945	86,463	89,057	91,729
Subtotal	\$298,760	\$336,767	\$349,730	\$363,209	\$377,228	\$391,809
O&M Adjustments						
Poplar Tree O&M	\$0	\$37,689	\$57,033	\$59,052	\$61,143	63,307
Wetland O&M	\$30,000	\$31,062	\$32,162	\$33,300	\$48,271	49,979
Poplar Tree Harvest/Replant	\$101,000	\$100,434	\$0	\$0	\$0	-
Poplar Tree Salvage Contingency	\$0	\$10,354	\$10,721	\$11,100	\$11,493	11,900
Subtotal	\$131,000	\$179,538	\$99,915	\$103,452	\$120,906	\$125,186
Transfers (621)						
Transfer to other funds	\$65,000	\$67,301	\$70,693	\$74,256	\$77,998	81,930
Water Fund	\$70,000	\$72,478	\$76,131	\$79,968	\$83,998	88,232
Surface Water/Storm Collection	\$235,000	\$243,319	\$255,582	\$268,464	\$281,994	296,207
Technical and Environmental	\$150,000	\$155,310	\$163,138	\$171,360	\$179,996	189,068
Equipment Replacement	\$70,000	\$72,478	\$76,131	\$79,968	\$83,998	88,232
Subtotal	\$590,000	\$610,886	\$641,675	\$674,015	\$707,985	\$743,668
Total O&M Requirements	\$2,799,367	\$2,960,800	\$3,007,615	\$3,143,510	\$3,299,529	\$3,448,880

Total estimated expenses for FY2009/10 are approximately \$2.8 million and are projected to increase to \$3.4 million in FY2014/15, or 4.3 percent on average. Personnel costs represent 39 percent of the current year (FY2009/10) total, materials and services 33 percent, capital outlays 2 percent, other expenditures 5 percent, and transfers 21 percent. Electricity and gas expenditures represent the largest materials and services line items, budgeted at \$354,000. The projected O&M costs also include specific costs for wetland and poplar tree management, identified in the Facilities Plan.

Transfers to other funds include payment to the following:

- **Water Fund** for costs of meter reading and billing expenses such as mailing, and for finance department personnel who handle the billing and accounting of payments

- **Surface Water and Storm Collection Fund** for operations and maintenance of the City's storm and surface water program, for compliance with City NPDES permit, being designated a Designated Management Agency (DMA)
- **Technical and Environmental Fund** for engineering and administrative functions performed for the plant by personnel in the Public Works Department
- **Equipment Replacement Fund** for ongoing replacement of wastewater system equipment

3.3 Capital Costs

3.3.1 Capital Improvement Program (CIP)

Future capital expenditures for the wastewater system are based on the Facilities Plan-recommended CIP through FY2029/30. Table 3-2 presents the CIP for the wastewater system for the forecast period (FY2009/10 through FY2029/30), in 2008 dollars. The total projected capital improvement costs for the wastewater system are \$94.5 million through FY2029/30, with slightly more than 50 percent of the costs incurred in the first 10 years. On the basis of an estimated annual capital cost escalation rate of 3.0 percent, the inflation-adjusted CIP costs total almost \$129 million.

Near-term projects are necessary primarily to address regulatory requirements (in particular, Total Maximum Daily Load [TMDL] limits), in accordance with a Mutual Agreement and Order (MAO) with the Oregon Department of Environmental Quality (DEQ) on how the City will address the temperature, pH, and ammonia limits established for the river. Future projects are also needed to expand capacity for future growth.

TABLE 3-2
Capital Improvement Plan (\$2008)

Improvement Items*	2009–2020 Total	2021–2030 Total	2009–2030 Total
Collection System			
Mill Creek PS Project – Phase 1	\$500,000	\$0	\$500,000
Mill Creek PS Project – Phase 2	\$2,605,000	\$0	\$2,605,000
I-5 PS Project	\$1,307,000	\$0	\$1,307,000
I-5 FM Project	\$3,093,000	\$0	\$3,093,000
Stevens PS Project	\$990,000	\$0	\$990,000
Young Street Pipeline Project	\$1,773,000	\$0	\$1,773,000
Front Street Pipeline Project	\$1,040,000	\$0	\$1,040,000
Mill Creek Interceptor Pipeline Project	\$0	\$1,855,000	\$1,855,000
Progress Way Pipeline Project	\$1,362,000	\$0	\$1,362,000
Hayes Street Pipeline Project	\$2,030,000	\$0	\$2,030,000
Brown Street Pipeline Project	\$931,000	\$0	\$931,000
Service to North Area (2005 PFP Project)	\$0	\$5,219,000	\$5,219,000

TABLE 3-2
Capital Improvement Plan (\$2008)

Improvement Items*	2009–2020 Total	2021–2030 Total	2009–2030 Total
Service to South Area – South Brown Street Pump Station	\$800,000	\$0	\$800,000
Service to Southwest Industrial Area	\$0	\$9,722,000	\$9,722,000
Area Outside Urban Growth Boundary (UGB)	\$0	\$8,560,000	\$8,560,000
Current CIP Projects (Funds 465, 472)	\$460,000	\$0	\$460,000
Replacement Costs – Collection System Piping	\$3,400,000	\$4,600,000	\$8,000,000
Equipment Replacement (VAC Truck)	\$350,000	\$0	\$350,000
Pump Station Upgrades (Existing Upgrades – Reliability)	\$275,000	\$0	\$275,000
Subtotal – Collection System	\$20,916,000	\$29,956,000	\$50,872,000
Subtotal – Industrial Land Application	\$0	\$8,200,000	\$8,200,000
Treatment			
Headworks – Screening	\$1,900,000	\$0	\$1,900,000
Headworks – Grit Removal	\$1,300,000	\$1,300,000	\$2,600,000
Primary Sedimentation – PEPS	\$3,000,000	\$0	\$3,000,000
Primary Sedimentation – Convert WW Clarifiers	\$1,750,000	\$0	\$1,750,000
Primary Sedimentation – New Primary Clarifier	\$0	\$2,400,000	\$2,400,000
Secondary Process – Blower and Dissolved Oxygen (DO) Upgrades	\$1,300,000	\$0	\$1,300,000
Secondary Process – Contact Stabilization Modifications	\$300,000	\$0	\$300,000
Secondary Process – New Secondary Clarifier	\$2,500,000	\$0	\$2,500,000
Filtration	\$1,900,000	\$0	\$1,900,000
Ultraviolet (UV) Disinfection – Expand Existing Equipment	\$400,000	\$0	\$400,000
UV Disinfection – Add Additional Channel	\$2,100,000	\$1,300,000	\$3,400,000
Outfall – Bypass Aerator	\$100,000	\$0	\$100,000
Outfall – Upsize Outfall B	\$500,000	\$0	\$500,000
Condition Improvements	\$3,700,000	\$0	\$3,700,000
Septage/Recreational Vehicle (RV) Dump Station Improvements	\$1,700,000	\$0	\$1,700,000
Generator	\$300,000	\$0	\$300,000
Subtotal – Treatment	\$22,750,000	\$5,000,000	\$27,750,000
Natural Treatment Systems (NTS)			
Poplar Tree Expansion on City-owned Land	\$1,064,000	\$0	\$1,064,000
Land Purchase	\$885,000	\$0	\$885,000
Poplar Tree Expansion on Additional Purchased Land	\$1,540,000	\$112,000	\$1,652,000
Lagoon Wetlands	\$1,100,000	\$0	\$1,100,000
Floodplain Wetlands	\$1,400,000	\$0	\$1,400,000

TABLE 3-2
Capital Improvement Plan (\$2008)

Improvement Items*	2009–2020 Total	2021–2030 Total	2009–2030 Total
Wetland Conveyance and New River Outfall	\$1,620,000	\$0	\$1,620,000
Subtotal – Natural Treatment Systems	\$7,609,000	\$112,000	\$7,721,000
Total	\$51,280,000	\$43,270,000	\$94,540,000

*Project triggers (for example, regulatory, capacity condition) are identified in Volume 2 of the Woodburn Wastewater Facilities Plan.

3.3.2 CIP Funding

Funding for the CIP will likely be provided primarily through revenue bond and loan proceeds, including DEQ loan proceeds of about \$8 million and a bank loan for land purchases of about \$1 million. Revenue from rates and SDCs is nominal (about 10 percent) for direct project expenses; however, additional rate and SDC revenue is used to repay the City's debt service. The bulk of project expenses are assumed to be funded through future revenue bond proceeds of about \$113 million over the 20-year period. The City is currently repaying loans based on a total principal amount of about \$34 million. The majority of these loans will be paid off in FY2020/21.

Total CIP funding shown in Table 3-3 is \$140.2 million for the 20-year period, with \$128.9 million related to capital improvements (adjusted for inflation) and \$11.3 million related to debt service reserve and issuance costs, which are generally paid from debt proceeds.

TABLE 3-3
Projected Capital Improvement Plan Funding

	Total
Uses of Funds	
Capital Improvements*	\$128,925,212
Debt Issuance	\$1,695,000
Debt Reserve	\$9,605,000
Total Uses of Funds	140,225,212
Funding Sources	
Loan Proceeds	\$3,093,175
Grants	\$0
Loan (Expand Existing State Revolving Fund (SRF))	\$5,000,000
Rates/SDCs	\$13,363,759
Future Bond Proceeds	\$113,000,000
Bank Loan	\$729,240

TABLE 3-3
Projected Capital Improvement Plan Funding

	Total
Interest Income	\$5,039,038
Total Source of Funds	\$140,225,213

*Adjusted for inflation.

3.4 Total Revenue Requirements

Table 3-4 shows total revenue requirements and requirements from rates for the period FY2010/11 through FY2014/15 (the cost-of-service rate-setting period presented in Section 5). As the table shows, total revenue requirements increase steadily over the study period, ranging from \$6.4 million to \$8.7 million. Debt service costs increase significantly (over \$2 million) during the study period, in order to support the first phase of improvements at the treatment plant, and address initial collection system issues. Specifically, the financial plan includes additional debt issuance through FY2014/15 of approximately \$38 million. The assumed debt proceeds include DEQ loans (\$5 million), a bank loan (\$0.7 million), and revenue bonds (\$32.3 million).

In addition to debt service to support the CIP, the wastewater fund will also need to repay the debt service for an interfund loan from the water fund used to pay for contract hauling of biosolids. The interfund loan is assumed to be repaid over 5 years at an interest rate of 2.5 percent.

TABLE 3-4
Projected Revenue Requirements from Rates

	FY2010/11	FY2011/12	FY2012/13	FY2013/14	FY2014/15
Revenue Requirements					
Operations & Maintenance	\$2,960,801	\$3,007,615	\$3,143,511	\$3,299,530	\$3,448,880
Interfund Loan	\$646,856	\$646,856	\$646,856	\$646,856	\$646,856
Debt Service	\$2,264,523	\$2,730,652	\$3,251,523	\$3,940,599	\$4,631,351
Capital Transfers	\$525,885	\$12,517	\$66,618	\$19,449	\$71,892
Total	\$6,398,065	\$6,397,641	\$7,108,509	\$7,906,434	\$8,798,980
Less Nonrate Revenue – O&M Related					
Collections	(\$100)	(\$100)	(\$100)	(\$100)	100
Wastewater Discharge Fines	(\$505)	(\$517)	(\$530)	(\$543)	556
Interest from Investment	(\$5,483)	(\$5,685)	(\$5,743)	(\$5,913)	6,108
Other Miscellaneous Income	(\$7,271)	(\$7,449)	(\$7,633)	(\$7,820)	8,013
Late Fees	(\$42,412)	(\$43,455)	(\$44,524)	(\$45,619)	46,741
Subtotal	(\$55,770)	(\$57,206)	(\$58,530)	(\$59,996)	\$61,519
(Uses of) Additions to Reserves	(\$638,788)	\$2,341	\$6,795	\$7,801	\$7,468

TABLE 3-4
Projected Revenue Requirements from Rates

	FY2010/11	FY2011/12	FY2012/13	FY2013/14	FY2014/15
Requirements from Rates					
O&M/Interfund Loan	\$3,551,887	\$3,597,265	\$3,731,838	\$3,886,391	\$4,034,218
Capital	2,790,408	2,743,170	3,318,142	3,960,048	4,703,243
(Uses of) Additions to Reserves	(638,788)	2,341	6,795	7,801	7,468
Requirements from Rates	\$5,703,507	\$6,342,775	\$7,056,774	\$7,854,239	\$8,744,928
Projected System-wide Rate Increase Required	12.00%	9.50%	9.50%	9.50%	9.50%

3.5 Nonrate Revenues

Nonrate revenue from interest on investments and other fees/charges is modest, ranging from approximately \$55,000 to \$60,000 during the forecast period. In FY2010/11, the City is also estimated to use existing cash reserves of about \$600,000 to pay for a portion of the revenue requirements.

3.6 Net Revenue Requirements from Rates

When total requirements are reduced by nonrate revenues and reserves, revenue requirements from rates are estimated to be \$5.7 million in FY2010/11, and increase to \$8.7 million in FY2014/15. The City's last rate increase was 12 percent in August 2009. Revenue under existing rates is projected to be about \$4.9 million in FY2010/11, assuming moderate customer growth. Projected additional rate increases of 12 percent in FY2010/11 and 9.5 percent each year through FY2014/15 are needed to meet the forecast requirements from rates.

3.7 Long-Term Projected Operating Results

Table 3-5 shows the projected operating results for the wastewater fund through FY2029/30. The table includes projected revenues, expenses, debt service coverage, and changes in fund balance for the long-term study period. Debt service coverage is the amount of revenue that a utility must generate annually in excess of its operation, maintenance, and debt service requirements. This additional revenue is required by debt issuers as a condition of issuing revenue bonds and loans; it provides the debt holders a measure of security regarding debt repayment by the utility. Failure to generate the required revenues puts the utility in default on the debt, which adversely affects current and future bond ratings and interest costs. The City has a current minimum debt service coverage ratio of 1.05, which is expected to increase to 1.20 with future bond sales. A minimum target coverage ratio of 1.30 (the minimum generally recommended by financial advisors) is used for financial planning purposes. The coverage ratio is the multiple by which net revenues (gross revenue less

O&M expenses) must exceed the average annual principal and interest requirements of all outstanding bonds.

As shown in Tables 3-4 and 3-5, it is estimated that additional wastewater rate increases averaging 10 percent per year are needed in the short term (through FY2014/15) to enable the City to fund the forecast capital investments and annual O&M requirements, in addition to meeting minimum reserve and coverage requirements. Subsequent years are projected to have either no rate increase or a modest increase of 3.5 percent, based on forecast annual revenue requirements. Appendix A provides additional detail related to the financial forecast, including cash flows by fund.

TABLE 3-5
Projected Operating Results

	FY 2010/11	FY 2011/12	FY 2012/13	FY 2013/14	FY 2014/15	FY 2015/16	FY 2016/17	FY 2017/18	FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23	FY 2023/24	FY 2024/25	FY 2025/26	FY 2026/27	FY 2027/28	FY 2028/29	FY 2029/30	
Beginning Balance	\$219,321	\$227,389	\$201,214	\$205,401	\$132,858	\$79,442	\$265,708	\$274,169	\$239,403	(\$8,144)	\$224,983	\$73,834	\$252,545	\$269,578	\$279,241	\$299,992	\$306,169	\$316,282	\$334,446	\$355,099	
Sales Revenue (existing rates)	\$4,359,460	\$4,446,649	\$4,535,582	\$4,626,294	\$4,718,820	\$4,813,196	\$4,909,460	\$5,007,649	\$5,107,802	\$5,209,958	\$5,314,157	\$5,420,441	\$5,528,849	\$5,639,426	\$5,752,215	\$5,867,259	\$5,984,604	\$6,104,296	\$6,226,382	\$6,350,910	
Additional Revenue from Rate Increase																					
Year	Percent	% of Initial FY Effec.																			
FY 2009-10	12.00%	85%	\$523,135	\$533,598	\$544,270	\$555,155	\$566,258	\$577,584	\$589,135	\$600,918	\$612,936	\$625,195	\$637,699	\$650,453	\$663,462	\$676,731	\$690,266	\$704,071	\$718,153	\$732,516	\$747,166
FY 2010-11	12.00%	100%	\$585,911	\$597,630	\$609,582	\$621,774	\$634,209	\$646,894	\$659,831	\$673,028	\$686,489	\$700,218	\$714,223	\$728,507	\$743,077	\$757,939	\$773,098	\$788,560	\$804,331	\$820,417	\$836,826
FY 2011-12	9.50%	100%		\$529,898	\$540,496	\$551,306	\$562,332	\$573,579	\$585,051	\$596,752	\$608,687	\$620,860	\$633,278	\$645,943	\$658,862	\$672,039	\$685,480	\$699,190	\$713,173	\$727,437	\$741,986
FY 2012-13	9.50%	100%			\$591,843	\$603,680	\$615,754	\$628,069	\$640,630	\$653,443	\$666,512	\$679,842	\$693,439	\$707,308	\$721,454	\$735,883	\$750,601	\$765,613	\$780,925	\$796,543	\$812,474
FY 2013-14	9.50%	100%				\$661,030	\$674,250	\$687,735	\$701,490	\$715,520	\$729,830	\$744,427	\$759,316	\$774,502	\$789,992	\$805,792	\$821,908	\$838,346	\$855,113	\$872,215	\$889,659
FY 2014-15	9.50%	100%				\$738,304	\$753,070	\$768,132	\$783,494	\$799,164	\$815,148	\$831,451	\$848,080	\$865,041	\$882,342	\$899,989	\$917,989	\$936,348	\$955,075	\$974,177	
FY 2015-16	0.00%	100%					\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
FY 2016-17	0.00%	100%						\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
FY 2017-18	3.50%	100%						\$316,078	\$322,400	\$328,848	\$335,425	\$342,133	\$348,976	\$355,955	\$363,074	\$370,336	\$377,743	\$385,297	\$392,903	\$400,664	
FY 2018-19	3.50%	100%							\$333,684	\$340,357	\$347,165	\$354,108	\$361,190	\$368,414	\$375,782	\$383,298	\$390,964	\$398,783	\$406,759	\$414,894	
FY 2019-20	3.50%	100%								\$352,270	\$359,315	\$366,502	\$373,832	\$381,308	\$388,934	\$396,713	\$404,647	\$412,740	\$420,995	\$429,415	
FY 2020-21	0.00%	100%									\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
FY 2021-22	0.00%	100%									\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
FY 2022-23	0.00%	100%									\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
FY 2023-24	3.20%	100%													\$360,827	\$368,043	\$375,404	\$382,912	\$390,570	\$398,382	
FY 2024-25	3.20%	100%													\$379,820	\$387,417	\$395,165	\$403,069	\$411,130	\$419,352	
FY 2025-26	3.20%	100%														\$399,814	\$407,810	\$415,967	\$424,286	\$432,772	
FY 2026-27	3.20%	100%															\$420,860	\$429,278	\$437,863	\$446,620	
FY 2027-28	3.20%	100%																\$443,015	\$451,875	\$460,912	
FY 2028-29	3.20%	100%																	\$466,335	\$475,661	
Subtotal Additional Revenue	\$1,109,047	\$1,661,126	\$2,286,192	\$2,992,945	\$3,791,109	\$3,866,931	\$3,944,269	\$4,339,233	\$4,759,701	\$5,207,165	\$5,311,309	\$5,417,535	\$5,525,885	\$5,997,230	\$6,496,995	\$7,026,749	\$7,588,144	\$8,182,922	\$8,812,915	\$9,480,056	
Septage Dumping	\$235,000	\$235,000	\$235,000	\$235,000	\$235,000	\$235,000	\$235,000	\$235,000	\$235,000	\$235,000	\$235,000	\$235,000	\$235,000	\$235,000	\$235,000	\$235,000	\$235,000	\$235,000	\$235,000	\$235,000	
Total Rate Revenue	\$5,703,507	\$6,342,775	\$7,056,774	\$7,854,239	\$8,744,928	\$8,915,127	\$9,088,729	\$9,581,882	\$10,102,504	\$10,652,123	\$10,860,466	\$11,072,975	\$11,289,735	\$11,871,656	\$12,484,210	\$13,129,008	\$13,807,749	\$14,522,218	\$15,274,297	\$16,065,966	
Other Revenue	\$452,582	\$985,490	\$1,270,741	\$1,255,094	\$1,559,358	\$1,480,262	\$1,346,547	\$1,438,617	\$1,840,531	\$1,762,248	\$1,691,109	\$1,972,979	\$2,250,542	\$2,129,590	\$2,089,470	\$2,400,593	\$2,327,008	\$2,564,307	\$2,597,189	\$3,011,590	
Other Miscellaneous Income	\$7,271	\$7,449	\$7,633	\$7,820	\$8,013	\$8,210	\$8,412	\$8,619	\$8,831	\$9,048	\$9,272	\$9,501	\$9,735	\$9,976	\$10,222	\$10,475	\$10,733	\$10,998	\$11,270	\$11,548	
Total Resources	\$6,156,089	\$7,328,265	\$8,327,514	\$9,109,333	\$10,304,287	\$10,395,389	\$10,435,277	\$11,020,499	\$11,943,035	\$12,414,372	\$12,551,575	\$13,045,955	\$13,540,277	\$14,001,246	\$14,573,679	\$15,529,601	\$16,134,756	\$17,086,525	\$17,871,486	\$19,077,556	
Operation & Maintenance Costs ^(a)	\$2,635,982	\$2,668,087	\$2,788,584	\$2,928,479	\$3,060,944	\$3,321,561	\$3,472,260	\$3,603,561	\$3,849,759	\$4,014,562	\$4,321,696	\$4,520,171	\$4,836,398	\$5,004,044	\$5,392,235	\$5,487,657	\$5,660,484	\$5,992,897	\$6,373,634	\$6,664,472	
Net Revenue Avail. For Debt Service	\$3,520,107	\$4,660,177	\$5,538,930	\$6,180,855	\$7,243,342	\$7,073,828	\$6,963,017	\$7,416,938	\$8,093,276	\$8,399,810	\$8,229,880	\$8,525,784	\$8,703,878	\$8,997,202	\$9,181,445	\$10,041,944	\$10,474,273	\$11,093,628	\$11,497,853	\$12,413,084	
Debt Service																					
Sr. Lien Bonds	\$0	\$581,153	\$1,162,306	\$1,915,420	\$2,668,534	\$2,668,534	\$2,808,069	\$3,644,862	\$4,342,120	\$4,342,120	\$4,806,959	\$5,829,730	\$6,387,662	\$6,387,662	\$6,852,500	\$7,317,339	\$7,549,758	\$7,782,178	\$8,618,971	\$9,455,764	
Subordinate (Loans)	\$2,525,398	\$2,961,151	\$2,950,284	\$2,939,043	\$2,932,428	\$2,920,194	\$2,907,538	\$2,899,478	\$2,695,780	\$2,536,314	\$2,524,958	\$608,831	\$606,480	\$604,074	\$601,612	\$599,092	\$596,510	\$593,869	\$591,164	\$588,395	
Debt Service	\$2,525,398	\$3,542,304	\$4,112,589	\$4,854,463	\$5,600,962	\$5,588,728	\$5,715,607	\$6,544,341	\$7,037,901	\$6,878,434	\$7,331,917	\$6,438,561	\$6,994,142	\$6,991,736	\$7,454,112	\$7,916,431	\$8,146,269	\$8,376,046	\$9,210,135	\$10,044,159	
Sr. Lien Debt Service Coverage	na	8.02	4.77	3.23	2.71	2.65	2.48	2.03	1.86	1.93	1.71	1.46	1.36	1.41	1.34	1.37	1.39	1.43	1.33	1.31	
Subordinate Debt Coverage	1.39	1.38	1.48	1.45	1.56	1.51	1.43	1.30	1.39	1.60	1.36	4.43	3.82	4.32	3.87	4.55	4.90	5.58	4.87	5.03	
Interest from SDC Fund	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Construction Fund Interest Adjustment	(\$43,681)	(\$24,375)	(\$258,888)	(\$188,978)	(\$435,972)	(\$296,485)	(\$98,933)	(\$123,853)	(\$455,022)	(\$302,052)	(\$153,568)	(\$352,482)	(\$542,840)	(\$329,117)	(\$190,696)	(\$399,834)	(\$216,638)	(\$340,370)	(\$251,706)	(\$538,235)	
Other Expenditures																					
Capital Outlay & Other Interfund Transfers	\$324,819	\$986,384	\$1,001,783	\$1,017,908	\$1,034,792	\$405,617	\$424,132	\$443,523	\$463,832	\$485,103	\$507,382	\$530,720	\$555,168	\$580,777	\$607,607	\$635,715	\$665,166	\$696,021	\$728,353	\$762,232	
Other Financing	\$92,257	\$92,257	\$92,257	\$92,257	\$92,257	\$92,257	\$92,257	\$92,257	\$92,257	\$92,257	\$92,257	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Capital Projects Transfer	\$525,885	\$12,517	\$66,618	\$19,449	\$71,892	\$676,827	\$623,627	\$205,429	\$30,939	\$712,009	\$220,541	\$1,192,930	\$594,695	\$1,085,909	\$908,279	\$1,083,788	\$1,436,086	\$1,663,026	\$1,287,005	\$1,052,222	
Total Other Expenditures	\$942,960	\$1,091,157	\$1,160,658	\$1,129,613	\$1,198,940	\$1,174,700	\$1,140,016	\$741,209	\$587,028	\$1,289,368	\$727,924	\$1,723,651	\$1,149,863	\$1,666,686	\$1,515,885	\$1,719,503	\$2,101,252	\$2,359,048	\$2,015,358	\$1,814,453	
Total Requirements	\$6,104,340	\$7,301,548	\$8,061,832	\$8,912,555	\$9,860,846	\$10,084,988	\$10,327,883	\$10,889,111	\$11,474,687	\$12,182,364	\$12,381,537	\$12,682,383	\$12,980,403	\$13,662,466	\$14,362,232	\$15,123,590	\$15,908,004	\$16,727,992	\$17,599,127	\$18,523,084	
Ending Operating Balance	\$227,389	\$229,730	\$236,524	\$244,326	\$251,793	\$265,708	\$274,169	\$281,703	\$295,028	\$224,984	\$241,453	\$252,544	\$269,578	\$279,241	\$299,992	\$306,169	\$316,282	\$334,446	\$355,099	\$371,336	
Ending Construction Fund Balance (Unreserved)	\$111,246	\$8,142,383	\$5,345,968	\$13,695,752	\$8,116,268	\$214,190	\$926,020	\$12,757,750	\$6,638,949	\$699,587	\$7,712,777	\$14,192,118	\$5,643,205	\$106,368	\$7,528,540	\$200,719	\$4,678,296	\$1,131,760	\$10,892,922	\$402,301	

NOTE:
^(a)Excluding Surface Water

Wastewater Characteristics

4.1 Introduction

An equitable allocation of revenue requirements to wastewater system users begins with an analysis of user characteristics. This section provides an overview of customer classes and usage characteristics.

4.2 Customer Classes

Wastewater utilities must design and operate their systems to meet the total estimated wastewater flows and loadings generated within the service area. There are significant costs of building, operating, and maintaining a system to meet user capacity requirements. The development of customer class rates enables a utility to assign costs to different classes in proportion to their service requirements.

For reasons of equity, customers must be classified into relatively homogeneous groups with similar usage characteristics or service demands. Costs are then allocated to the customer classes in proportion to each class's usage characteristics. For the wastewater system, costs are allocated to customers based on their estimated wastewater flows and loads.

The most common customer classifications for rate-setting purposes are commercial and residential. Residential may be further divided into single-family residential and multifamily residential. Similarly, commercial may be divided into industrial and other commercial classes. For rate-setting purposes, a utility must have available data on system usage/demand, or be able to project them, for each designated customer class.

4.3 Projected Usage Characteristics

A fundamental objective in developing an equitable rate system is to price utility services so that customers pay for the service they receive in proportion to their use. Historical data on customer growth and wastewater treatment plant influent data are used to project user characteristics by class for rate-setting purposes.

Table 4-1 summarizes estimated user characteristics for each customer class for FY2008/09.

4.3.1 Customers and Bills

As Table 4-1 indicates, the wastewater system serves approximately 6,148 customers, including residential, multifamily, commercial, industrial, and monitored. Residential customers compose close to 90 percent of total accounts—93 percent when multifamily accounts are added. Commercial customers compose about 7 percent, and monitored and industrial customers compose a fraction of a percent. Customer account growth is forecast at 1.0–2.5 percent annually throughout the study period.

TABLE 4-1
Wastewater System User Characteristics (FY2008/09)

Customer Class	Customers	Equivalent Dwelling Units	Flow (100 cf) ^a
Residential	5,562	5,562	398,774
Multifamily	183	2,436	150,132
Commercial	398	NA ^b	124,934
Monitored	3	NA	43,053
Industrial	3	NA	25,131
Septic	NA	NA	2,991
TOTAL	6,148	8,402	745,015
Residential	90.46%	66.20%	53.53%
Multifamily	2.97%	29.00%	20.15%
Commercial	6.47%	NA	16.77%
Monitored	0.05%	NA	5.78%
Industrial	0.05%	NA	3.37%
Septic	NA	NA	0.40%
TOTAL	100%	100%	100%

^aHundred cubic feet

^bNot applicable

4.3.2 Wastewater Flows and Loads

Table 4-1 also provides information on estimated wastewater flows. For single-family residential and multifamily customers, the flows are estimated from winter use records. For all other customers, flows are based on monthly metered water use or monitored flows and loads. As shown in Table 4-1, while residential customers represent 93 percent of accounts, they represent only about 74 percent of total flows. Commercial customers are estimated to represent about 17 percent of flows, with the remaining 9 percent of flows from industrial customers, including monitored customers. The City also receives flows from septic haulers, which represent a fairly small portion of flow, but a higher portion of load.

Estimated strength loadings for customers are presented in Table 4-2. Residential and septic strengths are based on industry data. Monitored industrial strengths are from monthly monitoring reports. Commercial and nonmonitored industrial strengths are estimated from residual plant loadings (total loads at the treatment plant less other class loadings).

TABLE 4-2
Wastewater Loadings

Customer Class	Flow		BOD		TSS		
	(mg)	(lb)	%	(mg/L)	(lb)	%	(mg/L)
Residential ^a	298	746,751	42.8%	300	696,968	45.5%	280
Multifamily ^a	112	281,139	16.1%	300	262,397	17.1%	280
Commercial ^b	93	397,470	22.8%	510	272,301	17.8%	349
Monitored ^c	27.1	128,883	7.4%	571	15,194	1.0%	67
Industrial ^c	20.7	87,939	5.0%	510	60,246	3.9%	349
Septic ^c	2.2	100,807	5.8%	5,400	224,016	14.6%	12,000
Total ^d	554.0	1,742,990	100%		1,531,121	100%	

^a Estimated based on winter water use records.

^b Estimated from annual water use records.

^c From monitoring reports.

^d Excludes infiltration and inflow.

Cost Allocations

5.1 Introduction

A fundamental principle for developing an equitable rate structure is to ensure that all users pay – through user charges, connection charges, taxes, or other fees – for their share of the total costs imposed on the system. Some of these expenditures are a function of wastewater flow (average and peak); others are a function of wastewater loadings. Some costs are associated with serving customers regardless of the volume or strength of discharge.

As described in Section 2, the basic steps used to allocate the revenue requirements of the City’s wastewater system to customer classes include the following:

1. Revenue requirements are categorized by utility function.
2. Costs are grouped into joint and specific categories.
3. The costs are classified based on the types of services provided by the utility (referred to here as service characteristics).
4. Requirements by customer service characteristic are allocated to customer classes in proportion to each class’s use.

This section describes the cost allocation process and presents the costs to be recovered from each customer class through rates during the period FY2010/11 through FY2014/15. The approaches described in this section follow standard industry practice for wastewater utility rate setting. While the allocation methodologies are widely accepted for developing equitable rates, equitable allocations are a matter of judgment to some degree. This is because many costs are associated with facilities or services that serve more than one purpose or more than one group of customers.

5.2 Cost Allocation Procedure

The City’s last cost-of-service analysis was completed in 1995. The current analysis follows the same general approach used in the previous study – revenue requirements are allocated to wastewater system service characteristics based on system design and operation criteria, and are then allocated to customer classes in proportion to system use.

City staff and consultants conducted a review and analysis of the wastewater system to determine equitable allocations to system functions and service characteristics. The resultant cost allocations, summarized below, reflect the best available knowledge of the system. More detailed documentation of the cost allocations is provided in Appendix B.

5.3 Allocations to Functions

The wastewater utility functions used for categorizing revenue requirements include the following:

- **Collection** – the pipelines that collect wastewater from individual customers and deliver it to the treatment plant.
- **Pumping** – the facilities for mechanically moving wastewater to higher elevations.
- **Preliminary treatment** – Screenings and grit removal facilities. Preliminary treatment facilities are sometimes referred to as headworks facilities because they are located at the front or head end of treatment plants.
- **Primary treatment** – The sedimentation process removes suspended solids from the wastewater. This component includes the primary sedimentation settling tanks and associated pumping systems for material that is removed from the top (scum/skimmings) and bottom (primary sludge) of the settling tanks.
- **Secondary treatment** – a biological process to remove the soluble and colloidal organic matter that remains after primary treatment; facilities typically include aeration basins and the associated blowers that provide air to the basins, and secondary clarification settling tanks and the associated pumping facilities that transport the settled biological sludge to subsequent biosolids processing facilities.
- **Filtration** – process units that rely on filters to remove TSS from the treated effluent.
- **Disinfection/outfall** – process elements at the downstream end of the treatment process. Disinfection sterilizes remaining microorganisms contained in the treated wastewater. The outfall is a pipeline and/or a series of diffuser ports for conveying the treated effluent to the receiving stream.
- **Digestion/thickening** – process units that further treat and thicken the settled sludge that has been removed from the wastewater through the liquid treatment processes, allowing safe and cost-effective land application of the treated biosolids.
- **Industrial pretreatment program** – management of a program to regulate selected sanitary wastewater flows at their industrial sources before they are discharged to the public collection system.
- **Poplar** – natural treatment systems used for beneficial effluent reuse and disposal of biosolids.
- **Wetlands** – natural treatment systems used only for temperature reduction of the treated effluent, prior to discharge to the receiving stream.
- **Lab** – facilities that are used to monitor and test wastewater discharges to receiving stream, reuse and industrial users.
- **Billing** – costs associated with billing, accounting, and other customer services that do not vary with the amount or strength of wastewater discharged.

- Septic – treatment plant facilities that are used to receive waste from septic tank haulers.

5.4 Operations and Maintenance Cost Allocations

Table B-1 in Appendix B shows the functionalization percentages for each O&M line item. The Wastewater division (621) supports primarily treatment functions, while the Maintenance division (631) is responsible for collection and pumping. Transfers to the water fund support the wastewater system's share of customer billing. Other transfers are spread indirectly over the functional categories, in proportion to the directly allocated costs. The O&M adjustments are additional costs related to poplar and wetland management, identified in the Facilities Plan.

Table B-1 also shows that on average over the study period, about 19 percent of wastewater O&M costs are associated with collection and pumping, and about 70 percent are for treatment and disposal functions. Septic-specific costs represent almost 1.4 percent of costs, and lab and customer service costs are 6.0 percent and 3.2 percent, respectively.

5.4.1 Capital Costs

Table B-2 in Appendix B presents the wastewater system capital improvement costs by utility function for the study period. Because the revenue requirements include both debt related to existing facilities and projected new debt service to support the CIP, both existing system assets and CIP improvements are considered in the allocation. As shown in Table B-2, the CIP improvements are more heavily weighted to collection/pumping functions, while the fixed assets include relatively more significant treatment system investment. None of the capital costs are related to industrial pretreatment or billing functions. The City is planning additional investment in septic receiving facilities, as discussed in the Joint and Specific Groupings subsection, below.

5.5 Joint and Specific Groupings

Costs needed to support functions performed for the entire service area are considered "joint" costs, whereas costs needed to perform functions unique to a particular subset of customers are "specific" costs. For the City's wastewater system, septic haulers represent the only specific grouping of customers at this time. As shown in Table 5-1, septic haulers benefit from certain O&M and capital costs that serve them specifically, while they do not share in collection or liquid treatment functions.

Table B-1 shows the direct allocation of O&M costs to septic haulers. Additionally, the Facilities Plan CIP includes an improvement to septic receiving facilities of \$1.7 million. The costs of these facilities are assumed to be amortized over a 20-year period, at an interest rate of 5.5 percent. Therefore, the direct allocation to septic customers includes an annual capital cost of \$142,000. Septic customers are also allocated a share of the "All Users" functional costs (i.e., solids handling and disposal costs) in proportion to their flows and loads.

TABLE 5-1
Allocation of Costs to System Characteristics

Function	All Users	All Users Except Septic	Septic Only
Collection		100%	
Pump Stations		100%	
Preliminary		100%	
Primary		100%	
Secondary		100%	
Filtration		100%	
Disinfection/Outfall		100%	
Industrial Pretreatment		100%	
Digestion/Thickening	100%		
Poplars	100%		
Wetlands	100%		
Lab	100%		
Billing		100%	
Septic			100%

5.6 Allocation to Service Characteristics

Wastewater system costs by function are allocated to service characteristics as follows:

- **Average flow** – includes capital costs and O&M expenses associated with transporting and treating average wastewater discharges from customers.
- **Peak flow** – the costs associated with providing capacity and maintaining facilities that handle rainfall and groundwater that enter the wastewater conveyance system in the form of infiltration and inflow (I/I).
- **Biochemical oxygen demand** – costs associated with building and operating facilities to provide treatment for BOD.
- **Total suspended solids** – costs associated with building and operating facilities to provide removal of TSS.
- **Billing** – costs associated with billing, accounting, and other customer services that do not vary with the amount of wastewater or loading discharged.
- **Septic** – facilities that are used to receive waste from septic tank haulers.

Table 5-2 presents the allocation percentages for the functional categories.

TABLE 5-2
Allocation of Costs to System Characteristics

Function	Total	Average Flow	Infiltration/ Inflow	BOD	TSS	Billing	Septic
Collection	100%	12%	88%				
Pump Stations	100%	12%	88%				
Preliminary	100%	12%	88%				
Primary	100%	2%	18%	33%	47%		
Secondary	100%	2%	18%	47%	33%		
Filtration	100%			34%	66%		
Disinfection/Outfall	100%	12%	88%				
Industrial Pretreatment	100%	34%		33%	33%		
Digestion/Thickening	100%			50%	50%		
Poplars	100%	100%					
Wetlands	100%	100%					
Lab	100%			70%	30%		
Billing	100%					100%	
Septic	100%						100%
Average O&M Cost Allocation	100%	16.1%	29.0%	26.6%	23.8%	3.2%	1.4%
Average Capital Cost Allocation	100%	17.9%	38.0%	18.8%	21.1%	0.0%	4.2%

5.6.1 Operations and Maintenance Costs

When the O&M costs by functional category (presented in Appendix B) are distributed across system characteristics, as shown in Table 5-2, the average system O&M cost percentages by service characteristic for the study period are: 45 percent of total O&M costs are related to wastewater flows (16 percent average flow and 29 percent I/I). Total strength costs are estimated to represent almost 51 percent of total costs. Billing-related costs represent about 3 percent of total costs, while septic costs are about 1 percent.

5.6.2 Capital Costs

Table 5-2 also presents the average wastewater system capital costs by service characteristic for the study period. On the basis of the CIP and fixed asset allocations, approximately 55.9 percent of total costs are related to wastewater flows (17.9 percent average flow and 38.0 percent I/I). Total strength costs are estimated to represent about 39.9 percent of total costs. Septic receiving costs represent 4.2 percent of costs.

5.7 Cost Allocations to Customer Classes

Allocation of costs by service characteristic to customer classes is based on the allocation of costs to joint and specific categories, the costs by service characteristic, and the proportionate use levels of each characteristic by each class. Table 5-3 shows the allocation of revenue requirements from rates by service characteristic and joint and specific categories.

As shown in Table 5-3, total revenue requirements from rates are forecast to be \$5.7 million in FY2010/11. Of the total, \$2.2 million are costs (primarily for solids handling and disposal) that serve all users (including septic haulers), \$3.3 million are costs related to all users, except septic haulers (costs associated with liquids treatment and collection system), and almost \$200,000 million are septic-specific.

The costs by service characteristic, shown in Table 5-3, are allocated to customer classes, based on each class's share of that service characteristic, as estimated by the following:

- Average flow and I/I costs – for nonmonitored customers: estimated wastewater flows from water use records, and metered flows for monitored customers
- Biochemical oxygen demand – annual pounds of BOD as estimated by the plant balance analysis shown in Table 4-2
- Total suspended solids costs – annual pounds of TSS as estimated by the plant balance analysis shown in Table 4-2
- Billing – number of customer accounts billed
- Septic – direct cost allocation

On the basis of the user characteristics presented in Section 4 and the net requirements by category in Table 5-3, the allocation of costs to customer classes is shown in Table 5-4. Residential customers are responsible for about 49 percent of system costs. Multifamily and commercial customers each represent 18 percent of total costs. In FY2010/11, septic customers' costs are 6 percent of total requirements from rates, and monitored and industrial costs are about 5 percent and 4 percent, respectively.

TABLE 5-3
Net Requirements Classification Summary

Category and Year	Classifications						Total
	Average Flow	BOD	TSS	Billing	I/I - Flow	Septic	
Costs Shared by All Wastewater System Customers (Including Septic)							
FY2009/10	\$668,863	\$622,250	\$531,463	\$0	\$0	\$0	\$1,822,576
FY2010/11	\$612,499	\$869,869	\$737,594	-	-	-	\$2,219,962
FY2011/12	\$702,344	\$929,529	\$784,319	-	-	-	\$2,416,192
FY2012/13	\$796,283	\$1,007,772	\$847,062	-	-	-	\$2,651,117
FY2013/14	\$896,584	\$1,100,881	\$921,615	-	-	-	\$2,919,080
FY2014/15	\$1,013,658	\$1,197,675	\$998,870	-	-	-	\$3,210,204
Customers Shared by Customers, excluding Septic							
FY2009/10	\$308,415	\$424,700	\$500,464	\$86,961	\$1,830,034	\$0	\$3,150,574
FY2010/11	\$325,497	\$478,850	\$559,466	\$112,828	\$1,815,634	-	\$3,292,275
FY2011/12	\$360,873	\$539,784	\$646,914	\$114,270	\$2,072,848	-	\$3,734,688
FY2012/13	\$400,488	\$606,776	\$739,924	\$118,545	\$2,346,172	-	\$4,211,905
FY2013/14	\$443,913	\$682,211	\$845,116	\$123,454	\$2,644,580	-	\$4,739,274
FY2014/15	\$492,990	\$766,290	\$962,848	\$128,150	\$2,986,522	-	\$5,336,800
Septic-Specific Costs							
FY2009/10						\$180,032	\$180,032
FY2010/11						\$191,269	\$191,269
FY2011/12						\$191,895	\$191,895
FY2012/13						\$193,752	\$193,752
FY2013/14						\$195,885	\$195,885
FY2014/15						\$197,925	\$197,925
Total Costs							
FY2009/10	\$977,278	\$1,046,950	\$1,031,928	\$86,961	\$1,830,034	\$180,032	\$5,153,183
FY2010/11	\$937,996	\$1,348,719	\$1,297,060	\$112,828	\$1,815,634	\$191,269	\$5,703,507
FY2011/12	\$1,063,216	\$1,469,313	\$1,431,233	\$114,270	\$2,072,848	\$191,895	\$6,342,775
FY2012/13	\$1,196,771	\$1,614,548	\$1,586,986	\$118,545	\$2,346,172	\$193,752	\$7,056,774
FY2013/14	\$1,340,497	\$1,783,092	\$1,766,732	\$123,454	\$2,644,580	\$195,885	\$7,854,239
FY2014/15	\$1,506,649	\$1,963,965	\$1,961,718	\$128,150	\$2,986,522	\$197,925	\$8,744,928

TABLE 5-4
Total Costs by Customer Class

Customer Class	FY2009/10	FY2010/11	FY2011/12	FY2012/13	FY2013/14	FY2014/15
Residential	\$2,560,797	\$2,813,322	\$3,151,610	\$3,528,524	\$3,949,918	\$4,422,160
Multifamily	\$937,064	\$1,030,491	\$1,153,996	\$1,291,740	\$1,445,793	\$1,618,378
Commercial	\$924,143	\$1,037,996	\$1,160,894	\$1,298,405	\$1,452,360	\$1,624,620
Monitored	\$249,449	\$270,107	\$295,028	\$322,147	\$351,743	\$384,090
Industrial	\$184,808	\$205,588	\$224,304	\$244,743	\$267,076	\$291,456
Septic	\$296,922	\$346,003	\$356,943	\$371,215	\$387,349	\$404,224
Total	\$5,153,183	\$5,703,507	\$6,342,775	\$7,056,774	\$7,854,239	\$8,744,928

Wastewater Rates

6.1 Introduction

The structure or design of a utility rate refers to the set of unit charges and customer use measures used to calculate bills for individual users. In most cases, utility rates include fixed charges that do not vary with customer usage, often called customer charges or service charges, and one or more charges per unit of demand (however that demand is measured). In some instances, a quantity allowance³ is included in the customer charge; in other cases, charges are assessed on a customer's total use during a billing period.⁴

The "art" of ratemaking involves designing rates that balance inherently conflicting rate objectives in a manner that reflects community values. At a minimum, utility rates should be sufficient to generate revenues required to support operations, maintain and develop capital infrastructure, and preserve (or enhance) the financial integrity of the utility system. In addition, there are a number of other technical and policy objectives that utilities set out to achieve in developing rate structures for utility services. These may include rate stability, equity, simplicity, public understanding, and resource efficiency.

The wastewater rates presented in this study are designed to recover the revenue requirements presented in Section 3 and generate revenues by class and rate component that approximately equal the allocated cost responsibility shown in Section 5. They are based on the assumption that historical information on user characteristics can be expected to be predictive of future demands, and that customer growth will approximate between 1.0 and 2.5 percent per annum. Significant changes in growth rates or usage patterns may require a reassessment of the wastewater rates presented. In addition, if the City substantially revises its O&M budget or its financial plan, discussed in Section 3, the rates should be reviewed and may require adjustment.

6.2 Existing Rates

"Existing rates," for the purposes of this report, refer to rates effective August 1, 2009, and are shown in Table 6-1. As the table indicates, existing rates include a minimum (fixed) monthly charge of \$28.38 for residential customers, including multifamily dwelling units, as well as a 5 hundred cubic feet (ccf) quantity allowance. Commercial and industrial minimum charges are \$35.88 and include 6 ccf. Monitored customers pay a minimum monthly charge of \$77.16, including 10 ccf.

³ An allowance for a specified amount of service usage within a billing period wherein volume-based charges are applied only to usage in excess of the allowed quantity.

⁴ In some cases, customer usage may be based on actual metered data during the current billing period, and in other cases, customer use may be estimated from usage during a previous period. An example of the latter is using average winter water usage to estimate monthly wastewater flows in nonwinter months.

TABLE 6-1
Existing and Projected Rates

Customer Class	Existing August 1, 2009	Projected Cost of Service Rates				
		FY2010/11	FY2011/12	FY2012/13	FY2013/14	FY2014/15
Usage Charges (\$/ccf)						
Residential	\$5.04	\$6.01	\$6.58	\$7.21	\$7.90	\$8.65
Multifamily	\$5.04	\$6.01	\$6.58	\$7.21	\$7.90	\$8.65
Commercial	\$7.71	\$8.84	\$9.74	\$10.67	\$11.69	\$12.80
Industrial	\$7.71	\$8.84	\$9.74	\$10.67	\$11.69	\$12.80
Monitored						
Flow (\$/ccf)	\$3.19	\$3.77	\$4.14	\$4.55	\$4.99	\$5.48
BOD (\$/lb)	\$1.19	\$0.79	\$0.85	\$0.92	\$1.01	\$1.10
TSS (\$/lb)	\$0.35	\$0.92	\$1.00	\$1.09	\$1.19	\$1.30
Minimum Charge (\$/EDU/Month)						
Residential	\$28.38	\$31.03	\$33.98	\$37.23	\$40.77	\$44.64
Multifamily	\$28.38	\$31.03	\$33.98	\$37.23	\$40.77	\$44.64
Commercial	\$35.88	\$42.28	\$46.11	\$50.30	\$54.89	\$59.87
Monitored	\$77.16	\$69.87	\$76.18	\$83.10	\$90.67	\$98.90
Industrial	\$35.88	\$42.28	\$46.11	\$50.30	\$54.89	\$59.87

EDU = equivalent dwelling unit

The volume charge, per ccf of water use, also varies by class: residential customers pay \$5.04 per ccf over the minimum and commercial/industrial customers pay \$7.71 when customers exceed the minimum quantity allowance. The existing wastewater rates also include charges for monitored industrial users whose discharge is sampled and metered. The monitored rates are: \$3.19 per ccf for flow, and \$1.19 and \$0.35 per pound (lb) for BOD and TSS, respectively

6.3 Projected Rates

Table 6-1 also shows rates based on the revised cost-of-service analysis (which includes the projected annual system-wide rate increases of 9.5 to 12.0 percent per year). The revised rates are based on the same rate structure as the existing rates; they include a fixed charge to recover billing and minimum quantity costs, and a volume charge to recover the remaining costs by customer class. Monitored rates are based on the average system-wide costs to treat each unit of flow, BOD, and TSS.

The projected rates reflect some changes in the utility's cost structure — in other words, how costs relate to different functional and service categories. Most notably, the BOD unit costs are significantly lower under the revised cost of service (even with the 12.0 percent rate increase projected for FY2010/11), and TSS costs are significantly higher. Commercial and industrial volume rates continue to be higher than residential customer rates, reflecting

higher average strength loadings. The minimum charges for these customers are also higher than residential, because of the additional 1 ccf included in the minimum charge.

6.4 Impact on Typical Bills

Table 6-2 shows sample monthly bills for a range of volumes within each customer class, based on existing and projected rates. Assuming an average monthly usage of 6 ccf, bills for most residential customers will increase 10.8 percent in FY2010/11. Bills for small- and large-volume residential customers will increase between 9 and 17 percent reflecting a relatively greater increase in the usage charge, compared with the minimum charge. Commercial/industrial customers will generally experience an average increase in bills of 14-16 percent in FY2010/11, based on the cost-of-service analysis. In subsequent years, most bills increase at about 9-10 percent, reflecting the projected system-wide rate increases.

TABLE 6-2
Sample Monthly Bills

Customer Class	EDUs	Monthly		Projected Rates				
		Use (ccf)	Existing	FY2010/11	FY2011/12	FY2012/13	FY2013/14	FY2014/15
Residential		3	\$28.38	\$31.03	\$33.98	\$37.23	\$40.77	\$44.64
Residential		6	\$33.29	\$36.89	\$40.40	\$44.26	\$48.48	\$53.07
Residential		20	\$103.98	\$121.25	\$132.74	\$145.41	\$159.25	\$174.31
Multifamily	3	10	\$85.14	\$93.08	\$101.93	\$111.68	\$122.32	\$133.91
Multifamily	12	69	\$383.51	\$423.59	\$463.83	\$508.18	\$556.60	\$609.33
Multifamily	40	400	\$2,143.20	\$2,444.01	\$2,675.93	\$2,931.53	\$3,210.61	\$3,514.53
Commercial		10	\$66.72	\$77.62	\$85.07	\$92.99	\$101.65	\$111.07
Commercial		26	\$191.30	\$220.40	\$242.49	\$265.45	\$290.56	\$317.88
Commercial		400	\$3,073.62	\$3,523.59	\$3,884.30	\$4,255.26	\$4,661.14	\$5,102.65
Industrial								
Flow			\$3.19	\$3.77	\$4.14	\$4.55	\$4.99	\$5.48
BOD			\$1.19	\$0.79	\$0.85	\$0.92	\$1.01	\$1.10
TSS			\$0.35	\$0.92	\$1.00	\$1.09	\$1.19	\$1.30
Septage Rates			\$235,000	\$347,209	\$358,142	\$372,933	\$389,642	\$407,102
Residential (\$/gal)			\$0.090	\$0.133	\$0.137	\$0.143	\$0.149	\$0.156
Commercial (\$/gal)			\$0.116	\$0.171	\$0.177	\$0.184	\$0.192	\$0.201
Residential Min.			\$35.00	\$51.71	\$53.34	\$55.54	\$58.03	\$60.63
Commercial Min.			\$44.00	\$65.01	\$67.06	\$69.83	\$72.95	\$76.22
Residential				9.3%	9.5%	9.6%	9.5%	9.5%
Residential				10.8%	9.5%	9.6%	9.5%	9.5%
Residential				16.6%	9.5%	9.5%	9.5%	9.5%
Multifamily				9.3%	9.5%	9.6%	9.5%	9.5%
Multifamily				10.5%	9.5%	9.6%	9.5%	9.5%
Multifamily				14.0%	9.5%	9.6%	9.5%	9.5%
Commercial/Indust.				16.3%	9.6%	9.3%	9.3%	9.3%
Commercial/Indust.				15.2%	10.0%	9.5%	9.5%	9.4%
Commercial/Indust.				14.6%	10.2%	9.6%	9.5%	9.5%
Flow				18.3%	9.6%	9.9%	9.8%	9.8%
BOD				-34.0%	8.2%	8.9%	9.0%	8.9%
TSS				163.1%	8.6%	9.2%	9.2%	9.2%

TABLE 6-2
Sample Monthly Bills

Customer Class	EDUs	Monthly		Projected Rates				
		Use (ccf)	Existing	FY2010/11	FY2011/12	FY2012/13	FY2013/14	FY2014/15
Septic				47.7%	3.1%	4.1%	4.5%	4.5%
System-Wide				12.00%	9.50%	9.50%	9.50%	9.50%

As noted previously, Table 6-2 also shows that the cost-of-service analysis yields significant changes in monitored industrial unit costs. The bill impact on each monitored customer depends on the respective flows and loads of that customer. Some bills may actually decrease for customers with high BOD loadings. Other bills will increase significantly because of the increase in flow and TSS costs.

The rates for septage increases by about 48 percent in FY2010/11, as shown in Table 6-2. In future years, septage costs increase at a lower rate than other costs, reflecting the uniform amortization of capital costs for septage receiving station improvements (as discussed in Section 5).

System Development Charges

7.1 Introduction

Oregon legislation establishes guidelines for the calculation of system development charges. Within these guidelines, local governments have some latitude in selecting technical approaches and establishing policies related to the development and administration of SDCs. A discussion of this legislation follows, along with the recommended methodology for calculating updated wastewater SDCs for the City, in accordance with state law and the City's recently completed Facilities Plan.

7.2 System Development Charges: An Overview

In the 1989 Oregon state legislative session, a bill was passed that created a uniform framework for the imposition of SDCs statewide. This legislation (Oregon Revised Statute [ORS] 223.297-223.314), which became effective on July 1, 1991 (with subsequent amendments), authorizes local governments to assess SDCs for the following types of capital improvements:

- Drainage and flood control
- Water supply, treatment, and distribution
- Wastewater collection, transmission, treatment, and disposal
- Transportation
- Parks and recreation

The legislation provides guidelines on the calculation and modification of SDCs, accounting requirements to track SDC revenues, and the adoption of administrative review procedures.

7.2.1 SDC Structure

SDCs can be developed around two concepts: (1) a reimbursement fee, and (2) an improvement fee, or a combination of the two. The **reimbursement fee** is based on the costs of capital improvements *already constructed or under construction*. The legislation requires the reimbursement fee to be established or modified by an ordinance or resolution setting forth the methodology used to calculate the charge. This methodology must consider the cost of existing facilities, prior contributions by existing users, gifts or grants from federal or state government or private persons, the value of unused capacity available for future system users, ratemaking principles employed to finance the capital improvements, and other relevant factors. The objective of the methodology must be that future system users contribute no more than an equitable share of the capital costs of *existing* facilities. Reimbursement fee revenues are restricted only to capital expenditures for the specific system for which they are assessed, including debt service.

The methodology for establishing or modifying an **improvement fee** must be specified in an ordinance or resolution that demonstrates consideration of the *projected costs of capital*

improvements identified in an adopted plan and list, that are needed to increase capacity in the system to meet the demands of new development. Revenues generated through improvement fees are dedicated to capacity-increasing capital improvements or the repayment of debt on such improvements. An increase in capacity is established if an improvement increases the level of service provided by existing facilities or provides new facilities.

In many systems, growth needs will be met through a combination of existing available capacity and future capacity-enhancing improvements. Therefore, the law provides for a **combined fee** (reimbursement plus improvement component). However, when such a fee is developed, the methodology must demonstrate that the charge is not based on providing the same system capacity.

7.2.2 Credits

The legislation requires that a credit be provided against the improvement fee for the construction of “qualified public improvements.” Qualified public improvements are improvements that are required as a condition of development approval, identified in the system’s capital improvement program, and either (1) not located on or contiguous to the property being developed, or (2) located in whole or in part, on or contiguous to, property that is the subject of development approval and required to be built larger or with greater capacity than is necessary for the particular development project to which the improvement fee is related.

7.2.3 Update and Review

The methodology for establishing or modifying improvement or reimbursement fees shall be available for public inspection. The local government must maintain a list of persons who have made a written request for notification prior to the adoption or amendment of such fees. The legislation includes provisions regarding notification of hearings and filing for reviews. “Periodic application of an adopted specific cost index or... modification to any of the factors related to rate that are incorporated in the established methodology” are not considered “modifications” to the SDC. As such, the local government is not required to adhere to the notification provisions. The criteria for making adjustments to the SDC rate, which do not constitute a change in the methodology, are as follows:

- “Factors related to the rate” are limited to changes to costs in materials, labor, or real property as applied to projects in the required project list.
- The cost index must consider average change in costs in materials, labor, or real property and must be an index published for purposes other than SDC rate setting.

The notification requirements for changes to the fees that *do* represent a modification to the methodology are 90-day written notice prior to first public hearing, with the SDC methodology available for review 60 days prior to public hearing.

7.2.4 Other Provisions

Other provisions of the legislation require the following:

- Preparation of a capital improvement program or comparable plan (prior to the establishment of an SDC) that includes a list of the improvements that the jurisdiction

intends to fund with improvement fee revenues and the estimated timing, cost, and eligible portion of each improvement.

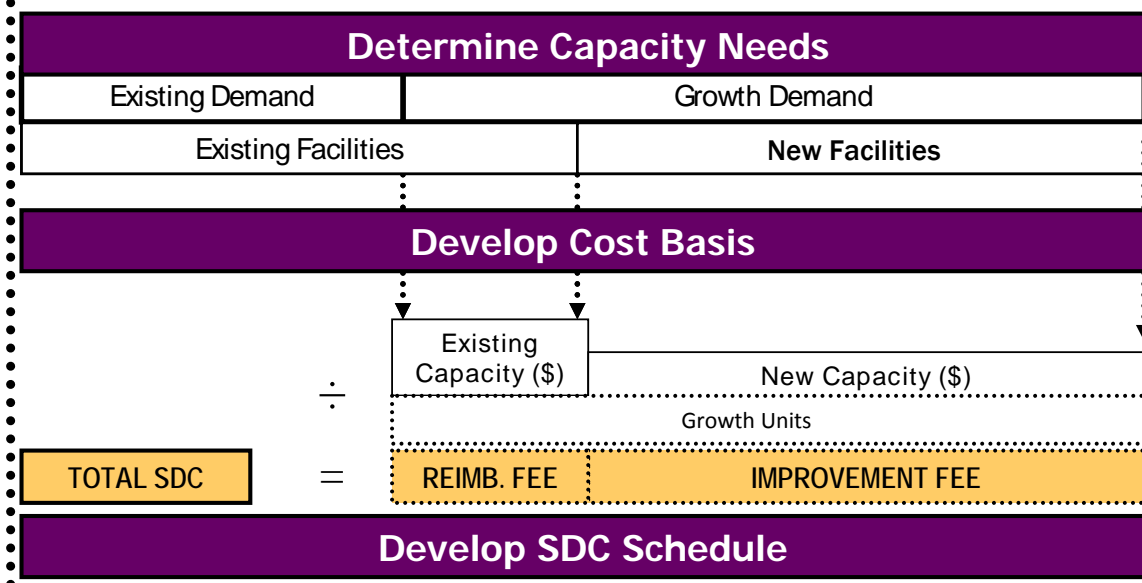
- Deposit of SDC revenues into dedicated accounts and annual accounting of revenues and expenditures, including a list of the amount spent on each project funded, in whole or in part, by SDC revenues.
- Creation of an administrative appeals procedure, in accordance with the legislation, whereby a citizen or other interested party may challenge an expenditure of SDC revenues.

The provisions of the legislation are invalidated if they are construed to impair the local government’s bond obligations or the ability of the local government to issue new bonds or other financing.

7.3 Overview of Methodology

The general methodology used to calculate wastewater SDCs is illustrated in Figure 7-1. It begins with an analysis of system planning and design criteria to determine growth’s capacity needs, and how they will be met through existing system available capacity and capacity expansion. Then, the capacity to serve growth is valued to determine the “cost basis” for the SDCs, which is then spread over the total growth capacity units to determine the system-wide unit costs of capacity. The cost basis is divided by the total growth units to be served by both available and new capacity, in order to establish a weighted average cost of capacity. The final step is to determine the SDC schedule, which identifies how different developments will be charged, based on their estimated capacity requirements.

FIGURE 7-1
Overview of SDC Methodology



7.4 Determine Capacity Needs

Table 7-1 shows the planning assumptions for the wastewater system contained in the Facilities Plan.

The relevant design criteria for the wastewater system include the following:

- Average annual flow (AAF): the average flow at the plant during the year
- Maximum daily wet weather flow (MDWWF): the peak daily flow at the wastewater treatment plant (WWTP) during the months of November through April
- Maximum daily dry weather flow (MDDWF): peak daily flow at the WWTP during the months of May through October
- Peak hour flow (PHF): the highest flow at the WWTP sustained for 1 hour, based on 2030
- Peak hour flow (collection): the highest flow at the WWTP sustained for 1 hour at buildout
- Poplar area: the area needed for natural treatment systems (NTS) used for beneficial effluent reuse and disposal of biosolids
- Wetlands: the area needed for NTS used primarily for temperature reduction of the treated effluent, prior to discharge to the receiving stream

As shown in Table 7-1, in terms of MDWWF, future (2030) capacity requirements are projected to be 20.6 million gallons per day (mgd), with growth requirements expected to be 6.1 mgd (29 percent of future MDWWF). Future (2030) capacity requirements for MDDWF are projected to be 7.4 mgd, with growth requirements expected to be 2.6 mgd (35 percent of future MDDWF). The PHF capacity required by growth through 2030 is estimated to be 10.0 mgd for treatment facilities, representing about 38 percent of the future PHF, and 8.3 mgd for collection facilities, representing about 32 percent of the future PHF. Growth-related peak flows for the collection system are estimated to be 22.3 mgd through buildout (estimated 2060).

TABLE 7-1
Wastewater System Planning Assumptions—Current and Future Flows

Capacity Parameter	Current	Future		Growth	
		2030	Buildout	2030	Buildout
AAF (mgd)	3.0	4.7		1.7	
MDWWF (mgd)	14.5	20.6		6.1	
MDDWF (mgd)	4.8	7.4		2.6	
Peak Hour Flow – Treatment (mgd)	16.0	26.0		10.0	
Peak Hour Flow – Collection (mgd)	17.7	26.0	40.0	8.3	22.3
Poplar Area (acres)	72.0	157.0		85.0	
Wetland Area (acres)	17.0	24.0		7.0	

Current system capacities and available capacities vary among WWTP components and pump stations, as shown in Table 7-2. As indicated previously, Oregon SDC law allows for inclusion of a reimbursement fee, provided that existing system capacity can be demonstrated.

As Table 7-2 indicates, the wastewater system has sufficient capacity to meet current requirements with respect to aeration basins and the certain aspects of the NTS (poplar). Capacity of the aeration basins is estimated to be 6.45 mgd, compared with existing capacity requirements of 4.8 mgd, leaving about 26 percent available capacity for growth. The existing capacity requirement for the poplar NTS is 72 acres with an existing capacity of 80 acres, leaving 10 percent available capacity for growth.

TABLE 7-2
Capacity Analysis by Unit Process

	Design Criteria	Existing Capacity	Existing Flow/ Load	Future Capacity	Planned Expansion	Available Capacity	
						Quantity	%
Headworks							
Screening	PHF	16.0	17.7	26	10.00	(1.70)	0.0%
Grit Removal	PHF	16.0	17.7	32	16.00	(1.70)	0.0%
Primary Clarification	PHF	12.0	17.7	30	18.00	(5.70)	0.0%
Secondary Treatment							
Blowers	MDWWF	11.67	14.5	21	8.89	(2.83)	0.0%
Aeration Basins	MDDWF	6.45	4.8	6.5	–	1.70	26.3%
Aeration Basins – Contact Stabilization	MDWWF	10.40	14.5	20.6	10.16	(4.10)	0.0%
Secondary Clarifiers	PHF	17.70	17.7	26	8.30	0.00	0.0%
Filtration	MDDWF	3.00	4.8	7.4	4.40	(1.75)	0.0%
Disinfection	PHF	12.00	17.7	32	20.00	(5.70)	0.0%
Outfall	PHF	12.0	17.7	40	28.00	(5.70)	0.0%
NTS							
Poplar (acres)	Poplar	80.0	72.0	157.0	77.00	8.00	10.0%
Wetland (acres)	Wetland	–	17.0	24.0	24.00	(17.00)	0.0%
Pump Stations							
Mill Creek	PF	16.0	17.7	31.1	31.1	(1.70)	0.0%
Santiam	PF	0.2	0.2	0.2	0.0	0.00	0.0%
Industrial	PF	0.8	0.6	0.8	–	0.20	25.0%
Vanderbeck	PF	1.0	0.1	1.0	–	0.90	90.0%
Greenview	PF	0.6	0.4	0.6	–	0.20	33.3%

Certain treatment unit processes (e.g., blowers, contact stabilization, filtration, disinfection, and outfall) designed to handle peak hour and maximum day flows lack sufficient capacity

to meet current design requirements. Though it does not exceed capacity, secondary clarification has currently reached existing capacity. Because there is currently a need for capacity within these processes, growth's capacity needs will be met by planned expansion to the system. Future capacity requirements include additional demands associated with growth, along with existing peak and maximum day flow deficiencies.

With the exception of the Mill Creek and Santiam pump stations, the remaining lift station facilities have some available capacity to serve growth. Specifically, Industrial lift station has 25 percent available capacity for growth, with Vanderbeck and Greenview facilities having approximately 90 percent and 33 percent, respectively.

7.5 Develop Cost Basis

As demonstrated in Table 7-2, the WWTP capacity needed to serve new development will be met primarily through planned system improvements. The reimbursement fee is intended to recover the costs associated with the growth-related (or available) capacity in the existing system; the improvement fee is based on the costs of capacity-increasing future improvements needed to meet the demands of growth. The value of capacity needed to serve growth in aggregate within the planning period, adjusted for expected contributions, is referred to as the "cost basis."

7.5.1 Reimbursement Fee Cost Basis

Table 7-3 shows the reimbursement fee cost basis calculation, based on the value of existing system assets (exclusive of treatment and other assets lacking available capacity). Growth available capacity for aeration basins is 26 percent, as presented in Table 7-2 (described previously). The recent improvements to the irrigation facility yard can address capacity needs of the poplar system through the planned future 157 acres. Existing customers require 72 acres, so the remaining acres (85 or 54 percent) represent available capacity for growth. The McNulty property has a growth allocation of 29 percent, which is based on a capacity of 24 acres, of which 17 acres are needed for existing customers and 7 acres (29 percent) are for growth.

TABLE 7-3
Reimbursement Fee Cost Basis

Function	Design Criteria	Value	Growth \$	
			%	\$
Aeration Basins	MDDWF	\$2,800,000	26%	\$737,320
Irrigation Facility Yard	NTS	\$4,610,000	54%	\$2,495,860
McNulty Property	NTS	\$939,043	29%	\$273,888
Subtotal		\$8,349,043		\$3,507,068
Pump Stations				
Mill Creek	PFC	\$372,343	0%	\$0
Santiam	PFC	\$3,300	0%	\$0
Industrial	PFC	\$53,785	25%	\$13,446
Vanderbeck	PFC	\$118,057	90%	\$106,251

TABLE 7-3
Reimbursement Fee Cost Basis

Function	Design Criteria	Value	Growth \$	
			%	\$
Greenview	PFC	\$65,694	33%	\$21,898
Subtotal		\$613,179	20%	\$119,698
Wastewater Lines	PFC	\$6,370,637	56%	\$3,551,630
Total		\$15,332,859		\$7,178,395

PFC = peak flow collection

The total reimbursement cost basis is about \$7.2 million, including \$3.5 million of treatment-related assets, \$0.1 million for pump stations, and \$3.6 million for collection lines. The allocation of collection lines to growth is based on growth's share of future PHF at buildout (22 mgd out of 40 mgd; 56 percent).

7.5.2 Improvement Fee Cost Basis

The cost of future capacity-increasing improvements (the improvement fee cost basis) is presented in Table 7-4. Each improvement was reviewed to determine the portion of costs that expand capacity, specifically for growth.

Table 7-5 shows the analysis that was used to determine WWTP facility improvement allocation percentages. As indicated in Table 7-2, the existing system has limited available capacity to meet future growth needs, and for some unit processes is lacking adequate capacity to meet existing design standards. Therefore, upgrades to buildings and processes are needed in order to both remedy existing deficiencies and to provide treatment capacity for growth through 2030.

TABLE 7-4
Improvement Fee Cost Basis

Component/Process	Total Cost	Design Basis	Growth %	Growth \$
Publicly Owned Treatment Works				
Headworks – Screening	\$1,900,000	PFT	83%	\$1,577,000
Headworks – Grit Removal	\$2,600,000	PFT	89%	\$2,323,750
Primary Sedimentation – PEPS	\$3,000,000	PFT	53%	\$1,575,000
Primary Sedimentation – Convert WW Clarifiers	\$1,750,000	PFT	53%	\$918,750
Primary Sedimentation – New Primary Clarifier	\$2,400,000	PFT	100%	\$2,400,000
Secondary Process – Blower and DO Upgrades	\$1,300,000	MDWWF	68%	\$885,864
Secondary Process – Contact Stabilization Modifications	\$300,000	MDWWF	60%	\$178,893
Secondary Process – New Secondary Clarifier	\$2,500,000	PFT	100%	\$2,500,000

TABLE 7-4
Improvement Fee Cost Basis

Component/Process	Total Cost	Design Basis	Growth %	Growth \$
Filtration	\$1,900,000	MDDWF	36%	\$679,353
UV Disinfection – Expand Existing Equipment	\$400,000	PFT	0%	\$0
UV Disinfection – Add Additional Channel/Unit	\$3,400,000	PFT	89%	\$3,038,750
Outfall – Bypass Aerator	\$100,000	PFT	5%	\$5,000
Outfall – Upsize Outfall B	\$500,000	PFT	100%	\$500,000
Condition Improvements	\$3,700,000	PFT	37%	\$1,351,168
Septage/RV Dump Station Improvements	\$1,700,000		0%	\$0
Generator	\$300,000	PFT	50%	\$150,000
Total Treatment	\$27,750,000			\$18,083,527
Collection System CIP				
Mill Creek PS Project – Phase 1	\$500,000	PFC	16%	\$78,000
Mill Creek PS Project – Phase 2	\$2,605,000	PFC	39%	\$1,015,950
I-5 PS Project	\$1,307,000	PFC	75%	\$980,250
I-5 FM Project	\$3,093,000	PFC	100%	\$3,093,000
Stevens PS Project	\$990,000	PFC	50%	\$495,000
Stevens FM Project – Delete	\$0	PFC	100%	\$0
Young Street Pipeline Project	\$1,773,000	PFC	4%	\$74,168
Front Street Pipeline Project	\$1,040,000	PFC	0.5%	\$5,720
Mill Creek Interceptor Pipeline Project	\$1,855,000	PFC	67%	\$1,245,370
Progress Way Pipeline Project	\$1,362,000	PFC	13%	\$180,534
Hayes Street Pipeline Project	\$2,030,000	PFC	0.08%	\$1,704
Brown Street Pipeline Project	\$931,000	PFC	27%	\$252,008
Sanitary Wastewater Service to North Area (2005 PFP Project)	\$5,219,000	PFC	100%	\$5,219,000
Sanitary Wastewater Service to South Area – South Brown Street Pump Station	\$800,000	PFC	100%	\$800,000
Sanitary Wastewater Service to Southwest Industrial Area (2005 PFP Pipeline Project)	\$9,722,000	PFC	100%	\$9,722,000
Area Outside UGB	\$8,560,000	PFC	100%	\$8,560,000
Current CIP Projects (Funds 465, 472)	\$460,000	PFC	0%	\$0
Replacement Costs – Collection System Piping	\$8,000,000	PFC	0%	\$0
Equipment Replacement (VAC Truck)	\$350,000	PFC	0%	\$0

TABLE 7-4
Improvement Fee Cost Basis

Component/Process	Total Cost	Design Basis	Growth %	Growth \$
Pump Station Upgrades (Existing Upgrades – Reliability)	\$275,000	PFC	0%	\$0
Total Collection	\$50,872,000			\$31,722,703
Natural Treatment Systems (NTS)				
Poplar Tree Expansion on City-Owned Land	\$1,064,000	Poplar	100%	\$1,064,000
Land Purchase	\$885,000	Poplar	100%	
Poplar Tree Expansion on Additional Purchased Land	\$1,652,000	Poplar	100%	\$1,652,000
Lagoon Wetlands	\$1,100,000	TMDL	29%	\$320,833
Floodplain Wetlands	\$1,400,000	TMDL	29%	\$408,333
Wetland Conveyance and New River Outfall	\$1,620,000	TMDL	29%	\$472,500
Total NTS	\$7,721,000			\$4,802,667
Industrial Land Application	\$8,200,000	MDDWF	100%	\$8,200,000
Total Wastewater System	\$94,543,000			\$62,808,897

PFT = peak flow treatment

TABLE 7-5
Determination of Improvement Allocation Percentages

Allocation of Treatment Expansion Improvements	Expansion	Existing Ratepayers		Growth	
	Total Capacity	Amt.	%	Amt.	%
Headworks					
Screening	10.00	1.70	17%	8.30	83%
Grit Removal	16.00	1.70	11%	14.30	89%
Primary Clarification					
PEPS	12.00	5.70	48%	6.30	53%
Convert WW Clarifiers	12.00	5.70	48%	6.30	53%
New Primary Clarifier	6.00	–	0%	6.00	100%
Secondary Treatment					
Blowers	8.89	2.83	32%	6.06	68%
Aeration Basins – Contact Stabilization	10.16	4.10	40%	6.06	60%
Secondary Clarifiers	8.30	–	0%	8.30	100%

TABLE 7-5
Determination of Improvement Allocation Percentages

Allocation of Treatment Expansion Improvements	Expansion	Existing Ratepayers		Growth	
	Total Capacity	Amt.	%	Amt.	%
Filtration	7.40	4.75	64%	2.65	36%
Disinfection					
Expand Existing	4.00	4.00	100%	–	0%
Add Units	16.00	1.70	11%	14.30	89%
Outfall					
Bypass Aerator	6.00	5.70	95%	0.30	5%
Upsize Outfall B	22.00	–	0%	22.00	100%
NTS					
Poplar (acres)	77.00	–	0%	77.00	100%
Wetland (acres)	24.00	17.00	71%	7.00	29%
Industrial Land Application	0.95	–	0%	0.95	100%
Allocation of Treatment Performance Improvements/New Processes and Technology					
AAF (mgd)	4.71	2.99	63%	1.72	37%

PFT = peak flow treatment

Table 7-5 shows that capacity improvements for processes without existing deficiencies (new primary clarifier, secondary clarifiers, outfall, the poplar NTS, and industrial land application) are allocated 100 percent to growth. Other processes (for example, screening, grit removal, primary sedimentation, blowers and contact stabilization, filtration, disinfection, and the wetland NTS) include a portion of costs for existing development to remedy existing deficiencies.

In addition to capacity projects, the Facilities Plan identified improvements needed to increase the level of performance provided – through condition improvements. These improvements are assumed to be allocated to both growth and existing development in proportion to the future share of AAF. Table 7-5 also shows these allocations.

The improvement fee cost basis for treatment facilities improvements totals \$18.1 million. Septage station improvements are assumed to be funded through rates charged to septage haulers, and are therefore excluded from the SDC cost basis.

Collection system improvement costs have been allocated to growth individually, based on hydraulic modeling results which indicate the portion of capacity needed to convey future development flows, based on buildout conditions.

Collection system improvements account for \$31.7 million of the improvement fee cost basis. The total improvement fee cost basis is about \$62.8 million.

7.6 Develop SDC Schedule

System-wide unit costs of WWTP capacity are determined by dividing the reimbursement fee and improvement fee cost bases identified in Step 2 by the aggregate growth-related capacity requirements defined in Step 1. The unit costs are then applied to the capacity requirements of a typical dwelling unit to determine the fee per equivalent dwelling unit (EDU).

7.6.1 EDU Capacity Requirements

Table 7-6 presents the calculation of the capacity requirements by design criteria per equivalent residential unit (EDU). Estimating capacity requirements begins with the average flow per EDU of 219 gallons per day (gpd). The capacity requirements per EDU for treatment design criteria reflect the peaking factors for each design criterion multiplied by the average flow per EDU. The peaking factors range from 1.5 for MDDWF to 4.8 for PHF.

TABLE 7-6
Capacity Requirements per Equivalent Dwelling Unit

	Gallons per day/ EDU	Peaking Factor
Average flow per EDU (gpd)	219	
Peaking factors		
MDWWF	385	1.76
MDDWF	337	1.54
Peak Hour	1,059	4.83

7.6.2 Reimbursement Fee

Table 7-7 shows the reimbursement fee calculation by design criteria. The cost basis figures are summed by design criteria from Table 7-2, and divided by capacity requirements from Table 7-1 to determine the unit costs of capacity.

TABLE 7-7
Reimbursement Fee Calculation

Item	Total	PFC (mgd)	PFT (mgd)	MDWWF (mgd)	MDDWF (mgd)	NTS (acres)
Reimbursement Fee Cost Basis	\$7,200,293	\$3,693,226	\$0	\$0	\$737,320	\$2,769,747
Growth Capacity Requirements		22.30	10.00	6.06	2.6	85.0
System-wide Unit Cost of Capacity		\$165,616	\$0	\$0	\$278,665	\$32,585
Capacity Requirements per Unit		0.001059	0.001059	0.000385	0.000337	0.010841
Reimbursement Fee per Unit	\$623	\$175	\$0	\$0	\$94	\$353

Multiplying the per-unit capacity requirements by the system-wide unit costs yields a reimbursement fee per EDU of \$623, including \$175 for peak flow collection (PFC) facilities, \$94 for MDDWF facilities, and \$353 for NTS facilities.

7.6.3 Improvement Fee

The improvement fee calculation is shown in Table 7-8. The cost basis is distributed over aggregate capacity through 2030 for treatment and buildout for collection, and the unit costs of capacity multiplied by the EDU capacity requirements. The resulting cost per EDU is \$5,048, including \$1,506 for PFC improvements, \$1,730 for peak flow treatment (PFT) improvements, \$68 for MDWWF improvements, \$1,132 for MDDWF improvements, \$459 for Poplar improvements, and \$153 for TMDL (wetland) improvements.

TABLE 7-8
Improvement Fee Calculation

Items	Total	PFC (mgd)	PFT (mgd)	MDWWF (mgd)	MDDWF (mgd)	Poplar (acres)	TMDL (acres)
Growth Cost	\$62,808,897	\$31,722,703	\$16,339,418	\$1,064,757	\$8,879,353	\$3,601,000	\$1,201,667
Growth Capacity Requirements		22.30	10.00	6.06	2.6	85.0	7
Unit Cost		\$1,422,543	\$1,633,942	\$175,746	\$3,355,891	\$42,365	\$171,667
Capacity Requirements per Unit		0.001059	0.001059	0.000385	0.000337	0.010841	0.000893
Improvement Fee per Unit	\$5,048	\$1,506	\$1,730	\$68	\$1,132	\$459	\$153

7.6.4 Combined Fee

Table 7-9 presents the calculation of the costs associated with the capacity requirement per EDU. The sum of the improvement and reimbursement portions is \$5,671, compared with the current SDC of \$2,977. Table 7-9 also shows that the current SDC would have increased to about \$4,522, simply based on cumulative inflation through 2008.

TABLE 7-9
Combined SDC per Equivalent Dwelling Unit

Component	Amount
Reimbursement SDC per EDU	\$623
Improvement SDC per EDU	\$5,048
Combined SDC per EDU	\$5,671
Current SDC	\$2,977
Inflation Adjusted (2008–1995)	\$4,522

Local governments are entitled to include, in the SDCs, a charge to recover costs associated with complying with the SDC law. Compliance costs include costs related to developing the SDC methodology and project list (i.e., a portion of master planning costs), and annual accounting costs. Table 7-10 shows the calculation of the compliance charge per EDU, which is estimated to be \$150, resulting in a total SDC per EDU of \$5,821.

TABLE 7-10
Compliance Charge

Component	Years	Total	Growth	Annualized
SDC Study	5	\$10,000	100%	\$2,000
Master Planning	10	\$835,000	66%	\$55,473
Auditing/Accounting	1	\$1,500	100%	\$1,500
Total Annual Costs		\$846,500		\$58,973
Compliance Charge/EDU				\$150

The City currently assesses SDCs to nonresidential customers based on estimated flow. Under the revised SDCs, the estimated flow per EDU is 219 gpd under average flow conditions. Therefore, the formula for calculating nonresidential EDUs will be:

$$\text{Estimated flow} / 219 \text{ gpd} = \text{EDUs} \times \$5,821 \text{ per EDU} = \text{total SDC}$$

Industrial customers are charged based on estimated flows and loads. Table 7-11 presents the unit costs from which industrial SDCs may be developed.

TABLE 7-11
Industrial SDCs

	Total	Collection Flow (gpd)	Treatment Flow (gpd)	BOD (ppd)	TSS (ppd)
Growth Cost	\$70,009,190	\$36,225,135	\$21,535,524	\$6,221,643	\$6,026,889
Growth Capacity Req.		4,260,000	1,720,000	3,504	3,164
Unit Cost		\$8.50	\$12.52	\$1,775.58	\$1,904.83
Total		\$21.02		\$1,775.58	\$1,904.83
Current SDCs		\$10.69		\$1,446.42	\$532.14

Recommendations

8.1 Introduction

The recommended financial plan and rates presented in this report are based on a number of assumptions related to customer growth, cost escalation, debt financing, and other variables that have proved particularly volatile over the past year, reflecting the national and regional economic crisis. Therefore, an overarching recommendation is that the City monitor revenues and expenses semiannually, and make adjustments to planned rate increases as necessary to ensure adequate revenue recovery annually to meet projected system needs and debt coverage and reserve requirements.

8.2 Financial Plan

The financial plan presented in Section 3 provides a multi-year rate “slope” (i.e., series of annual rate increases) for the wastewater system that is designed to generate revenue to meet the projected capital and O&M expenditures over the study period. For the next 5 years, the projected rate increases are 12 percent in FY2010/11, and 9.5 percent each year thereafter.

The financial plan forecasts the need for the City to issue revenue bonds in FY2011/12, in order to fund the needed collection system and NTS improvements, and a portion of Phase 2A improvements at the treatment plant. In order to issue revenue bonds, the City will need to work with a finance team (including a financial adviser, bond counsel, and financial and engineering consultants) to structure the sale and complete a bond feasibility report prior to the sale. As part of that effort, the City should review and update the projected rate increases, if necessary, in light of actual customer growth and cost and revenue trends subsequent to this report, and then-current financial market conditions.

After the initial bond sale, it is recommended that the City continue to monitor the financial plan annually, and make adjustments to rates if needed to meet cost and debt requirements. Of particular importance in determining the appropriateness of future rate levels will be the following:

- Rate of customer growth
- Implementation of the recommended SDCs
- Future costs and availability of borrowing

Significant changes in the sizing or timing of capital projects or support from alternative funding sources will have an impact on the revenue requirements from rates.

8.3 Rates

The cost-of-service analysis presented in Section 5 resulted in some significant shifts among rate components, most notably the following:

- Decreases in BOD unit costs, and corresponding increases in TSS and flow costs
- Relatively smaller increases in minimum charges for residential customers and larger increases in volume (usage rates)
- Large increases in septic tank hauling costs

These shifts will result in customer bills increasing (or potentially decreasing for some monitored customers) at different percentages, compared with the system-wide average rate increases. While the system-wide average rate increase recommended for FY2010/11 is 12 percent, individual customer bill increases may range from 9 percent to 17 percent, depending on the type and size of customer.

It is recommended that the City continue to charge rates on a cost-of-service basis. Cost of service based rates, reflecting the projected system-wide rate increases contained in the financial plan, are shown in Table 6-1. Any changes to the system-wide rate increases developed as part of future financial plan updates (as noted previously), will require adjustment to the rates presented in Table 6-1. It is critical that any deviations from the cost-of-service rates be reviewed for potential impact on other rates. For example, if the City does not move forward with the septic rate adjustments at the recommended levels, other rate components would need to be increased to make up for the lost revenue from septic haulers.

It is recommended that the City consider future development and implementation of industrial pretreatment permit fees for monitored customers. The cost-of-service analysis identified the costs of the industrial pretreatment program to be about \$250,000 annually. While some of the functions of this program benefit all wastewater system users, a significant portion of the costs is associated with the monitored customers specifically. Other communities recover a portion of these costs through direct charges to industry – either in the form of fixed monthly or annual charges, or through surcharges on the volume rates.

8.4 System Development Charges

The SDC methodology presented in this report follows industry standard approaches and Oregon SDC statutes. It is recommended that the City implement the SDCs identified in Section 7, so that new customers pay for an equitable share of system improvements. It is further recommended that the City:

- Initiate the public notification process required by Oregon statutes to adopt a new SDC methodology. Specifically, the City must (1) notify interested parties 90 days prior to the date on which the City Council will hold a public hearing to consider the methodology, and (2) make the SDC methodology available 60 days prior to the scheduled public hearing.
- Include a provision in the adopting resolution that will allow the City to index the SDCs to a construction cost index, so that the fees keep pace with future cost escalation. Most

communities use the *Engineering News-Record* construction cost index – either the 20-city average or the Seattle index.

The financial plan presented in Section 3 assumes implementation of the revised SDCs by July 1, 2010. If the SDCs are implemented at a reduced level, the rates may need to be adjusted in order to meet the revenue needs of the utility.

APPENDIX A

Financial Plan Detail

APPENDIX B

Cost Allocations

TABLE B-1
Sewer COS Analysis
O&M Cost Functionalization
2010/11 to 2014/15

Description	Functions															5-Year Total
	Collection	Pump Stations	Preliminary	Primary	Secondary	Filtration	Disinfection / Outfall	Industrial Pretreat	Digestion / Thickening	Poplars	Wetlands	Lab	Billing	Septic	IN - System Wide	
Sewer Fund (472)																
Sewer (621)																
Salaries/Overtime	\$32,087	\$192,519	\$224,606	\$128,346	\$481,298	\$128,346	\$288,779	\$577,558	\$224,606	\$256,692	\$64,173	\$481,298	\$32,087	\$96,260	\$0	\$3,208,655
Intergovernmental Service	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$370,749	\$370,749
Benefits	\$14,790	\$88,742	\$103,533	\$59,161	\$221,855	\$59,161	\$133,113	\$266,226	\$103,533	\$118,323	\$29,581	\$221,855	\$14,790	\$44,371	\$0	\$1,479,036
Supply/Services	\$0	\$215,394	\$53,849	\$26,924	\$161,546	\$53,849	\$242,319	\$128,164	\$161,546	\$80,773	\$53,849	\$26,924	\$0	\$53,849	\$1,433,445	\$2,692,430
Chemicals	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$120,100	\$0	\$0	\$0	\$0	\$0	\$120,100
Lab	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$108,662	\$0	\$0	\$0	\$108,662
Electric/Gas	\$0	\$349,305	\$20,547	\$20,547	\$452,042	\$41,095	\$575,326	\$0	\$369,852	\$41,095	\$0	\$0	\$0	\$0	\$184,926	\$2,054,734
Subtotal	\$46,877	\$845,961	\$402,534	\$234,979	\$1,316,741	\$282,451	\$1,239,537	\$971,948	\$859,536	\$616,982	\$147,602	\$838,740	\$46,877	\$194,479	\$1,989,121	\$10,034,366
Maintenance (631)																
Salaries/Overtime	\$626,168	\$34,787	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$34,787	\$695,742
Benefits	\$328,173	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$328,173
Supply/Services	\$362,135	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$362,135
Capital Outlay	\$432,694	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$432,694
Subtotal	\$1,749,169	\$34,787	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$34,787	\$1,818,743
Transfers (621)																
Transfer to other funds	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$372,178	\$372,178
Water Fund	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$400,807	\$0	\$0	\$400,807
Surface Water/Storm Collection	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,345,566	\$1,345,566
Technical & Environmental	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$858,872	\$858,872
Equipment Replacement	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$400,807	\$400,807
Subtotal	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$400,807	\$0	\$2,977,422	\$3,378,229
O&M Adjustments																
Poplar Tree O&M	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$278,224	\$0	\$0	\$0	\$0	\$0	\$278,224
Wetland O&M	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$194,774	\$0	\$0	\$0	\$0	\$194,774
Contract Hauling for Biosolids	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$3,234,282	\$0	\$0	\$0	\$0	\$0	\$0	\$3,234,282
Poplar Tree Harvest/Replant	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$100,434	\$0	\$0	\$0	\$0	\$0	\$100,434
Poplar Tree Salvage Contingency	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$55,567	\$0	\$0	\$0	\$0	\$0	\$55,567
Subtotal Adjustments	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$3,234,282	\$434,225	\$194,774	\$0	\$0	\$0	\$0	\$3,863,280
Total O&M	\$1,796,046	\$880,748	\$402,534	\$234,979	\$1,316,741	\$282,451	\$1,239,537	\$971,948	\$4,093,818	\$1,051,207	\$342,376	\$838,740	\$447,684	\$194,479	\$5,001,330	\$19,094,618
Allocation of Indirect -- Systemwid	13%	6%	3%	2%	9%	2%	9%	7%	29%	7%	2%	6%	3%	1%		100%
	\$637,369	\$312,554	\$142,849	\$83,388	\$467,276	\$100,234	\$439,878	\$344,918	\$1,452,786	\$373,045	\$121,500	\$297,646	\$158,871	\$69,016		\$5,001,330
Fully Allocated Wastewater O&M Percentages	\$2,433,415 12.74%	\$1,193,302 6.25%	\$545,383 2.86%	\$318,367 1.67%	\$1,784,017 9.34%	\$382,685 2.00%	\$1,679,415 8.80%	\$1,316,867 6.90%	\$5,546,604 29.05%	\$1,424,253 7.46%	\$463,876 2.43%	\$1,136,386 5.95%	\$606,555 3.18%	\$263,495 1.38%	0.00%	\$19,094,618 100.00%

TABLE B-2
 City of Woodburn
 Sewer COS Analysis
 Capital Cost Functionalization

Description	Functions															Total
	Collection	Pump Stations	Preliminary	Primary	Secondary	Filtration	Disinfection / Outfall	Industrial Pretreat	Digestion / Thickening	Poplars	Wetlands	Lab	Billing	Septic	IN - System Wide	
Capital Improvement Plan																
Collection System																
Mill Creek PS Project - Phase 1	\$0	\$500,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$500,000
Mill Creek PS Project - Phase 2	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
I-5 PS Project	\$0	\$1,307,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,307,000
I-5 FM Project	\$3,093,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$3,093,000
Stevens PS Project	\$0	\$990,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$990,000
Stevens FM Project - Delete	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Young Street Pipeline Project	\$1,773,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,773,000
Front Street Pipeline Project	\$1,040,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,040,000
Mill Creek Interceptor Pipeline Project	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Progress Way Pipeline Project	\$1,362,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,362,000
Hayes Street Pipeline Project	\$2,030,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$2,030,000
Brown Street Pipeline Project	\$931,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$931,000
Service to North Area (2005 PFP Project)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Service to South Area - South Brown Street Pump St	\$800,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$800,000
Service to Southwest Industrial Area	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Area Outside UGB	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Current CIP Projects (Funds 465, 472)	\$460,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$460,000
Replacement Costs-Collection System Piping	\$2,020,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$2,020,000
Equipment Replacement (VAC Truck)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$350,000	\$350,000
Pump Station Upgrades (Existing Upgrades - Reliabi	\$0	\$275,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$275,000
POTW	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Headworks - Screening	\$0	\$0	\$1,900,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,900,000
Headworks - Grit Removal	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Primary Sedimentation - PEPS	\$0	\$0	\$0	\$3,000,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$3,000,000
Primary Sedimentation - Convert WW Clarifiers	\$0	\$0	\$0	\$1,750,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,750,000
Primary Sedimentation - New Primary Clarifier	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Secondary Process - Blower and DO Upgrades	\$0	\$0	\$0	\$0	\$1,300,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,300,000
Secondary Process - Contact Stabilization Modificati	\$0	\$0	\$0	\$0	\$300,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$300,000
Secondary Process - New Secondary Clarifier	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Filtration	\$0	\$0	\$0	\$0	\$0	\$1,900,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,900,000
UV Disinfection - Expand Existing Equipment	\$0	\$0	\$0	\$0	\$0	\$0	\$400,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$400,000
UV Disinfection - Add Additional Channel/Unit	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Outfall - Bypass Aerator	\$0	\$0	\$0	\$0	\$0	\$0	\$100,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$100,000
Outfall - Upsize Outfall B	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Condition Improvements	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$2,900,000	\$2,900,000
Generator	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$300,000	\$300,000
Natural Treatment Systems (NTS)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Poplar Tree Expansion on City Owned Land	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,064,000	\$0	\$0	\$0	\$0	\$0	\$0	\$1,064,000
Land Purchase	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$885,000	\$0	\$0	\$0	\$0	\$0	\$0	\$885,000
Poplar Tree Expansion on Additional Purchased Lan	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,428,000	\$0	\$0	\$0	\$0	\$0	\$0	\$1,428,000
Lagoon Wetlands	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,100,000	\$0	\$0	\$0	\$0	\$0	\$1,100,000
Floodplain Wetlands	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,400,000	\$0	\$0	\$0	\$0	\$0	\$1,400,000
Wetland Conveyance and New River Outfall	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,620,000	\$0	\$0	\$0	\$0	\$0	\$1,620,000
INDUSTRIAL LAND APPLICATION	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total	\$13,509,000	\$3,072,000	\$1,900,000	\$4,750,000	\$1,600,000	\$1,900,000	\$500,000	\$0	\$0	\$3,377,000	\$4,120,000	\$0	\$0	\$0	\$3,550,000	\$38,278,000
Direct Allocation %s	39%	9%	5%	14%	5%	5%	1%	0%	0%	10%	12%	0%	0%	0%	0%	100%
Allocation of Indirects	\$1,380,930	\$314,029	\$194,224	\$485,559	\$163,557	\$194,224	\$51,111	\$0	\$0	\$345,207	\$421,159	\$0	\$0	\$0	\$0	\$3,550,000
Total	\$14,889,930	\$3,386,029	\$2,094,224	\$5,235,559	\$1,763,557	\$2,094,224	\$551,111	\$0	\$0	\$3,722,207	\$4,541,159	\$0	\$0	\$0	\$0	\$38,278,000

TABLE B-2 (Continued)
 City of Woodburn
 Sewer COS Analysis
 Capital Cost Functionalization

Description	Functions															Total
	Collection	Pump Stations	Preliminary	Primary	Secondary	Filtration	Disinfection / Outfall	Industrial Pretreat	Digestion / Thickening	Poplars	Wetlands	Lab	Billing	Septic	IN - System Wide	
Fixed Assets																
Sewer Lines	\$6,370,637	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pump Stations	\$0	\$1,156,299	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Headworks	\$0	\$0	\$1,500,962	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Aeration Basins	\$0	\$0	\$0	\$2,938,753	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Secondary Clarification	\$0	\$0	\$0	\$0	\$1,241,625	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Filters/RAS	\$0	\$0	\$0	\$0	\$0	\$3,574,472	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
UV Disinfection	\$0	\$0	\$0	\$0	\$0	\$0	\$869,651	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Control/Lab Building	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,854,786	\$0	\$0	\$0	\$0	\$0
Digestion	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$2,363,114	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Thickening/Storage	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,446,271	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Outfall	\$0	\$0	\$0	\$0	\$0	\$0	\$975,257	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Poplar Tree Irrigation	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$3,267,653	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Unused	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total Fixed Assets	\$6,370,637	\$1,156,299	\$1,500,962	\$2,938,753	\$1,241,625	\$3,574,472	\$1,844,908	\$0	\$3,809,385	\$3,267,653	\$0	\$1,854,786	\$0	\$0	\$0	\$0
Summary																
CIP Allocations	\$14,889,930	\$3,386,029	\$2,094,224	\$5,235,559	\$1,763,557	\$2,094,224	\$551,111	\$0	\$0	\$3,722,207	\$4,541,159	\$0	\$0	\$0	\$0	\$0
Fixed Asset Allocations	\$6,370,637	\$1,156,299	\$1,500,962	\$2,938,753	\$1,241,625	\$3,574,472	\$1,844,908	\$0	\$3,809,385	\$3,267,653	\$0	\$1,854,786	\$0	\$0	\$0	\$0
Total Capital	\$21,260,567	\$4,542,328	\$3,595,186	\$8,174,312	\$3,005,182	\$5,668,696	\$2,396,019	\$0	\$3,809,385	\$6,989,860	\$4,541,159	\$1,854,786	\$0	\$0	\$0	\$0
Fixed Asset Allocations	23.1%	4.2%	5.4%	10.7%	4.5%	13.0%	6.7%	0.0%	13.8%	11.9%	0.0%	6.7%	0.0%	0.0%	0.0%	100%
Weighted Avg. CIP/Asset Allocations	32.3%	6.9%	5.5%	12.4%	4.6%	8.6%	3.6%	0.0%	5.8%	10.6%	6.9%	2.8%	0.0%	0.0%	0.0%	100%