

**City of Portland
Bureau of Environmental Services**



FY 2019 Sewer System Rate Study

June 2018

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I. INTRODUCTION AND SUMMARY OF RATES

The Sewer System Rate Study is the final step in a three-part financial planning process performed each year by the Bureau of Environmental Services (Bureau, or BES). The first step in this process consists of updating the Bureau's Five-Year Financial Plan, the primary document addressing key policy issues related to the provision of sanitary sewer and stormwater drainage services. The Five-Year Financial Plan includes a forecast of operating and capital improvement program (CIP) expenditures, a CIP financing plan, and an estimate of the percentage change in residential customer monthly bills required to meet the Bureau's forecast expenditures.

The second step in the financial planning process is the preparation of a budget request for the upcoming fiscal year. The budget request is based on the first year of the Five-Year Financial Plan, which is refined into a detailed financial management tool for the upcoming fiscal year. The budget development process culminates with the budget request being submitted to the City Budget Office for review and eventual inclusion in the citywide Mayor's Proposed Budget.

The final step in the financial planning process is the annual rate study that is conducted after City Council has approved the budget request. The rate study calculates the sanitary sewer and stormwater drainage rates necessary to fund Bureau operations for the upcoming fiscal year using formal cost of service ratemaking principles adopted by City Council in 1977. The rate study also calculates system development charges for new customers connecting to the sanitary sewer and stormwater drainage system. Before going into effect, the rates and charges calculated in the rate study are adopted by City Council.

The rate study does not establish the recommended level or priority of Bureau services - these are addressed in the Five-Year Financial Plan and the annual budget. The rate study does, however, play a central role in determining how these services will be funded. The primary objectives of the rate study are to ensure that: 1) funding for Bureau operations is provided at the level authorized in the adopted budget; 2) costs are recovered from customers in a fair and equitable manner using City Council defined cost of service ratemaking principles; and, 3) cost recovery mechanisms are compatible with other City objectives, including environmental protection and sustainability, and compliance with legal and regulatory constraints.

Table 1 on the following page presents adopted sanitary sewer and stormwater drainage rates for the fiscal year ending on June 30, 2019 (FY 2019). Rates for FY 2019 reflect changes in operating and capital costs, as well as forecast reductions in customer usage, and changes in rate model assumptions regarding the strength of customer sanitary sewage discharges. The average monthly bill for single-family residential customers, assuming no participation in the Clean River Rewards (CRR) program, increases by 2.35% relative to FY 2018 rates.

Table 1
Bureau of Environmental Services
FY 2018 and FY 2019 Sanitary Sewer and Stormwater Drainage Rates

Fiscal Year Ending June 30,	Previous	Adopted
	2018	2019
Residential Sanitary Sewer and Stormwater Drainage		
Sanitary Sewage Volume (\$ / ccf)	\$ 10.19	\$ 10.44
Stormwater Drainage (\$ / 1000 square feet of impervious area / month)	11.92	12.36
Average Single-Family Bill (\$ / month)	71.86	73.55
Low Income Discount (\$ / month)	31.68	32.43
Commercial / Industrial Sanitary Sewer and Stormwater Drainage		
Special Meter Charge (\$ / month)	\$ 29.99	\$ 32.37
Sanitary Sewage Volume (\$ / ccf)	10.051	10.364
Stormwater Drainage (\$ / 1000 square feet of impervious area / month)	12.48	13.02
Clean Water to Stormwater Drainage System (\$ / ccf)	1.042	1.096
Extra Strength Sanitary Sewer		
Biochemical Oxygen Demand (\$ / pound)	\$ 0.723	\$ 0.788
Total Suspended Solids (\$ / pound)	0.988	1.096
System Development Charges		
Sanitary Sewer System Development Charge (\$ / equivalent dwelling unit)	\$ 6,046	\$ 6,446
Line and Branch Charges		
Line Charge (\$ / square feet)	1.75	1.81
Branch Charge (\$ / branch)	6,531	6,742
Stormwater Drainage System Development Charge		
\$ / 1000 square feet of impervious area	\$ 231.00	\$ 228.00
\$ / linear foot of frontage	\$ 7.12	\$ 7.40
\$ / daily vehicle trip	\$ 3.84	\$ 4.02

II. BACKGROUND ON COST OF SERVICE RATEMAKING

The Bureau utilizes the following five-step process to calculate rates. This process is common to most sanitary sewer and stormwater drainage utilities throughout the United States.

Step 1: Determine the Gross Revenue Requirement. Revenues are required to fund two broad categories of costs: operating and capital, which sum to form the Bureau's overall gross revenue requirement. Operating revenue requirements include the recurring cost of providing service plus overhead charges and contingency reserves. The Bureau's adopted budget provides a detailed description of these operating costs for the upcoming fiscal year. Capital expenditures are funded via bond debt and rate revenues from customers (cash financed CIP). The capital revenue requirement includes debt service payments to bondholders and the value of cash financed capital improvements. The Five-Year Financial Plan describes planned CIP expenditures for the upcoming fiscal year and provides a discussion of the Bureau's debt management policies.

Step 2: Calculate the Revenue Required from Rates (Net Revenue Requirement). Funding to meet the gross revenue requirement is provided from multiple sources, including: rate revenues, system development charges, wholesale contract revenues and interest earnings. To determine the amount of rate revenue required from customers, all sources of non-rate revenue must be identified and used as an offset to the gross revenue requirement. The remaining net revenue requirement is recovered from recurring sanitary sewer and stormwater drainage rates.

Step 3: Allocate the Revenue Requirement to Individual Service Parameters. Under cost of service ratemaking, the revenue requirement is allocated to individual service components, commonly called service parameters. This process translates the overall gross revenue requirement into a specific revenue requirement for each individual service parameter. As discussed in Section IV, the Bureau uses the service parameters that best represent the services provided to customers. These service parameters fall into one of the following three broad categories:

Sanitary Sewage Flow includes the costs of managing the volume of sanitary sewer and stormwater drainage flow, beginning in the collection system and ending with treatment and discharge into the Willamette and Columbia Rivers.

Sanitary Sewage Strength captures the costs of purification at the treatment plant. Sanitary sewage strength is measured according to two characteristics: biochemical oxygen demand (BOD) and total suspended solids (TSS).

Stormwater Drainage Service includes all the costs of managing the volume and quality of urban stormwater runoff.

There are a variety of approaches for allocating revenue requirements (costs) to service parameters. Some allocations are self-evident. For example, pump station maintenance costs are appropriately allocated to sanitary sewage flow because a pump station's function is to transport wastewater – not purify it. Other allocations are less obvious. The cost of maintenance functions within a combined sanitary sewer and stormwater drainage system should be allocated to both sanitary sewage flow and stormwater drainage. However, it is less apparent how costs should be divided between these two

service parameters. Allocations of this type are based on the best professional judgment of the Bureau personnel responsible for performing these activities.

To ensure that revenue requirements are allocated to individual service parameters in the most accurate and equitable manner, the Bureau periodically employs consultants to review the cost allocations used in the rate model. In 1998, the consulting firm Black & Veatch reviewed the Bureau’s capital cost allocations and offered specific recommendations that continue to be utilized. In 2005, Black & Veatch completed a comprehensive review of the Bureau's sanitary sewer and stormwater drainage rate model. This review included an evaluation of: 1) the methodologies used by the Bureau to allocate operations and maintenance (O&M) and capital costs to individual service parameters; 2) whether sanitary sewer and stormwater drainage rates are properly calculated to match revenue requirements; and, 3) and how the Bureau's ratemaking methodologies compare to those used by other sewer and stormwater utilities. As a result of this review, Black & Veatch concluded that the Bureau is allocating O&M and capital costs in a "reasonable manner consistent with industry practices."

Step 4: Assign Units of Measure to Each Service Parameter. The fourth step in the rate setting process is to quantify each of the service parameters by a unit of measure, which then allows individual unit rates to be calculated. The units of service for sanitary sewage flow and strength are a direct measure of a customer’s wastewater discharge and, therefore, a direct measure of the level of service.

Impervious area is currently the only stormwater drainage service unit of measure used by the Bureau. The precise level of stormwater drainage service provided to individual customers is also a function of property slope, soil type, semi-impervious area, and access to and use of public rights of way. However, adding these additional factors would result in high customer billing analysis and transaction costs relative to the size of the stormwater drainage rate. For this reason, impervious area is used as the only unit of service measure. Table 2 below shows the units by which service parameters are currently quantified.

Table 2
Bureau of Environmental Services
Units of Measure for Service Parameters

Service Parameter	Units of Measure
Sanitary Sewage Flow	Hundreds of cubic feet (ccf)
Sanitary Sewage Strength	
Biochemical Oxygen Demand (BOD)	Pounds/ccf
Total Suspended Solids (TSS)	Pounds/ccf
Clean Water to Stormwater System	Hundreds of cubic feet (ccf)
Basic Stormwater Drainage Service	Square feet of impervious area
Commercial / Industrial Stormwater Drainage Service	Sq. Ft. of commercial / industrial impervious area

Step 5: Calculate Sanitary Sewer and Stormwater Rates. The calculation of specific sanitary sewer and stormwater drainage rates is the final step in the rate setting process. Rates are based upon total forecast customer class use for each service parameter, and the unit costs of those services, allowing for changes in customer usage characteristics, as well as other market-and regulatory-driven influences. The FY 2019 ratemaking process is discussed below, including tables of data and results.

III. CALCULATION OF FY 2019 RATES

A. FY 2019 Revenue Requirement Calculation

The Bureau's gross revenue requirement for FY 2019 is \$524.1 million. CIP related expenditures for the construction of new sanitary sewer and stormwater drainage facilities constitute \$120.0 million, or approximately 22.9% of the gross revenue requirement. O&M expenditures constitute \$198.2 million, or approximately 39.3% of the gross revenue requirement, and include the cost of direct labor, materials and services, as well as the utility license fees, City general fund overhead allocations and transfers to the Sewer System Rate Stabilization Fund (Fund 617000). All payments for O&M and CIP related expenditures are made through the Sewer System Operating Fund (Fund 600000) with CIP expenditures reimbursed by the Sewer System Construction (Fund 614000).

Debt service payments to bondholders are the result of funding prior years' capital expenditures from the proceeds of long-term bonds, and constitute \$181.6 million, or approximately 34.7% of the gross revenue requirement. Debt service payments are made from the Sewer System Debt Redemption Fund (Fund 609000) and reimbursed by the Sewer System Operating Fund. Cash financed CIP are forecast to be \$24.3 million.

The Bureau's net revenue requirement (the amount of revenue that must be obtained from sanitary sewer and stormwater drainage rates) is projected to be \$346.0 million in FY 2019. This is \$178.1 million less than the gross revenue requirement of \$524.1 million. The difference between the gross and net revenue requirements is due to the following revenue requirement offsets: \$130.5 million in CIP expenditure reimbursements from the Sewer System Construction fund to the Sewer System Operating Fund; \$29.0 million in system development charge revenue; and \$3.7 million in wholesale service revenue. There is also a \$6.4 million decrease to the Sewer System Operating Fund balance and a \$0.8 million for year-over-year accrued revenues. The remaining \$7.8 million difference results from miscellaneous service reimbursements, interest income, licenses and permits, and other minor revenues.

Revenues from sewer system line and branch extensions are not included as an offset to gross revenue requirements; they flow directly to the Sewer System Construction Fund and are used to reduce CIP related borrowing requirements.

Table 3 on the following page presents the Bureau's revenue requirement calculation for FY 2019.

Table 3
Bureau of Environmental Services
Calculation of FY 2019 Rate Revenue Requirement

Year Ending June 30	Forecast 2019
<u>O&M AND CIP EXPENSES</u>	
Personal Services	\$ 60,889,796
Materials & Services – External	32,304,966
Materials & Services – Internal	41,095,546
Capital Outlay (non-CIP)	6,119,822
Expenditures for Capital Improvement Projects	120,016,000
SRF Loan Management Fees	58,863
Cash Transfers:	
General Fund Overhead	6,305,627
Utility License Fees	17,192,449
Rate Stabilization Fund	30,043,125
Pension Obligation Bonds Fund	4,178,178
TOTAL O&M AND CIP EXPENSES	\$ 318,204,371
Cash Transfers to Debt Redemption Fund:	
Senior Debt Service	87,968,450
Junior Lien Debt Service	93,656,225
Cash Transfers to Sewer Construction Fund:	
Cash Financed Capital Improvements	24,297,381
TOTAL DEBT AND CIP TRANSFERS	\$ 205,922,056
GROSS REVENUE REQUIREMENT	\$ 524,126,427
<u>LESS: OTHER SYSTEM RESOURCES</u>	
CIP Reimbursement from Construction Fund	\$ 130,474,968
System Development Charges	29,000,000
Wholesale Sewer Contracts	3,690,000
Other Service Charges	3,164,498
Service Reimbursements	1,901,575
Rate Stabilization Fund Transfer In	-
Other Cash Transfers	156,769
Product Sales	537,372
Inspections	775,000
Rents	156,780
Licenses and Permits	2,108,125
Interest on Investments	1,336,301
Miscellaneous	1,199,000
Portland Harbor Rate Revenues Deposited in ERF	(3,566,996)
Accrued User Charge Revenue	800,000
Decrease / (Increase) in Operating Fund Balance	6,602,962
TOTAL OTHER RESOURCES	\$ 178,336,355
RATE REVENUE REQUIREMENT	\$ 345,790,072

The FY 2019 revenue requirement is allocated to the following service parameters that best approximate the services the Bureau provides to its customers.

Basic Sanitary Flow (Flow, or Q) represents the volume of sanitary sewage discharged by a customer, and is measured in hundreds of cubic feet per year.

Biochemical Oxygen Demand (BOD) is one measure of sanitary sewage discharge strength. It represents the oxygen required by microorganisms to break down the organic content of sanitary sewage. The stronger the discharge, the greater the quantity of oxygen required. This service parameter is measured in pounds per hundred cubic feet of sanitary sewage flow.

Total Suspended Solids (TSS) is another measure of sanitary sewage discharge strength. It represents the weight of suspended particulate matter per unit of sanitary sewage flow, and is also measured in pounds per hundred cubic feet of sanitary sewage flow.

Basic Impervious Area (IA) represents the responsible residential customer's contribution of stormwater runoff to the City's stormwater drainage system. It is measured in thousands of square feet.

Commercial/Industrial Impervious Area (C/I-IA) represents the responsible commercial/industrial customer's contribution of stormwater runoff to the City's stormwater drainage system. It is also measured in thousands of square feet.

Commercial/Industrial Flow-related Services (C/I QS) are related to customer sanitary sewage flow volumes. Examples include some source control planning and permitting activities. C/I QS is measured by the volume of commercial sanitary sewage flow.

Special Meter Services are provided whenever a meter is required to monitor discharge directly, as opposed to indirectly through water consumption. Special meter services are measured by the number of special meter billings.

Portland Harbor costs were separately identified on customer bills beginning in FY 2008. This ensures that customers know what these costs are. Because the costs are related to both sewage and stormwater flow, 40 percent of the costs will be recovered on a flow basis and 60 percent on an impervious area basis.

1. Allocation of Operations and Maintenance Costs to Service Parameters

The allocation of O&M costs (revenue requirements) to the eight service parameters described above is a two-step process. For each of the Bureau's cost centers, budgeted expenditures are classified as either indirect, relating to departmental-wide or Bureau-wide activities, or as direct, relating specifically to one or more service parameters. Direct costs for each cost center are allocated on a percentage basis among the service parameters. The percentage of total direct costs allocated to each service parameter is then used to allocate the indirect costs. Therefore, the percentage of direct costs allocated to a particular service parameter (basic sanitary flow, for example) will define the percentage of indirect costs allocated to that same parameter.

2. Allocation of Capital Costs to Service Parameters

The allocation of capital costs (revenue requirements) to service parameters is based on the existing asset approach. The depreciated value of existing system assets is allocated to the service parameter that influenced the sizing or capacity of that asset. The percentage of total depreciated value assigned to each service parameter determines the percentage of capital revenue requirements allocated to that parameter. As discussed previously, the capital cost allocations used in this rate study reflect the findings and recommendations made in 1998 by Black & Veatch Corporation, updated to reflect current system assets. Black & Veatch reaffirmed the use of this methodology in its 2005 review of the Bureau's rate model.

3. Allocation of Non-Rate Revenue Offsets to Service Parameters

The allocation of non-rate revenues (gross revenue requirement offsets) to service parameters is based on a review of each individual Bureau revenue center. Revenues classified as offsets to capital costs are allocated to the service parameters in the same percentage as capital costs. These include connection charge revenues and cash line and branch charge revenues. The remaining revenues, including cash transfers from other funds, contract revenues, and interest income, are allocated in a manner similar to O&M costs. Revenues are allocated directly to service parameters where appropriate, and "indirect" revenues are allocated in the same percentage as total operating costs.

4. Calculation of Service Parameter Net Revenue Requirements

Service parameter net revenue requirements are calculated per the following formula for each individual service parameter:

$$\begin{array}{l} \text{O\&M Revenue Requirement Allocated to Service Parameter} \\ + \text{Capital Revenue Requirement Allocated to Service Parameter} \\ - \text{Revenue Requirement Offsets Allocated to Service Parameter} \\ \hline \text{Service Parameter Net Revenue Requirement} \end{array}$$

Table 4 below summarizes the development of the net revenue requirement by service parameter for FY 2019. All capital expenditures are allocated to sanitary flow, BOD, TSS, or impervious area. Revenue requirements for other categories in this table are operating only.

Table 4
Bureau of Environmental Services
FY 2019 Development of Service Parameter Net Revenue Requirement

	Gross Revenue Requirements	Revenue Offsets	Net Revenue Requirements
Sanitary Sewage Flow			
<i>Operating</i>	\$ 68,610,930	\$ 4,109,787	\$ 64,501,144
<i>Capital</i>	<u>116,860,767</u>	<u>28,885,531</u>	<u>87,975,236</u>
<i>Total</i>	\$ 185,471,697	\$ 32,995,317	\$ 152,476,379
Biochemical Oxygen Demand			
<i>Operating</i>	\$ 26,679,203	\$ 2,395,078	\$ 24,284,125
<i>Capital</i>	<u>14,414,544</u>	<u>3,465,761</u>	<u>10,948,783</u>
<i>Total</i>	\$ 41,093,747	\$ 5,860,839	\$ 35,232,908
Total Suspended Solids			
<i>Operating</i>	\$ 22,898,770	\$ 2,355,024	\$ 20,543,746
<i>Capital</i>	<u>12,870,128</u>	<u>3,550,302</u>	<u>9,319,827</u>
<i>Total</i>	\$ 35,768,899	\$ 5,905,326	\$ 29,863,573
Basic Impervious Area			
<i>Operating</i>	\$ 72,372,607	\$ 2,997,447	\$ 69,375,160
<i>Capital</i>	<u>61,776,617</u>	<u>13,189,388</u>	<u>48,587,229</u>
<i>Total</i>	\$ 134,149,224	\$ 16,186,835	\$ 117,962,389
Commercial/Industrial Impervious Area	\$ 4,466,526	\$ 193,939	\$ 4,272,587
Portland Harbor/Willamette River (Flow)	1,894,202	-	1,894,202
Portland Harbor/Willamette River (IA)	2,841,303	-	2,841,303
Commercial / Industrial Flow-Related Services	1,008,830	257,748	751,082
Special Meter Services	598,104	102,454	495,649
Grand Totals	<u>\$ 407,292,531</u>	<u>\$ 61,502,459</u>	<u>\$ 345,790,072</u>

B. FY 2019 Customer Demand Characteristics

To develop cost of service rates, the quantity and discharge strength for each customer class must be forecast. FY 2019 average residential sanitary sewer usage (as measured by the lesser of winter average water use and actual water use) is forecast to be 4.11 ccf per month.

As a result of recommendations made by Black & Veatch, BOD and TSS sanitary sewage strength demand characteristic assumptions for residential and regular strength commercial customers were modified in FY 2006. In FY 2005, BOD and TSS strength levels were each forecast at 235 mg/l. In FY 2007, BOD and TSS strength assumptions were increased to 293 mg/l and 288 mg/l, respectively.

These changes more accurately reflect the true BOD and TSS contributions of residential and regular strength commercial customers and they have the effect of lowering the amount of BOD and TSS revenue requirements recovered from commercial and industrial extra strength customers. Table 5 below summarizes forecast customer usage characteristics for FY 2019.

Table 5
Bureau of Environmental Services
FY 2018 Sewer System Customer Flow and Strength Characteristics

Customer Class/Type	Annual Billed Flow (ccf)	Impervious Area (1,000 sq. ft.)	Strength	
			BOD (mg/l)	TSS (mg/l)
Residential Single Family	49.3	2.4	293	288
Multifamily	41.3	as measured	293	288
Commercial				
Monthly	1,691	as measured	293	288
Quarterly	149	as measured	293	288
Extra Strength	18,035	as measured	1,460	517

C. FY 2019 Customer Counts

Table 6 presents FY 2019 forecast sanitary sewer and stormwater drainage customer account totals. To avoid double counting, extra strength accounts are not included in the totals because they are also regular accounts.

Table 6
Bureau of Environmental Services
FY 2019 Forecast Customer Accounts

	Forecast
Averages for Fiscal Year Ending June 30	2019
<u>RESIDENTIAL</u>	
Single Family	157,775
Multifamily	12,300
TOTAL RESIDENTIAL ACCOUNTS	170,075
<u>COMMERCIAL</u>	
Monthly	3,782
Quarterly	10,156
Clean Water to Stormwater Drainage System	15
Stormwater Drainage Only	26
TOTAL COMMERCIAL ACCOUNTS	13,980
TOTAL SYSTEM ACCOUNTS	184,055

1. Extra Strength Charges

Prior to 2012, the Bureau monitored and charged about 72 commercial/industrial customers for sanitary sewage discharges in excess of residential or baseline strength. This excess is measured in terms of “biological oxygen demand” (“BOD”) and “suspended solids” (“TSS”) and is referred to as “extra strength” discharge. These extra strength accounts are called “measured extra strength” because the discharges are monitored. Extra strength discharges are also associated with smaller scale food processing and service establishments. As many as 3,400 other commercial customers were thought to have significant extra strength discharges. Prior to 2012, the cost of treating the added extra strength load from those customers was borne by others.

In 2012, the Bureau implemented a “class average” system of strength-based rates for the smaller commercial and industrial customers. The class average rates system overcomes the need to continuously monitor the discharges of thousands of establishments. It has also improved both customer equity and pollution prevention incentives. Apart from implementation costs, this is a revenue-neutral program and the resulting revenues have lowered rates for other customers systemwide. Currently, nearly 3,900 Class Average Extra Strength Program accounts have been set up. During FY 2017-18, Class Average revenues were \$5.0 million. The corresponding figure for Measured (i.e. non-Class Average) extra strength revenue was about \$5.7 million.

D. FY 2019 Demand by Service Parameter

The quantities shown in Table 7 below represent forecast FY 2019 total units of demand by service parameter. Total forecast units of demand, together with the service parameter revenue requirements, determine the unit cost of service for each service parameter.

Table 7
Bureau of Environmental Services
FY 2019 Forecast Annual Service Units by Service Parameter

Service Parameter	Units	Forecast
		FY 2019
Basic Sanitary Sewage Flow	ccf	20,734,811
Biochemical Oxygen Demand	lbs.	48,109,667
Total Suspended Solids	lbs.	37,373,002
Total Impervious Area	1,000 sq. ft.	828,540
Commercial / Industrial Impervious Area	1,000 sq. ft.	392,472
Portland Harbor/Willamette River	ccf	20,734,811
Portland Harbor/Willamette River	1,000 sq. ft.	966,715
Commercial / Industrial Flow Related Services	Comm. / Ind. ccf	8,883,686
Special Meter Services	Special Meter Bills	15,612

E. FY 2019 Calculation of Unit Cost of Service

Total O&M and capital revenue requirements by service parameter were shown in Table 4. Those costs, net of forecast non-rate revenue offsets, form the basis for developing cost of service rates. The next step in rate development is to compute the unit cost of service for each service parameter, based on forecast units for each type of service as shown in Table 7. This requires dividing the revenue requirement for each service parameter by its forecast number of units, as shown in Table 8 below.

Table 8
Bureau of Environmental Services
FY 2019 per Unit Cost of Service by Service Parameter

Fiscal Year Ending June 30	Units	Net Rev. Req.	Annual Units	Forecast 2019
Service Parameter				\$
Basic Sanitary Flow	ccf	\$ 152,476,379	20,734,811	7.35
Biochemical Oxygen Demand	lbs.	35,232,908	48,109,667	0.73
Total Suspended Solids	lbs.	29,863,573	37,373,002	0.80
Total Impervious Area	1,000 sq. ft.	117,962,389	9,942,478	11.86
Commercial / Industrial				
Impervious Area	1,000 sq. ft.	4,272,587	392,472	10.89
Portland Harbor/Willamette				
River	ccf	1,894,202	20,734,811	0.09
Portland Harbor/Willamette				
River	1,000 sq. ft.	2,841,303	11,600,581	0.24
Commercial / Industrial Flow	Commercial /			
Related Services	Industrial ccf	751,082	5,883,686	0.08
Special Meter Services	Per Special Meter Per Bill	495,649	15,612	31.75

For example, total O&M and capital costs (net of revenue offsets) allocated to basic sanitary flow for FY 2019 are \$152.5 million. Total sanitary sewer flow for all customer classes is forecast to be 20.7 million ccf. Dividing the cost by the forecast service demand yields an estimated unit cost of \$7.35 per ccf. This unit cost allows revenue requirements to be charged to each customer class (and to individual customers) based on their contribution to basic sanitary flow. Table 8 presents the unit cost of service for each of the previously identified service parameters.

F. FY 2019 Adopted Sanitary Sewer and Stormwater Drainage Rates

The unit costs displayed in Table 8 are used to develop rates by customer class. For example, the residential sanitary volume rate includes the cost of flow (\$7.35/ccf), and the cost of “residential strength” at \$2.78/ccf. The latter is calculated by taking the assumed strength for BOD and TSS from Table 5 (293 mg/l for BOD and 288 mg/l for TSS), converting these numbers from mg/l to lbs/ccf (293 mg/l is approximately 1.83 lbs/ccf and 288 mg/l is approximately 1.80 lbs/ccf), and computing cost of strength per ccf of flow (1.83 lbs/ccf * \$0.73/lb for BOD plus 1.80 lbs/ccf * \$0.80/lb for TSS). The resulting rate of \$10.13 ccf is then adjusted upward by approximately 1.6% to reflect the cost of providing discounts to low-income customers. Finally, rates are adjusted upward by approximately 1.4% for projected uncollectable debts, yielding the \$10.44/ccf rate for residential sanitary volume.

In computing final rates, it is Bureau policy to round to the nearest tenth of a cent for commercial flow and strength rates, and to the nearest cent for other rates. Table 9 on the following page illustrates the adopted sanitary sewer and stormwater drainage rates for FY 2019.

This year's rate structure includes the effects of the CRR. Adopted rates for FY 2019 reflect CRR participation levels of about 34,700 customers. For residential customers receiving the full (35%) discount on the stormwater charge, the average monthly sanitary sewer and stormwater bill is forecast to be \$62.96 a 2.1% difference from the FY 2018 average of \$61.65 (includes CRR). For customers receiving no discount, the average monthly bill for sanitary sewer and stormwater service is forecast to be \$73.55, an increase of 2.35%. Intermediate levels of discount on stormwater charges are also possible.

Table 9
Bureau of Environmental Services
FY 2019 Sanitary Sewer and Stormwater Drainage Rates

Fiscal Year Ending June 30,	Adopted 2019
Residential Sanitary Sewer and Stormwater Drainage	
Sanitary Sewage Volume (\$ / ccf)	\$ 10.44
Stormwater Drainage (\$ / 1000 square feet of impervious area / month)	12.36
Average Single-Family Bill (\$ / month)	73.55
Low-Income Discount (\$ / month)	32.43
Extremely Low-Income Discount (\$ / month)	51.89
Commercial / Industrial Sanitary Sewer and Stormwater Drainage	
Special Meter Charge (\$ / month)	\$ 32.37
Sanitary Sewer Volume (\$ / ccf)	10.364
Stormwater Drainage (\$ / 1000 square feet of impervious area / month)	13.02
Clean Water to Stormwater Drainage System (\$ / ccf)	1.096
Extra Strength Sanitary Sewer	
Biochemical Oxygen Demand (\$ / pound)	\$ 0.788
Total Suspended Solids (\$ / pound)	1.096
System Development Charges	
Sanitary Sewer System Development Charge (\$ / equivalent dwelling unit)	\$ 6,446
Line and Branch Charges	
Line Charge (\$ / square feet)	1.81
Branch Charge (\$ / branch)	6,742
Stormwater Drainage System Development Charge	
\$ / 1000 square feet of impervious area	228.00
\$ / linear feet of frontage	7.40
\$ / daily vehicle trip	4.02

G. FY 2019 Typical Commercial Customer Bills

Table 10 below illustrates estimated commercial customer bills computed from adopted sewer rates for FY 2019, as compared to bills under FY 2018 rates excluding the effects of the CRR. Assuming no discounts, bill changes range from an increase of 4.1% to an increase of 7.3%, depending on the customer type and usage characteristics.

Table 10
Bureau of Environmental Services
FY 2018 vs. FY 2019 Typical Commercial Customer Bill Comparison
Assuming No Clean Rivers Rewards Discount

Typical Customer	Usage Characteristics								Percent Change
	Accounts per Customer		Sanitary Flow (ccf/month)	Impervious Area (Stormwater) (square feet)	Extra Strength		Monthly Cost		
	Monthly	Quarterly			BOD (lbs./ccf)	SS (lbs./ccf)	Current FY 2018	Proposed FY 2019	
Large Office Building	1		1,417	38,100	-	-	\$ 14,718	\$ 15,318	4.1%
Large Dairy	2		176	39,000	9.83	2.70	\$ 3,977	\$ 4,241	6.6%
Large Metal Plater	5	5	9,011	119,900	-	9.23	\$ 174,228	\$ 186,919	7.3%
Small Graphic Arts	1		4	1,500	-	-	\$ 56	\$ 58	4.8%
Industrial Laundry	1	2	6,610	104,000	3.35	3.08	\$ 103,871	\$ 110,237	6.1%
Large Nightclub	2		185	4,800	-	-	\$ 1,919	\$ 1,998	4.1%
Small Print Shop	1		9	1,500	-	-	\$ 109	\$ 114	4.4%
Large Church		2	39	20,100	-	-	\$ 646	\$ 678	4.8%
Big Box Retailer	1		443	657,000	8.45	3.03	\$ 16,686	\$ 17,764	6.5%
Brewery	4	2	3,385	30,000	15.60	1.07	\$ 76,169	\$ 81,352	6.8%
Hospital Complex	11	6	5,251	632,500	-	-	\$ 60,670	\$ 63,275	4.3%
Neighborhood Tavern	1		30	5,100	-	-	\$ 365	\$ 381	4.4%
Auto Repair Shop		1	15	10,000	-	-	\$ 272	\$ 286	5.0%
Large Hotel	1		3,876	39,300	-	-	\$ 39,449	\$ 41,039	4.0%
Fast Food	1		52	29,600	-	-	\$ 892	\$ 936	4.9%
Large Process Industry	1		1,311	547,100	2.67	0.20	\$ 22,790	\$ 23,999	5.3%
Department Store	1		286	38,100	-	-	\$ 3,350	\$ 3,495	4.3%
Meat Packer	1		1,773	25,000	0.39	-	\$ 18,637	\$ 19,415	4.2%
Large Manufacturer	3	2	12,210	414,000	-	-	\$ 127,893	\$ 133,127	4.1%
Small Nightclub		2	40	3,000	-	-	\$ 436	\$ 454	4.2%
Convenience Store		1	30	15,000	-	-	\$ 485	\$ 509	4.9%
Fast Food		1	123	15,000	-	-	\$ 1,424	\$ 1,485	4.3%
Electronics Manufacturer	1		20,240	73,900	-	-	\$ 204,359	\$ 212,559	4.0%
Zoo	1		14,859	497,400	-	-	\$ 155,559	\$ 161,925	4.1%
Small Office Building		1	57	34,500	-	-	\$ 1,007	\$ 1,057	5.0%

Table 11 below illustrates estimated commercial customer bills computed from adopted sewer rates for FY 2019, as compared to bills under FY 2018 rates including the effects of the CRR. At a full (35%) discount, bill changes range from an increase of 3.1% to an increase of 3.8%.

Table 11
Bureau of Environmental Services
FY 2018 vs. FY 2019 Typical Commercial Customer Bill Comparison
Assumes a 35% Clean Rivers Rewards Discount

Typical Customer	Usage Characteristics								Percent Change
	Accounts per Customer		Sanitary Flow (ccf/month)	Impervious Area (Stormwater) (square feet)	Extra Strength		Monthly Cost		
	Monthly	Quarterly			BOD (lbs./ccf)	SS (lbs./ccf)	Current FY 2018	Proposed FY 2019	
Large Office Building	1		1,417	38,100	-	-	\$ 14,551	\$ 15,008	3.1%
Large Dairy	2		176	39,000	9.83	2.70	\$ 2,095	\$ 2,165	3.3%
Large Metal Plater	5	5	9,011	119,900	-	9.23	\$ 91,548	\$ 94,407	3.1%
Small Graphic Arts	1		4	1,500	-	-	\$ 49	\$ 51	3.4%
Industrial Laundry	1	2	6,610	104,000	3.35	3.08	\$ 67,286	\$ 69,389	3.1%
Large Nightclub	2		185	4,800	-	-	\$ 1,898	\$ 1,958	3.1%
Small Print Shop	1		9	1,500	-	-	\$ 103	\$ 106	3.3%
Large Church		2	39	20,100	-	-	\$ 558	\$ 578	3.5%
Big Box Retailer	1		443	657,000	8.45	3.03	\$ 9,791	\$ 10,162	3.8%
Brewery	4	2	3,385	30,000	15.60	1.07	\$ 34,278	\$ 35,348	3.1%
Hospital Complex	11	6	5,251	632,500	-	-	\$ 57,905	\$ 59,769	3.2%
Neighborhood Tavern	1		30	5,100	-	-	\$ 343	\$ 354	3.3%
Auto Repair Shop		1	15	10,000	-	-	\$ 229	\$ 237	3.5%
Large Hotel	1		3,876	39,300	-	-	\$ 39,276	\$ 40,502	3.1%
Fast Food	1		52	29,600	-	-	\$ 763	\$ 789	3.5%
Large Process Industry	1		1,311	547,100	2.67	0.20	\$ 17,617	\$ 18,219	3.4%
Department Store	1		286	38,100	-	-	\$ 3,184	\$ 3,286	3.2%
Meat Packer	1		1,773	25,000	0.39	-	\$ 18,024	\$ 18,586	3.1%
Large Manufacturer	3	2	12,210	414,000	-	-	\$126,081	\$ 130,042	3.1%
Small Nightclub		2	40	3,000	-	-	\$ 423	\$ 436	3.2%
Convenience Store		1	30	15,000	-	-	\$ 420	\$ 434	3.5%
Fast Food		1	123	15,000	-	-	\$ 1,358	\$ 1,402	3.2%
Electronics Manufacturer	1		20,240	73,900	-	-	\$204,032	\$ 210,383	3.1%
Zoo	1		14,859	497,400	-	-	\$153,383	\$ 158,201	3.1%
Small Office Building		1	57	34,500	-	-	\$ 856	\$ 886	3.5%

IV. SANITARY SEWER AND STORMWATER DRAINAGE CAPITAL CHARGES

The Bureau has several charges designed to recover capital costs from new customers to the system: the sanitary sewer system development charge (SDC), the stormwater drainage SDC, and line and branch charges. The sanitary sewer SDC and the stormwater drainage SDC are subject to State of Oregon statutes governing SDCs and have been calculated as "reimbursement fees" under the requirements of Oregon Revised Statute 223.299. Line and branch charges are not subject to these requirements.

The purpose of the sanitary sewer SDC and the stormwater drainage SDC is to ensure that new customers pay an equitable portion of the costs of major sanitary sewer and stormwater drainage facilities that serve the entire community. These facilities, such as sewage treatment plants, interceptor sewers, and stormwater detention facilities, are normally constructed with excess capacity in anticipation of future growth. As this growth occurs, new customers pay connection charges and

SDCs to "reimburse" existing ratepayers for a share of the costs of these major facilities. In the case of the stormwater drainage SDC, new customers are also reimbursing existing customers for the capacity for draining the public right of way, and for draining excess runoff from properties adjacent to the right of way.

Line and branch charges recover the costs of local collector sewers from the properties they serve. Historically, collector sewers were assessed to benefited properties through local improvement district processes. Because of changes made to the Mid-County Sewer Project, most of the new collector sewers being constructed in Portland are now financed as part of the Bureau's capital improvement program. Recovery of these costs occurs through payment of line and branch charges from properties adjacent to these sewer lines.

These charges are based upon historical construction costs for facilities that are now operational; there is no allowance for costs of facilities to be constructed in the coming years. This is consistent with requirements imposed by state statute for reimbursement charges.

A. System Development Charges

The intent of the sanitary sewer and stormwater drainage SDCs is to recover an equitable share of facilities costs from new development. The calculation methodology takes the costs of existing facilities and several additional factors into consideration in arriving at a cost basis for reimbursement. Factors considered in developing the calculation methodology include:

The cost of existing facilities. The sanitary sewer and stormwater drainage SDCs are based on the replacement cost of existing facilities. Replacement cost calculations employ the Engineering News Record Construction Cost Index to bring original facilities costs up to their present replacement value.

Ratemaking principles employed to finance publicly owned capital improvements. Only that portion of facilities costs paid by current and past customers are fully eligible for SDC recovery (reimbursable facilities costs). For facilities funded by bond issuances (essentially all facilities since 1985), replacement costs are prorated over the term of the bonds (20 or 25 years) to approximate the cumulative debt service paid on the bonds.

Gifts or grants from federal or state government or private persons. The portion of facilities costs paid for from these revenue sources are not included in the cost basis for SDCs.

Prior contributions by existing ratepayers. A return on equity for the portion of facilities constructed with ratepayer funds is included in the calculation as a carrying cost for current and past ratepayers. The return on equity portion calculates simple interest foregone on each year's original project cost using each year's annual average yield on 6-month Treasury Bills.

The value of unused capacity available for future system users. The methodology used values each unit of capacity equally. New development "buys into" the existing system on the same basis as current ratepayers.

To compute reimbursable facilities costs for the sanitary sewer SDC, the original costs of sanitary sewer system facilities are adjusted by an index of construction costs to develop a present value replacement cost for those facilities. These costs are also adjusted to reflect a return on equity for existing ratepayers, who incurred the investment cost of constructing them. However, only that portion of facilities costs actually paid by ratepayers is included in the reimbursable cost total. For example, if a facility built five years ago was financed with 20-year revenue bonds, only one fourth of that facility's adjusted costs are included in as a reimbursable cost for purposes of the sanitary sewer SDC. The calculation of reimbursable facilities costs is the same for the stormwater drainage SDC.

B. FY 2019 Sanitary Sewer SDC Calculations

Applying the above methodology to sanitary sewer facilities yields total costs of \$2,435,988,093. These costs specifically exclude Local Improvement District development projects, developer permit projects, and grant-funded facilities.

For each customer, the Sanitary SDC is calculated as an average cost per equivalent dwelling unit (EDU) times the number of dwelling units. For purposes of the Sanitary SDC, one EDU corresponds to the sanitary flow from a single-family dwelling. The Bureau of Environmental Services maintains a table of EDU equivalencies by type of occupancy. The total system treatment capacity is 377,886 EDUs. Dividing the above total cost by this amount yields an average cost of \$6,446 per EDU. The customer's charge is therefore:

$$\text{Sanitary SDC} = \$6,446 \times \text{EDU}$$

C. FY 2019 Stormwater Drainage SDC Calculations

The calculation of the Stormwater SDC is intended to reflect the use of existing stormwater drainage facilities by new development. This use has several dimensions, corresponding to the various functions of the system. These functions include: 1) collection, conveyance, and treatment of stormwater flows from properties; and, 2) collection, conveyance, and treatment of stormwater flows from public rights of way. This service includes access to individual properties on local streets and use of arterial streets, unimpeded by flooding. It also includes protection of individual properties from hazardous materials spills in the right of way, as well as protection from flows originating elsewhere.

The charge has two components: an on-site charge and an off-site charge. The on-site charge reflects direct usage of public stormwater drainage facilities, corresponding to (1) above. Credits against this portion of the charge reflect the contributions made by developers in managing on-site flows. The off-site charge reflects the indirect uses and benefits, corresponding to (2) above. The measure of proportionality for this charge is intended to reflect the relationship between these uses and benefits and the characteristics of the development.

Applying the above methodology to stormwater drainage facilities yields total costs of \$514,517,724. These costs specifically exclude Local Improvement District projects, developer permit projects, and grant-funded facilities.

Total facilities costs are divided between on-site and off-site costs. On-site costs represent that portion of total costs for facilities handling stormwater drainage flows from individual properties. Off-site costs represent the portion of total costs for facilities handling stormwater drainage flows from rights of way. Even a development discharging no water directly to public facilities uses and benefits from facilities handling off-site flows in one or more of the following ways: 1) access to properties unimpeded by stormwater-related flooding of rights of way; 2) general use of the right of way unimpeded by stormwater-related flooding; 3) protection from hazardous materials spills in the right of way; and 4) protection from off-site flows.

The allocation between on-site and off-site costs is based on a computation of relative flow contributions from properties and rights of way. The costs allocated to the on-site charge total \$234,105,565. The remaining \$280,412,160 represents off-site costs. Off-site costs are further split to reflect the various benefits received from facilities draining the right of way. There are two principal benefits: drainage of arterial streets, and access to individual properties. These costs are split according to the relative amounts of impervious area in each type of street, adjusting for the portion of arterial streets used for access to properties. The resulting allocation is \$259,579,387 to local access, and \$20,832,772 to arterials.

The units of service for the three categories described are as follows:

<i>Cost Category</i>	<i>Unit of Measurement</i>	<i>Total Units in Service Area</i>	<i>Unit Cost</i>
On-site	Thousands of square feet of impervious area (excluding rights of way)	1,027,633	\$228.00 per 1000 square feet
Off-site Local	Linear feet of frontage	35,087,247	\$7.40 per foot
Arterial	Daily vehicle trips	5,176,696	\$4.02 per trip

In the absence of mitigation measures, flow from an individual site will be roughly proportional to the impervious area on that site. Access to an individual site is made using the right of way fronting the site. Daily vehicle trips are a proportionate measure of use of arterial streets.

For each customer, the cost for each category is the product of service units times unit cost. The total charge is the sum of costs for the three categories. Using data from the above table, this is:

$$\text{Storm SDC} = 228.00 \times \text{SIA} + \$7.40 \times \text{SF} + \$4.02 \times \text{ST},$$

where: SIA = net new impervious area on the site;
 SF = site frontage; and
 ST = net new site vehicle trips.

Credits against the impervious area portion of the stormwater drainage SDC are allowed, reflecting on-site stormwater drainage facilities exceeding development standards, or direct (permitted) discharge of stormwater to the Columbia or Willamette rivers, or to the Columbia Slough.

D. FY 2019 Line and Branch Charges

Line and branch charges are based upon the average costs of constructing collector sewers and house branches, adjusted to current dollars. Only projects that have been completed since 2003 are included within the computation. Line sewer costs are divided by the net assessable square footage to determine a line charge for each project, and an average line charge is then calculated. (This calculation excludes the highest and lowest line charge.) Total house branch costs are divided by the total number of house branches constructed to determine a house branch cost for each project. Again, the highest and lowest project branch costs are excluded from the average branch cost calculation.

These costs are then forecast for FY 2019, using the Engineering News Record cost index and applying linear regression analysis to develop a forward-looking construction cost estimate. FY 2019 represents the eleventh year since the transition from the large, low unit-cost Mid-County projects from the 1990's, to a more current cost based on smaller, higher unit-cost sewer extension projects. There have been no representative extension projects completed since FY 2011, although there are several projects currently in design that will be included within the next five years.

Table 12 on the next page illustrates how the FY 2019 line and branch charges were calculated.

**Table 12
Bureau of Environmental Services
FY 2019 Sewer System Line and Branch Charge Calculation**

BASE YEAR	2018	Line Charge:				Branch Charge:			
		Total Line Costs	Total Line Costs in Current Dollars	Total Benefitted Area (Sq. Feet)	Line Charge per Sq. Ft.	Total House Branch Costs	Total House Branch Costs In Current Dollars	Total # of House Branches	Average Branch Charge
PROJECTS	Fiscal Year Completed								
N Cecelia & Hodge SEP	2003	\$742,308	\$1,214,198	597735	\$2.03	\$310,809	\$508,393	103	\$4,936
N Hunt & Endicott SEP	2003	\$102,762	\$168,089	182300	\$0.92	\$103,875	\$169,909	26	\$6,535
none	2004								
none	2005								
S. Airport Way Phase 1 SEP	2006	\$1,634,161	\$2,308,790	1208111	\$1.91	\$172,873	\$244,239	47	\$5,197
SE 60th & Steele SEP	2006	\$1,620,383	\$2,289,325	1039206	\$2.20	\$713,268	\$1,007,725	209	\$4,822
none	2007								
S. Airport Way Phase 3	2008	\$4,619,392	\$6,085,770	4806281	\$1.27	\$1,141,991	\$1,504,505	102	\$14,750
SE Tolman and 69th Ave	2008	\$653,463	\$860,899	256177	\$3.36	\$310,335	\$408,847	61	\$6,702
S. Airport Way Phase 5	2009	\$1,837,445	\$2,347,603	1884393	\$1.25	\$555,685	\$709,968	54	\$13,148
S. Airport Way Phase 2A	2010	\$932,630	\$1,160,164	345791	\$3.36	\$179,998	\$223,913	20	\$11,196
NE 87th & Columbia Swr Ext.	2010	\$117,368	\$146,003	59110	\$2.47	\$22,379	\$27,839	2	\$13,920
N. Alberta Emerg. Swr Replacement	2010	\$91,804	\$114,202	17000	\$6.718	\$40,712	\$50,644	4	\$12,661
Lents San. Sewer Ext.	2011	\$3,251,378	\$3,925,107	1444272	\$2.72	\$798,813	\$964,338	185	\$5,213
Deltaewood Ph. 1 & 2	2011	\$386,089	\$466,092	173818	\$2.68	\$174,881	\$211,118	42	\$5,027
NW 29th & Savier San Sewer Ext.	2011	\$301,088	\$363,478	54100	\$6.719	\$120,993	\$146,064	13	\$11,236
none	2012								
none	2013								
none	2014								
none	2015								
none	2016								
none	2017								
TOTALS (after excluding High/Low projects):		\$15,886,422	\$20,918,150	11,831,894	\$1.768	\$2,791,353	\$3,665,274	557	\$6,580
				min	\$0.92			min	\$4,822
				max	\$6.719			max	\$14,750

SUMMARY

	Line Charge	Branch Charge
Adopted Line & Branch Charges for FY2017-18:	\$1.75	\$6,531
Est'd Line & Branch Costs for FY2017-18 (from Table III):	\$1.77	\$6,580
increase(decrease) over FY18 Adopted:	1.0%	0.8%
Proposed Charges for FY2018-19		
(at % Difference between FY18 Adopted	100.0%	\$1.81
increase(decrease) over FY18 Adopted:	3.4%	\$6,742

V. FY 2019 FORECAST OPERATING RESULTS

Table 13 on the following page illustrates the FY 2019 forecast operating results for the Sewer System Operating Fund, given the sources of rate revenues, non-rate revenues and costs discussed above. It shows that FY 2019 adopted rates will allow the Bureau to collect sufficient revenues to operate and maintain the sanitary sewer and stormwater drainage system, and to meet debt service coverage requirements as specified in revenue bond covenants.

Table 13
Bureau of Environmental Services
FY 2019 Forecast Sewer System Operating Fund Budgetary Basis Results

Year Ending June 30	Forecast 2019
<u>OPERATING REVENUES</u>	
Service Charges & Fees	\$ 347,415,973
Connection Fees	26,000,000
Line & Branch Charges	789,013
Wholesale Contracts	3,690,000
Other Service Charges	3,880,160
Reimbursements - Other City Funds	1,901,575
Other Funds Cash Transfers	-
Transfer from Rate Stabilization Fund	-
Product Sales	237,372
Inspection Fees	775,000
Rents	156,780
Miscellaneous	259,000
Licenses & Permits	631,590
TOTAL OPERATING REVENUES	\$ 385,736,463
<u>OPERATING EXPENSES</u>	
Personal Services	\$ 60,446,426
Materials & Services - External	29,808,855
Materials & Services - Internal	40,991,158
Capitalized Overhead	(12,859,386)
General Fund Overhead	6,305,627
Transfer to Rate Stabilization Fund	30,625,000
PERS Bonds Transfer	4,178,178
Bad Debt Expense	2,171,350
TOTAL OPERATING EXPENSES	\$ 161,667,209
OPERATING INCOME (LOSS)	\$ 224,069,254
<u>TOTAL OPERATING EXPENSES</u>	
Fund 151-Operations - Interest Income	\$ 616,787
Fund 552-Construction - Interest Income	3,676,614
Fund 351-Debt Redemption - Interest Income	1,059,514
Fund 632-Rate Stabilization - Interest Income	2,535,488
TOTAL NON-OPERATING REVENUES	\$ 7,888,403
NET INCOME (LOSS)	\$ 231,957,657
SUMMARY OF INCOME FOR DEBT SERVICE COVERAGE CALCULATION	
Operating Income	\$ 224,069,254
Interest Income	7,888,403
Bonded Connection Charges and Line & Branch Charges	2,100,000
TOTAL INCOME FOR DEBT SERVICE COVERAGE CALCULATION	\$ 234,057,657
<u>DEBT SERVICE PRINCIPAL AND INTEREST</u>	
First Lien Debt Service Payments	\$ 87,968,450
Second Lien Debt Service Payments	92,143,191
TOTAL DEBT SERVICE PAYMENTS	\$ 180,111,641
First Lien Debt Service Coverage	2.66
Combined First & Second Lien Debt Service Coverage	1.30