

REVENUE REQUIREMENTS AND COST OF SERVICE RATES

BLACK & VEATCH PROJECT NO. 197896

PREPARED FOR

City of St. Joseph, Missouri
Water Protection Division

JUNE 2018



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1 Executive Summary

The wastewater utility, owned and operated by the City of St. Joseph, Missouri (Sewer Utility or Water Protection Division), conducts an annual review of its charges for sewer service (Rate Study). The Rate Study consists of three phases: Revenue and Revenue Requirements, Cost of Service, and Rate Design. The Revenue and Revenue Requirements phase (also referred to as the Financial Planning phase) determines the overall rate adjustment required based on cost data and capital projects forecast provided by the City. The Cost of Service phase determines how costs should be equitably recovered from each of the Sewer Utility's customer classes. The last phase, Rate Design, determines how services should be priced to reflect the cost of service and recover 100% of the revenue requirement. Unless otherwise noted, references in this report to a specific year are for the City's fiscal year (FY) ended June 30.

1.1 REVENUES

The Sewer Utility is projected to experience a slight growth in the number of residential customers for the study period FY 2019 through FY 2023. Billable volume from current retail customers and wholesale customers is projected to increase slightly from 5,113,500 hundred cubic feet (Ccf) in FY 2019 to 5,124,900 Ccf in FY 2023 (Tables 2 and 3).

The projection of billed revenues from sales increases from \$31,720,172 in FY 2018 to \$31,781,300 in FY 2023 (Table 4). Approximately 98.8% of forecasted usage from FY 2018 Rate Study was achieved and the 11% rate increase resulted in an additional \$3.2 million per year in revenue from FY 2018-FY 2023.

1.2 REVENUE REQUIREMENTS

Operating expenses, which include operation and maintenance expense, routine capital expense, and transfers to other City funds, are expected to be \$15,331,700 in FY 2018 and are projected to increase to \$17,356,300 in FY 2023 (Table 6).

The City's current Capital Improvement Program (CIP) for FY 2018 through FY 2023 totals \$76.7 million (Table 7). The City's anticipated capital requirements are driven by regulatory needs or capital replacement expenses required to maintain current operations. As a result, the individual flexibility of projects is limited and, in general, the delaying of projects has the largest impact on rates. Once projects are scheduled, the City's procurement process aims to provide the necessary supplies, equipment, and services at the lowest possible cost that is consistent with the quality needed to meet the requirements of the wastewater utility so that the ratepayers receive the maximum value for each dollar expended. Future CIP projects are conservative estimates that City staff is generally able to report success in keeping projects at or below the originally estimated cost. For that reason, future rate increases could be lower than the current forecast as lower project costs related to being under budget or receiving lower bond rates are possible.

About 5.5% of the CIP is for environmental and regulatory projects mandated by the Missouri Department of Natural Resources (MDNR) for power upgrades of \$1.5 million and final stages of the Ammonia project (\$976,000). The current CIP includes a total of \$31 million in CSO related projects, with the majority going towards the Blacksnake Creek Stormwater Separation project. The CIP is anticipated to be financed with annual operating revenues, \$28.6 million in remaining State Revolving Fund (SRF) loans from 2017 and a total of \$19.3 million conventional bond issues in FY 2018 and FY 2023. Annual debt service on existing and proposed debt is projected to increase from approximately \$11.6 million in FY 2018 to \$15.3 million in FY 2023 (Table 9).

The following revenue increases are projected to be required to meet the Sewer Utility’s revenue requirements through the fiscal year ending June 30, 2023. There is no rate adjustment needed for FY 2019 and rates will remain the same as existing rates through June 30, 2019. Three percent rate increases are projected for each of the remaining years of the study period. Revenue requirements include both the cash obligations and the debt service coverage obligations of the Sewer Utility.

EFFECTIVE DATE	PERCENTAGE OVERALL INCREASE IN REVENUES	RESIDENTIAL INDICATOR
July 1, 2018	0.0%	1.4%
July 1, 2019	3.0%	1.5%
July 1, 2020	3.0%	1.5%
July 1, 2021	3.0%	1.5%
July 1, 2022	3.0%	1.5%

1.3 COST OF SERVICE ANALYSIS

The Rate Study indicates that no rate adjustments are required in FY 2019. As such, the cost allocation analysis was not completed. The next rate study, conducted in calendar year 2019, will be the full cost allocation update that is conducted every five years.

1.4 WASTEWATER RATE ADJUSTMENTS

There are no proposed changes to rates for FY 2019. The typical bill for a residential customer using 4 hundred cubic feet (Ccf), approximately 3,000 gallons, per month will be \$59.97 per month (\$0.02 per gallon), which indicates no change from the current rates.

2 Introduction

2.1 PURPOSE

The purpose of this report is to present the findings of our study of the financing needs and rate requirements of the Sewer Utility owned and operated by the City of St. Joseph, Missouri (City). The study addresses three objectives: (1) projection of operating and capital financing costs of the Sewer Utility for a five-year planning period ending June 30, 2023; (2) projection of revenue adjustments through fiscal year (FY) 2023; and (3) development of cost of service based rates for retail and wholesale customers for FY 2019. Unless otherwise noted, references in this report to a specific year are for the City's fiscal year ended June 30.

2.2 SCOPE

The report presents the study of revenue and revenue requirements and proposed rate design for wastewater service. The revenue and revenue requirements study includes consideration of future revenues under existing rates, operation and maintenance expense, principal and interest expense on bonded debt, expenditures for capital improvements, and compliance with existing bond indentures. Annual projections of the number of customers, billed wastewater volumes, revenues, and expenditures are shown for FY 2019 through FY 2023.

Revenue requirements are developed on a cash basis and the allocation of costs to functional cost components follows the design basis of cost causative allocation methods. The analysis provides the basis for the design of schedules of charges for wastewater service that will recover the total cost of wastewater service for the fiscal year ended June 30, 2019. Because no rate increase is indicated for FY 2019, the cost allocations for FY 2018 still apply.

2.3 GENERAL BACKGROUND

The City operates and maintains the Sewer Utility as a self-supporting enterprise. The Sewer Utility provides services to approximately 25,900 customers including residential, commercial, and industrial accounts.

The utility's wastewater rates are developed to provide sufficient revenues to meet all operation and maintenance expenses of the system, debt service requirements, capital improvement expenditures to be funded from current revenues, and other specific bond ordinance and revenue requirements.

The Sewer Utility also provides secondary treatment service to South St. Joseph Industrial Sewer District (SSJISD), National Beef Leathers, and Triumph Foods (collectively, the "wholesale customers") on a contractual basis. In 1980, the City and SSJISD entered into an agreement whereby the City would provide secondary treatment for the wastewater discharged from SSJISD's primary treatment facilities. The agreement was revised in January 1996 to define the basis for charges for the secondary treatment services and how the service charge to SSJISD would be developed and updated. The agreement provides that allocation factors used to develop the charges must be updated not less than every five years. The allocation factors were updated four years ago.

The City also has agreements with National Beef Leathers and Triumph Foods. Provisions of the agreement are similar to those of SSJISD, with the exception that National Beef Leathers and Triumph Foods do not pay any costs associated with the SSJISD Pump Station.

Each of the wholesale customers now has a fixed charge for the Ammonia Project related debt service. This charge is based on plant design and the units provided by each wholesale customer for

their Significant Industrial Users (SIU) permit. With the addition of the capacity component to the cost of service allocations, each wholesale customer now has a different flow charge.

2.4 DISCLAIMER

Subject to the limitations set forth herein, this report was prepared for the City of St. Joseph, Missouri (“City”) by Black & Veatch Corporation (“B&V”) and is based on information not within the control of B&V. B&V has not been requested to make an independent analysis, to verify the information provided, or to render an independent judgment of the validity of the information provided by others. As such, B&V cannot guarantee the accuracy thereof to the extent that such information, data, or opinions were based on information provided by others.

In conducting the B&V analysis and in forming an opinion of the projection of future operations summarized in this report, B&V has made certain assumptions with respect to conditions, events, and circumstances that may occur in the future. The methodologies B&V utilizes in performing the analysis and making these projections follow generally accepted industry practices. While B&V believes that such assumptions and methodologies as summarized in this report are reasonable and appropriate for the purpose for which they are used; depending upon conditions, events, and circumstances that actually occur but are unknown at this time, actual results may materially differ from those projected. Such factors may include, but are not limited to, the ability to execute the capital improvement program on schedule and within budget, the regional and national economic climate, and growth in the service area.

Readers of this report are advised that any projected or forecasted financial, operating, growth, performance, or strategy merely reflects the reasonable judgment of B&V at the time of the preparation of such information and is based on a number of factors and circumstances beyond B&V control. Accordingly, B&V makes no assurances that the projections or forecasts will be consistent with actual results or performance. To better reflect more current trends and reduce to chance of projected error, B&V recommends that periodic updates of the projections contained in this report be conducted so more recent historical trends can be recognized and taken into account.

Any use of this report, and the information therein, constitutes agreement that: (i) B&V makes no warranty, express or implied, relating to this report, (ii) the user accepts the sole risk of any such use, and (iii) the user waives any claim for damages of any kind against B&V.

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3 Revenues

The majority of the Sewer Utility's revenue is derived from rates and charges for sewer service. A summary of the City's existing rates is presented in Table 1. Projections of future revenue under existing rates are based on analyses of historical trends of customer growth and average volume per customer (Tables 2 through 4). Other income sources such as wastewater service penalties, tax credits, and other revenue are presented in Table 5. FY 2018 customer and volume estimates are based on projecting the average of the first seven months of the fiscal year (July 2017 through January 2018).

3.1 CUSTOMER GROWTH

Table 2 summarizes the historical average number of Sewer Utility customers by customer class during FY 2013 through FY 2017 and the projected number of customers for FY 2018 through 2023. Figures shown in Table 2 are annual averages based on the number of bills issued. Customer growth projections are based on an examination of recent trends in the number of customers added to the system. During the past five years the utility has experienced a slight fluctuation in the overall number of customers with an average annual increase of approximately 0.1 percent. There is a slight projected growth in the number of customers of 0.2 percent for FY 2019 through FY 2023 for the residential, commercial, and industrial customer classes. In recent years, retail commercial and industrial customers have shown a fluctuation in the number of customers. A large part of this is related to customer changes in the occupants of multi-family dwellings (duplexes and fourplexes) and not actual businesses leaving the wastewater utility.

3.2 BILLED WASTEWATER VOLUME

Historical and projected billed wastewater volumes are shown in Table 3. Total billed wastewater volume (retail and wholesale) from FY 2013 through FY 2017 has increased from 5,091,583 Ccf to 5,175,984 Ccf.

The billed wastewater volume for retail customers has decreased approximately 26,800 Ccf, between FY 2013 and FY 2018. The drop from FY 2016 to FY 2018 was caused by a decline in use per customer and the implementation of a new billing policy that bills customers on the lesser of their winter quarter average usage or actual usage for the month. Going forward, residential and commercial/industrial volume is projected to increase slightly in FY 2019 (based on a FY2017 use per customer for residential customers and a 2-year average use per customer for other customers). Both residential and commercial volumes are in line with the customer growth forecast. Total billed wastewater volume (retail and wholesale) is estimated to increase from about 5,064,798 Ccf in FY 2018 to 5,124,900 Ccf in FY 2023, an increase of about 1.2 percent. The majority of this increase is related to new customers for Retail and SSJISD.

3.2.1 Wholesale Customer Growth

Contributed volume from the South St. Joseph Industrial Sewer District (SSJISD) had been fluctuating from FY 2013 to FY 2017. SSJISD is expected to see a slight drop in FY 2018 to 871,100 Ccf, but once new customers are fully onboard, the volume will increase in FY 2019 and remain steady for the rest of the study period at 920,400 Ccf.

National Beef Leathers (NBL) experienced an increase in volumes from 290,546 Ccf in FY 2013 to 424,827 Ccf in FY 2017. Their flow is estimated to decrease from FY 2017 to FY 2018 by about 0.4 percent to 423,100 Ccf. NBL's contributed volume is projected to be 423,100 Ccf from FY 2019 through FY 2023.

Triumph Foods’ flows have decreased each year from FY 2013 to FY 2015. They have decreased approximately 3.0 percent overall. They are estimated to increase slightly by 3.2 percent from FY 2015 to FY 2018 and then remain constant for the rest of the study period. The pounds of BOD in Triumph’s contributed wastewater decreased in FY 2018 by 108 percent and contributed pounds of suspended solids decreased by 1.6 percent. These loadings are projected to remain flat for the rest of the study period. Triumph Foods’ contributed volume is projected to be 1,014,900 Ccf from FY 2019 through FY 2023.

Table 1 Schedule of Existing Rates

RETAIL

	Monthly					
Service Charge	<u>Charge</u>					
	\$					
Inside City	37.69					
Outside City	88.45					
					Limit	
Volume Charge	<u>Monthly</u>				<u>Fees</u>	
	\$/Ccf					
Inside City	5.57				1.96	\$/Ccf
Outside City	12.73				4.48	\$/Ccf
		Inside	Outside			
Extra Strength Surcharge		<u>City</u>	<u>City</u>			
BOD in excess of 300 mg/l		0.254	0.377	\$/lb	0.381	\$/lb.
Suspended solids in excess of 350 mg/l		0.196	0.465	\$/lb	0.239	\$/lb.
Ammonia in excess of 30 mg/l		0.105	0.249	\$/lb	0.158	\$/lb.
Fats, Oils, & Grease in Excess of 100 mg/l		0.286	0.657	\$/lb		
Septage		79.00	79.00	\$/Kgal		

WHOLESALE (a)

Ammonia Project Fixed Charge						
South St. Joseph Industrial Sewer District	40,490	\$/Month				
National Beef Leathers	13,410	\$/Month				
Triumph Foods	26,680	\$/Month				
Flow charge						
South St. Joseph Industrial Sewer District	0.279	\$/Ccf			0.419	\$/Ccf
National Beef Leathers	0.207	\$/Ccf			0.310	\$/Ccf
Triumph Foods	0.210	\$/Ccf			0.315	\$/Ccf
Pump Station (b)	0.393	\$/Ccf				
BOD	0.275	\$/lb.			0.413	\$/lb.
Suspended Solids	0.114	\$/lb.			0.171	\$/lb.
Ammonia	0.105	\$/lb.			0.158	\$/lb.
Fats, Oils, & Grease	0.286	\$/lb.			0.000	\$/lb.

(a) Applicable to the South St. Joseph Industrial Sewer District (SSJISD), National Beef Leathers, and Triumph for secondary treatment service.

(b) Applicable to SSJISD only.

Table 2 Historical and Projected Number of Customers

Fiscal Years Ending June 30

Customer Class	Historical					Estimated (a)	Projected				
	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
RETAIL											
Inside City											
Residential	23,286	23,342	23,299	23,211	23,834	23,585	23,644	23,703	23,762	23,821	23,881
Commercial/Industrial	2,127	2,020	2,122	2,052	2,117	2,058	2,058	2,058	2,058	2,058	2,058
Surcharge	9	9	10	10	9	9	9	9	9	9	9
Outside City											
Residential	624	186	178	196	173	173	173	173	173	173	173
Commercial/Industrial	23	22	34	32	30	30	30	30	30	30	30
WHOLESALE											
SSJISD	1	1	1	1	1	1	1	1	1	1	1
National Beef Leathers	1	1	1	1	1	1	1	1	1	1	1
Triumph Foods	1	1	1	1	1	1	1	1	1	1	1
Total	26,072	25,582	25,646	25,504	26,166	25,858	25,917	25,976	26,035	26,094	26,154

(a) FY 2018 Number of customers is based on average of first eight months of fiscal year

Table 3 Historical and Projected Contributed Volume

Fiscal Years Ending June 30

Customer Class	Historical					Estimated (a)	Projected				
	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
	Ccf	Ccf	Ccf	Ccf	Ccf	Ccf	Ccf	Ccf	Ccf	Ccf	Ccf
RETAIL											
Inside City											
Residential	1,528,749	1,580,272	1,459,517	1,252,600	1,178,046	1,116,398	1,144,100	1,146,900	1,149,800	1,152,600	1,155,500
Commercial/Industrial	1,312,038	1,110,592	1,323,167	1,158,867	1,184,641	1,198,400	1,170,600	1,170,600	1,170,600	1,170,600	1,170,600
Surcharge		315,831	345,638	401,396	436,496	426,200	426,200	426,200	426,200	426,200	426,200
Outside City											
Residential	38,532	11,698	11,202	9,154	8,939	9,100	8,700	8,700	8,700	8,700	8,700
Commercial/Industrial	5,205	4,913	4,936	7,126	4,200	5,600	5,500	5,500	5,500	5,500	5,500
Subtotal Retail	2,884,524	3,023,306	3,144,460	2,829,143	2,812,322	2,755,698	2,755,100	2,757,900	2,760,800	2,763,600	2,766,500
WHOLESALE											
SSJISD	902,767	958,593	946,047	938,460	951,496	871,100	920,400	920,400	920,400	920,400	920,400
National Beef Leathers	290,546	308,733	439,217	484,107	424,827	423,100	423,100	423,100	423,100	423,100	423,100
Triumph Foods	1,013,746	1,002,465	969,712	983,292	987,339	1,014,900	1,014,900	1,014,900	1,014,900	1,014,900	1,014,900
Subtotal Wholesale	2,207,059	2,269,791	2,354,976	2,405,859	2,363,662	2,309,100	2,358,400	2,358,400	2,358,400	2,358,400	2,358,400
Total System	5,091,583	5,293,097	5,499,435	5,235,002	5,175,984	5,064,798	5,113,500	5,116,300	5,119,200	5,122,000	5,124,900

(a) FY 2018 contributed volume is based on average of first eight months of fiscal year

3.3 WASTEWATER SERVICE CHARGE REVENUES UNDER EXISTING RATES

Estimates of revenues from wastewater service charges are based on projections of customer growth, billable wastewater volume, and surcharge billings. The estimates are obtained by applying the existing service charge and volume charge for each customer class to the projected number of customers and estimated billable wastewater volume. Approximately 99 percent of the retail customers pay the inside city rate while 1 percent pay the outside city rate. The City currently has nine retail surcharge customers, five of which have significant extra strength surcharges. Surcharge revenue in FY 2017 increased to an estimated \$681,637. Revenue is projected to be \$544,300 from FY 2019 (based on existing rates) through the remainder of the study period. As shown in Table 4, wastewater billed revenue from sales under existing rates are projected to be \$31,720,172 in FY 2018 and increase to be \$31,781,300 in FY 2023.

3.4 OTHER REVENUE

Historical and projected miscellaneous operating and non-operating revenues are shown in Table 5. Miscellaneous operating revenues consist of Sewer Service Penalties, System Development Fees, BUILD Credit Revenue and Other Revenue. Miscellaneous revenue is projected to total about \$1,022,400 in FY 2018 and decrease to about \$1,005,200 in FY 2023.

As shown in Table 5, the City is receiving tax credits related to the Missouri Development Finance Board (MDFB) BUILD bonds. The BUILD program provides financial incentives for the location or expansion of large business projects that will result in specified levels of new jobs within a three-year period. The revenue is used to pay down existing debt service, specifically the 2004C Revenue Bonds.

The revenues shown in Table 5 do not include earnings from the investment of available cash balances. Interest earnings are considered in a subsequent section of this report.

Table 4 Historical and Projected Billed Revenue from Sales (Existing Rates)

Fiscal Years Ending June 30

Customer Class	Historical					Estimated	Projected				
	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
RETAIL											
Residential	10,306,520	12,139,563	13,548,199	14,234,597	15,553,006	17,184,872	17,360,700	17,403,000	17,445,800	17,488,100	17,531,400
Commercial/Industrial	3,827,915	6,057,964	7,162,555	7,806,267	8,947,419	10,130,600	9,927,200	9,927,200	9,927,200	9,927,200	9,927,200
Extra Strength Surcharges	0	1,251,538	634,660	401,909	681,637	543,900	544,300	544,300	544,300	544,300	544,300
Septage			129,456	138,185	151,323	141,600	141,600	141,600	141,600	141,600	141,600
Subtotal Retail	14,134,435	19,449,065	21,474,870	22,580,958	25,333,385	28,000,972	27,973,800	28,016,100	28,058,900	28,101,200	28,144,500
WHOLESALE											
SSJISD	1,178,478	1,381,013	1,364,209	1,660,694	1,842,639	1,788,500	1,932,400	1,932,400	1,932,400	1,932,400	1,932,400
National Beef Leathers	116,600	144,600	174,200	272,200	274,900	374,000	368,600	368,600	368,600	368,600	368,600
Triumph Foods	567,774	647,093	769,108	981,234	1,042,993	1,556,700	1,335,800	1,335,800	1,335,800	1,335,800	1,335,800
Subtotal Wholesale	1,862,852	2,172,706	2,307,517	2,914,128	3,160,532	3,719,200	3,636,800	3,636,800	3,636,800	3,636,800	3,636,800
Total System	15,997,287	21,621,771	23,782,387	25,495,085	28,493,917	31,720,172	31,610,600	31,652,900	31,695,700	31,738,000	31,781,300

Table 5 Historical and Projected Miscellaneous Revenues

Fiscal Years Ending June 30

Description	Historical					Estimated	Projected				
	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
Miscellaneous Revenues											
Sewer Service Penalties	370,974	422,973	647,983	489,288	560,160	500,000	500,000	500,000	500,000	500,000	500,000
Sewer System Development Fees	41,316	27,700	31,500	39,286	33,000	30,000	30,000	30,000	30,000	30,000	30,000
Refund Prior Year Expenditures	-3,823	233	0	17	0	0	0	0	0	0	0
BUILD Credit Revenue	381,400	380,100	378,900	377,500	376,100	387,700	387,700	385,900	384,800	383,700	382,500
Other Revenue	77,500	149,900	240,000	704,000	228,600	104,700	104,700	92,800	92,700	92,700	92,700
Total Miscellaneous Revenue	867,368	980,906	1,298,383	1,610,091	1,197,860	1,022,400	1,022,400	1,008,700	1,007,500	1,006,400	1,005,200

4 Revenue Requirements

Revenues required to provide for the continued operation of the Sewer Utility must be sufficient to meet the cash requirements for operation and maintenance expense, principal and interest payments on bonded debt, routine annual capital improvements and replacements, and other major capital expenditures that are not financed through debt. In addition, revenues must be adequate to meet applicable rate covenants included in the City's ordinances authorizing the outstanding revenue bonds. The revenue requirements developed in this report incorporate the financial conditions as of July 1, 2017, and are projected for the five-year period ending June 30, 2023.

4.1 OPERATING EXPENSE

Operating expenses of the Sewer Utility include the cost of operating and maintaining the sewer collection and treatment facilities, routine capital expenditures, and transfers to other City departments or funds for services provided. These expenses are classified as Wastewater Plant Administration, Wastewater Treatment, Laboratory, and Sewer Maintenance. Other operating expenses include Routine Capital Expense and Transfers. Because these costs are a continuing normal annual obligation of the utility, they are met from operating revenue as they are incurred.

Projected operating expense is summarized in Table 6. Operating expense for FY 2018 is estimated to be \$15,331,700. This is about a 5.1 percent increase from FY 2017 actual expenses of \$14,591,400. This increase is not primarily attributed to one specific increase, but to numerous small increases over several areas. Operating expense for FY 2019 is budgeted to be \$15,241,500. This is a 0.6 percent decrease over the FY 2018 total. Operating expenses are projected to increase an average of 3.3 percent per year to \$17,356,300 in FY 2023.

The City continues to be focused on reducing bad debt and, as mentioned in the Executive Summary, has taken several steps to help reduce it. Bad debt is budgeted to remain stable at 2 percent of the total operating revenue for the study period. Bad debt is estimated at \$500,000 in FY 2018, and reaches up to \$715,000 in FY 2023.

Routine capital expenditures are purchases from the operating budget that are incurred annually for normal replacement of equipment and system expenses. As such, they are funded from annual revenues. Routine capital expenses are summarized in Table 6. The FY 2019 budget includes \$1,155,400 for various in-house rehabilitation projects.

In addition, the Sewer Utility transfers monies annually to the City's General Fund to pay the utility's allocated share of the City's general and administrative costs. This is accomplished through a payment in lieu of tax (PILOT). The PILOT is based on 6.5% of rate revenue. Beginning in FY 2019, the previous transfers to the General Fund and Computer Networks have been eliminated and only the PILOT will be collected for City general and administrative costs. The Sewer Utility also transfers monies to the City's Aviation Department to pay for costs related to sludge disposal at the City airport. The Aviation Department transfers are budgeted for \$48,300 in FY 2019 and are projected to be eliminated after FY 2019.

Table 6 Projected Operating Expense

Fiscal Years Ending June 30

Line No.	Description	Historical			Estimated	Budgeted	Projected			
		2015	2016	2017	2018	2019	2020	2021	2022	2023
				\$	\$	\$	\$	\$	\$	\$
Operation & Maintenance Expense										
1	Wastewater Plant Administration	2,860,700	1,806,500	2,920,700	1,956,300	1,919,200	2,111,300	2,173,100	2,236,300	2,300,700
2	Wastewater Treatment	6,495,300	6,483,800	6,526,200	7,042,600	7,172,600	7,452,200	7,738,000	8,032,000	8,337,800
3	Laboratory	622,100	669,600	615,800	787,400	760,400	788,500	817,600	847,800	879,100
4	Sewer Maintenance	1,807,400	1,958,800	1,907,800	2,424,800	2,419,000	2,503,300	2,590,500	2,678,400	2,769,400
5	Subtotal Direct O & M Expense	11,785,500	10,918,700	11,970,500	12,211,100	12,271,200	12,855,300	13,319,200	13,794,500	14,287,000
Transfers										
6	General Fund	1,527,900	86,000	58,800	26,500	0	0	0	0	0
7	PILOT	0	1,554,000	1,821,200	1,766,600	1,766,600	1,819,600	1,874,200	1,930,400	1,988,300
8	Computer Network	30,500	28,300	30,500	34,000	0	0	0	0	0
9	Aviation	48,300	48,300	48,300	48,300	48,300	0	0	0	0
10	Subtotal Transfers	1,606,700	1,716,600	1,958,800	1,875,400	1,814,900	1,819,600	1,874,200	1,930,400	1,988,300
11	Total Direct O&M and Transfers	13,392,200	12,635,300	13,929,300	14,086,500	14,086,100	14,674,900	15,193,400	15,724,900	16,275,300
12	Routine Capital Expense	868,200	1,823,600	662,100	1,245,200	1,155,400	989,300	1,018,900	1,049,500	1,081,000
13	Total Operating Expense	14,260,400	14,458,900	14,591,400	15,331,700	15,241,500	15,664,200	16,212,300	16,774,400	17,356,300

4.2 CAPITAL IMPROVEMENT PROGRAM

The Sewer Utility's capital improvement program (CIP) provides for the major repair and replacement of existing facilities, as well as treatment plant expansions, required major environmental upgrades, and collection system extensions to provide service to new customers. As shown in Table 7, the proposed capital improvement program totals \$24.9 million in FY 2019 (Line 57). The major project scheduled for FY 2018 was continuation of construction of the Stormwater Separation Conduits in the Blacksnake watershed (\$27.1 million).

The CIP shown in Table 7 is divided into six major sections: Environmental and Regulatory projects, CMOM Projects, CSO Long Term Control Plan projects, System Expansion projects, Collection System capital projects, and Water Protection Facility (WPF) capital projects.

4.2.1 Environmental and Regulatory Projects

The first section of Table 7 shows the projects classified as Environmental and Regulatory Projects. This section contains projects that are mandated by MDNR as part of the City's NPDES permit. The two projects for this section are the final components of the Ammonia Project (\$976,000) and the KCPL/WPF Power Upgrades (\$1.5 million) in FY 2019.

4.2.2 Capacity, Management, Operation and Maintenance (CMOM) Projects

The next section of Table 7 shows the projects classified as Capacity, Management, Operation and Maintenance (CMOM) Projects. CMOM is a program that is mandated in the City's NPDES permit. It provides documentation and planning which demonstrates actions being taken to prevent overloading of wastewater treatment plants, maintenance of the collection system, and the overflow prevention of sanitary sewage into lakes and streams. The specific CMOM projects are shown on Lines 4 through 21 of Table 7. The majority of CMOM projects are forecast to be funded with annual revenues and not debt financed except the Large Diameter Sewer Rehab project.

4.2.3 CSO Long Term Control Plan Projects

The focus of CSO LTCP projects included in the 5-year study period is to remove excess stormwater from entering the collection system with Stormwater Separation Conduits in the Blacksnake watershed. The total amount forecast for these projects from FY 2018 through FY 2023 is \$30.7 million and will be financed with operating revenue and State Revolving Fund (SRF) bonds. No other significant CSO projects are projected in the study period.

4.2.4 System Expansion Projects

In July 2007, the Department of Public Works was directed by the City Council to implement a plan to extend sewer mains throughout the city. Due to a lack of demand and economic conditions, few expansion projects have been executed to date. A total of \$3.3 million is scheduled during the study period including \$650,000 in FY 2019.

4.2.5 Capital Projects - Collection System and WPF

Lines 28 through 56 of Table 7 show the major capital projects necessary to maintain the sewer collection system and the existing water protection facility (WPF). These sections are comprised of projects that are necessary to operate and maintain the collection system and WPF in a safe and efficient manner. The major projects in FY 2019 are the Odor Control - Parkway A (\$3 million), MO Ave Sewer Rehab (\$3 million) and WPF Levee Stormwater Pump Station (\$5 million).

Table 7 Proposed Capital Improvement Program

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Fiscal Years Ending June 30

Line No.	Description	Estimated		Projected			Total
		2018	2019	2020	2021	2022	
		\$	\$	\$	\$	\$	\$
ENVIRONMENTAL AND REGULATORY PROJECTS							
1	Ammonia Project		975,900	-	-	-	975,900
2	KCP&L and WPF Power Upgrades - Phase 2	-	1,474,000	-	-	-	1,474,000
3	Subtotal	-	2,449,900	-	-	-	2,449,900
CMOM Projects							
4	TV Van			228,000	-	-	228,000
5	Other Rolling Stock - Sewer Maint.	-	621,000	-	-	-	621,000
6	Portable TV Unit	-	98,000	-	-	-	98,000
7	Easement Jet Machine	295,000	108,166	-	-	-	403,166
8	Purchase 50% of Street Sweeper A	-	196,000	-	-	-	196,000
9	Purchase 50% of Street Sweeper B		68,500	-	-	-	68,500
10	CMOM Cast-in-place Pipe Lining	380,000	391,000	403,000	415,000	449,000	2,501,000
11	CMOM Increased Root Control & Line Cleaning	127,000	130,000	134,000	138,000	150,000	833,000
12	CMOM Emergency Collection System Repairs	570,000	587,000	605,000	623,000	674,000	3,753,000
13	Major Mainline Sewer Repairs	53,000	55,000	56,000	58,000	63,000	350,000
14	CMOM Spray on Liner, Manhole, & Sewer Line Repair	185,000	190,000	196,000	202,000	219,000	1,217,000
15	CMOM Cave in Repairs	101,000	104,000	108,000	111,000	120,000	667,000
16	Large Diameter Sewer Rehab (for Sinking Fund - spend every five years)	-	799,500	-	-	-	799,500
17	I/I reduction	591,000	-	652,000	684,000	754,000	3,473,000
18	Manhole Inspection program from O & M	59,000	62,000	65,000	-	75,000	340,000
19	GPS Equipment	84,000	72,000	49,000	51,000	57,000	372,000
20	Update Aerial Photography	44,000	-	49,000	-	57,000	150,000
21	Sewer Maintenance Facility	-	150,000	-	-	-	150,000
	Subtotal	2,489,000	3,632,166	2,545,000	2,282,000	2,618,000	16,220,166
CSO LONG TERM CONTROL PLAN PROJECTS							
22	Green Solutions	598,313	217,000	228,000	239,000	200,000	1,682,313
23	Water Quality Education Program	81,000	85,000	90,000	-	75,000	406,000
24	Blacksnake Stormwater Separation Conduit -Outfall Structure	27,000	-	-	-	-	27,000
25	Blacksnake Stormwater Separation Conduit-Tree & Green	27,100,000	1,500,000	-	-	-	28,600,000
	Subtotal	27,806,313	1,802,000	318,000	239,000	275,000	30,715,313
SYSTEM EXPANSION PROJECTS							
26	System Expansion Projects	-	650,000	-	-	-	650,000
27	Future Extension 2022-2026- Design and Construction	-	-	-	-	2,657,000	2,657,000
	Subtotal	-	650,000	-	-	2,657,000	3,307,000

Table 7 Proposed Capital Improvement Program

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Fiscal Years Ending June 30

Line No.	Description	Estimated	Projected				Total	
		2018	2019	2020	2021	2022		2023
CAPITAL PROJECTS - COLLECTION SYSTEM								
28	Brown's Branch PS - Rehab.	1,125,601	-	-	-	-	-	1,125,601
29	Roof - Brown's Branch PS	-	-	-	-	-	57,000	57,000
30	SSJISD PS Station Replace Pumps	-	-	-	-	-	189,000	189,000
31	SSJISD PS - Replace VS Drives w/ EM Mag Drives	-	-	1,551,000	-	-	-	1,551,000
32	Odor Control - Parkway A	285,488	2,714,512	-	-	-	-	3,000,000
33	Rosecrans Lagoon Liner Replacement	135,024	1,564,976	-	-	-	-	1,700,000
		1,546,113	4,279,488	1,551,000	-	-	246,000	7,622,601
CAPITAL PROJECTS - Water Protection Facility								
34	ICP/Mass Spectr. Equipment	26,776	-	-	-	-	-	26,776
35	Digester Heat Exchangers (X - 6)	-	665,000	-	-	-	-	665,000
36	Replace Gas Burnoff	-	67,000	-	-	-	-	67,000
37	Sludge Piping Replacement	-	-	-	171,000	-	-	171,000
38	Motor Control Room (Belt Press Room)	-	-	111,000	-	-	-	111,000
39	Replace Raw Sludge Magnetic Flowmeter	-	-	-	14,000	-	-	14,000
40	Primary Clarifier Complex - Piping Replacement	-	-	-	26,000	-	-	26,000
41	Primary Clarifier Complex - Replace Progressive Cavity Pumps	-	-	-	26,000	-	-	26,000
42	Plant PS - Replace Centrifugal Raw Wastewater Pumps (X - 3)	-	168,000	-	-	-	-	168,000
43	Total for all Roofs	411,297	-	-	-	-	-	411,297
44	DAF Motor Control Center	-	-	-	-	86,000	-	86,000
45	Replacement Diffusers	-	797,000	-	-	-	638,000	1,435,000
46	Rehab Aeration Arms	-	-	586,000	-	-	-	586,000
47	Additional Centrifugal Blowers	-	-	1,773,000	-	-	-	1,773,000
48	Return Sludge PS #1 - Motor Control Center	-	-	74,000	-	-	-	74,000
49	Return Sludge PS #2 - Motor Control Center	-	-	74,000	-	-	-	74,000
50	CSO Sluice Gate Repairs - (Charles Street)	-	2,109,672	-	-	-	-	2,109,672
51	Control Building Progressive Pumps	-	168,000	-	-	-	-	168,000
52	Furnace - Maintenance Garage	-	15,000	-	-	-	-	15,000
53	Whitehead Rakes	-	105,000	62,000	66,000	71,000	76,000	380,000
54	Mo Ave Sewer Rehab	-	3,000,000	-	-	-	-	3,000,000
55	WPF Levee Stormwater PS	-	5,000,000	-	-	-	-	5,000,000
56	Subtotal	438,073	12,094,672	2,680,000	303,000	157,000	714,000	16,386,745
57	Total	32,279,499	24,908,226	7,094,000	2,824,000	3,050,000	6,546,000	76,701,725

4.3 FINANCING PLAN

Total planned investment from FY 2018 through FY 2023 is \$76.7 million, as shown on Table 7. The CIP financing plan is presented in Table 8. The funding sources are summarized on Lines 1 through 6 and the Capital Fund requirements, or use of funds, are shown on Lines 7 through 12. The Capital Fund had a balance of \$6.2 million, as shown in Table 7 Line 58 and 59, from the 2014B and 2015A Revenue bonds. The use of these funds can be seen in the Funding Source column on Table 7.

In April 2011 and again in February 2015, the voters of St. Joseph voted for bond approval that allows the city to apply to the Missouri Department of Natural Resources to participate in its SRF program. The SRF program provides low interest loans that have lower interest rates than conventional bond issues. The projected interest rate and term for future SRF bonds are 1.25% for 30 years. This compares to 20-year conventional bonds with a 3.5%-5.0% interest rates used in this study. Bonding assumptions were provided by the City’s advisors.

The SRF bonds have been used for the major capital projects in the past few five years. There are no major projects in the current study period that would warrant SRF loans.

The CIP presented in Table 7 is anticipated to be funded with the remaining proceeds from the 2014B revenue bonds (\$975,900) and 2015A revenue bonds(\$5.1million), as well as the current SRF Loan from 2017 (\$67.1 million), and conventional bonds in 2018 (\$16.3 million) and 2023 (\$3.36 million).

The Operating Fund will be used to fund projects not included in the bond issues, such as a majority of the CMOM Program, CSO Green Solutions, system expansion projects, etc. The operating fund can also be used to offset minor contingencies on the proposed projects.

Table 8 Capital Flow of Funds

Fiscal Years Ending June 30

Line No.	Description	Estimated	Projected					Total
		2018	2019	2020	2021	2022	2023	
		\$	\$	\$	\$	\$	\$	\$
SOURCE OF FUNDS								
1	Funds on Hand at Beginning of Year	6,164,900	21,647,700	0	0	0	0	6,164,900
2	Transfer from Operating Fund	3,195,100	3,171,600	7,094,000	2,824,000	3,050,000	3,251,000	22,585,700
3	Conventional Bond at Par	16,322,900	0	0	0	0	3,355,000	19,677,900
4	Net Short Term Bond	0	0	0	0	0	0	0
5	SRF Loan	27,127,000	1,500,000	0	0	0	0	28,627,000
6	Total Funds Available	52,809,900	26,319,300	7,094,000	2,824,000	3,050,000	6,606,000	77,055,500
USE OF FUNDS								
7	Major Capital Improvement Program	30,868,400	24,908,200	7,094,000	2,824,000	3,050,000	6,546,000	75,290,600
8	Bond Issuance Costs	293,800	0	0	0	0	60,000	353,800
9	Bond Reserve Fund	0	0	0	0	0	0	0
10	Net Payoff on Other Loans	0	0	0	0	0	0	0
11	Reimbursement to Operating Fund	0	1,411,100	0	0	0	0	1,411,100
12	Total Use of Funds	31,162,200	26,319,300	7,094,000	2,824,000	3,050,000	6,606,000	77,055,500
13	Funds on Hand at End of Year	21,647,700	0	0	0	0	0	0

4.4 DEBT SERVICE REQUIREMENTS

Table 9 presents a summary of the annual total of the monthly deposits into the Sewer Debt Fund for both the existing and proposed revenue bonds. The \$10 million 2016 SRF bond, used to fund design work on Blacksnake, was paid off early with the proceeds from the \$67.1 million 2017 SRF loan. The FY 2017 SRF loan of \$67.1 million is used for the Stormwater Separation Conduits in the

Blacksnake watershed and has a 30-year term and an average interest rate of 1.25 percent, plus a 0.5 percent administration fee.

Conventional bonds will be used to fund the remaining projects that are not covered with cash and unlikely to receive SRF funding. There are 10 projects included in these bond issuances for various major replacement or rehabilitation projects. The conventional bond issues are projected in 2018 (\$16.3 million) and 2023 (\$3.4 million). The 2018 bond issuance assumes 3.22 percent interest for 20 years, based on the preliminary issuance documents.

Annual debt service payments increase \$1.8 million in FY 2019 and another \$2.0 million to \$15.1 million in FY 2020 due to the full principal and interest payments starting for the Blacksnake SRF loan and new debt being issued in FY 2018. Annual debt service is fairly stable from 2020 through 2023.

Table 9 Existing and Proposed Debt Service

Fiscal Years Ending June 30

Description	2018	2019	2020	2021	2022	2023
	\$	\$	\$	\$	\$	\$
Sewer System Revenue Bonds						
Series 2003	60,300	58,100	60,900	58,400	60,900	63,100
Sewer System Revenue Bonds						
Series 2004	838,300	838,600	838,400	837,500	841,100	837,000
Sewer System Revenue Bonds						
Series 2011	1,594,100	1,593,300	1,591,500	1,593,700	1,589,700	1,594,000
State Revolving Fund Loan						
Series 2013	908,800	909,000	908,700	908,200	908,200	907,900
State Revolving Fund Loan						
Series 2014	3,125,500	3,152,000	3,175,800	3,201,600	3,228,500	3,255,300
Series 2014A	1,543,000	1,559,100	1,572,600	1,587,700	1,604,300	1,619,500
Series 2016	0	0	0	0	0	0
Series 2017	349,600	839,100	2,971,600	2,560,700	2,569,500	2,578,400
Conventional Bonds						
Series 2014B	379,700	380,600	386,400	387,000	387,500	392,400
Series 2015A	718,700	898,100	721,300	722,300	722,300	721,300
Series 2015B	2,096,000	2,098,400	2,098,800	2,099,300	2,096,500	2,095,500
Subtotal Existing Annual Debt Service	11,614,000	12,326,300	14,326,000	13,956,400	14,008,500	14,064,400
PROPOSED BONDS						
Proposed Conventional Bonds FY 2018 Issue (\$16.3 million)	0	1,119,600	1,119,600	1,119,600	1,119,600	1,119,600
Proposed Conventional Bonds FY 2023 Issue (\$3.4 million)	0	0	0	0	0	100,700
Subtotal Proposed Annual Debt Service	0	1,119,600	1,119,600	1,119,600	1,119,600	1,220,300
Total Annual Debt Service	11,614,000	13,445,900	15,445,600	15,076,000	15,128,100	15,284,700

5 Summary of Revenue Requirements

The total revenue requirements of the Sewer Utility consist of operation and maintenance expense, debt service requirements, routine annual capital outlays, and cash financing of major capital improvements. Revenue levels must also be sufficient to meet existing and future revenue bond covenants that net revenues in each fiscal year be not less than 110 percent of the debt service requirement. It is also essential that the Sewer Utility maintain sufficient cash balances to provide for Operating Fund encumbrances, offset fluctuations in revenues and expenditures, and provide for funds for use in emergencies. Charges for wastewater service provide the principal source of revenues to meet these requirements with additional revenue being derived from miscellaneous operating and non-operating income and from interest earnings.

Table 10 combines the projected revenues and revenue requirements into a pro forma operations statement or cash flow summary. The cash flow summary provides a basis for evaluation of the timing and size of wastewater revenue increases that are indicated to be necessary to meet the projected revenue requirements for the period FY 2019 through FY 2023. Projected revenues from wastewater service charges under existing rates are shown on Lines 1 through 4. The indicated total additional revenues under proposed rate increases are shown on Line 10. The increased revenues are the result of the rate increases shown on Lines 5 through 9. The revenue increase effective dates shown on Lines 5 through 9 of Table 10 indicate when additional revenue associated with the revenue increases will be realized. These revenue increases are primarily needed to cover large increases in debt service due to implementation of mandated regulatory projects and the CSO LTCP, in addition to higher cash financed capital projects, which reduce net revenues available for debt coverage purposes, and net operating reserve balances available to cover a working capital allowance.

Projected miscellaneous operating revenues from Table 5 are shown on Line 12. Interest income from the Operating and Capital Fund balances are shown on Line 13. These monies are projected to yield an average annual interest rate of 1.0 percent for the period. Interest income on the Bond Reserve Fund, shown on Line 14, is also calculated using a 1.0 percent interest rate. With the proposed revenue increases, total Sewer Utility revenues are projected to range from \$32,995,500 in FY 2018 to \$36,974,100 in FY 2023 (Line 15).

Revenue requirements for operation and maintenance expense, including transfers, debt service, routine annual capital outlays, and cash financed capital projects are taken from Tables 6, 8, and 9 and are summarized on Lines 16 through 25. These annual operating requirements are projected to increase from \$30,140,800 in FY 2018 to \$35,892,000 in FY 2023, as shown on Line 26 of Table 10.

The projected net annual operating balance is shown on Line 27 and ranges from a low of negative \$4.4 million in FY 2020 to a high of approximately \$2.9 million in FY 2018. Any annual surpluses accrued will be used to finance future capital projects and reduce the amount of future bond issues. The end of year operating cash balances shown on Line 28 include monies that have not been encumbered and which, by ordinance, must be available to the Sewer Utility. The City's current policy on operating reserves is 120 days of O&M expenses, which is approximately \$4.6 million on Line 30. This serves two primary purposes: first, with the substantial amount of new debt the City is forecast to take on in the coming years, it is prudent utility practice to have additional liquidity to offset fluctuations in revenues and expenditures and allow for contingencies; and second, it provides the City with a stronger base for the City to maintain its current credit rating. With the significant amount of debt the City plans to issue to fund its CSO LTCP and mandated regulatory projects, there is a risk the rating agencies could lower the City's credit rating, possibly increasing the cost of issuing additional debt.

Table 10 Operating Flow of Funds

Fiscal Years Ending June 30

Line No.	Operating Fund	Estimated	Projected				
		2018	2019	2020	2021	2022	2023
		\$	\$	\$	\$	\$	\$
Revenue							
1	Retail Revenue Under Existing Rates (Table 4)	28,001,000	27,973,800	28,016,100	28,058,900	28,101,200	28,144,500
2	SSJISD Under Existing Rates (Table 4)	1,788,500	1,932,400	1,932,400	1,932,400	1,932,400	1,932,400
3	National Beef Leathers Under Existing Rates (Table 4)	374,000	368,600	368,600	368,600	368,600	368,600
4	Triumph Foods Under Existing Rates (Table 4)	1,556,700	1,335,800	1,335,800	1,335,800	1,335,800	1,335,800
Additional Sewer Revenue Required:							
	Revenue Increase Effective Date	Annualized Revenue Increase (a)					
5	July 1, 2018	0.00%	-	-	-	-	-
6	July 1, 2019	3.00%		949,600	950,900	952,100	953,400
7	July 1, 2020	3.00%			979,400	980,700	982,000
8	July 1, 2021	3.00%				1,010,100	1,011,500
9	July 1, 2022	3.00%					1,041,800
10	Total Additional Sewer Revenue		-	949,600	1,930,300	2,942,900	3,988,700
11	Total Sewer Revenue	31,720,200	31,610,600	32,602,500	33,626,000	34,680,900	35,770,000
12	Miscellaneous Revenue (Table 5)	1,022,400	1,022,400	1,008,700	1,007,500	1,006,400	1,005,200
13	Interest Income - Operating & Capital Fund (b)	108,000	71,000	35,000	38,000	45,000	54,000
14	Interest Income - Bond Reserve Fund	144,900	144,900	144,900	144,900	144,900	144,900
15	Total Operating Fund Revenues Available	32,995,500	32,848,900	33,791,100	34,816,400	35,877,200	36,974,100
Revenue Requirements							
16	Operation and Maintenance Expense (Table 6) (c)	14,086,500	14,086,100	14,674,900	15,193,400	15,724,900	16,275,300
17	Net Revenues	18,909,000	18,762,800	19,116,200	19,623,000	20,152,300	20,698,800
Debt Service							
18	Existing Debt Service (Table 9)	11,614,000	12,326,300	14,326,000	13,956,400	14,008,500	14,064,400
19	Proposed Bond Debt Service (Table 9)	-	1,119,600	1,119,600	1,119,600	1,119,600	1,220,300
20	Total Debt Service	11,614,000	13,445,900	15,445,600	15,076,000	15,128,100	15,284,700
21	Less: Interest on EIERA Reserve Fund	-	-	-	-	-	-
22	EIERA Administrative Fee	-	-	-	-	-	-
23	Net Effective Debt Service	11,614,000	13,445,900	15,445,600	15,076,000	15,128,100	15,284,700
24	Routine Capital Outlay (Table 6)	1,245,200	1,155,400	989,300	1,018,900	1,049,500	1,081,000
25	Transfer to (from) Capital Fund	3,195,100	1,760,500	7,094,000	2,824,000	3,050,000	3,251,000
26	Total Operating Requirements	30,140,800	30,447,900	38,203,800	34,112,300	34,952,500	35,892,000
27	Net Annual Balance	2,854,700	2,401,000	(4,412,700)	704,100	924,700	1,082,100
28	Beginning of Year Balance	4,040,000	6,894,700	9,295,700	4,883,000	5,587,100	6,511,800
29	End of Year Balance	6,894,700	9,295,700	4,883,000	5,587,100	6,511,800	7,593,900
30	Desired Working Capital Allowance (d)	4,631,200	4,631,000	4,824,600	4,995,100	5,169,800	5,350,800

(a) Average annual revenue adjustment percentage. Revenues reflect twelve effective months in the first year of revenue adjustment

(b) Interest earnings based on budget and projected fund balances

(c) Includes Operation & Maintenance Expense and Transfers

(d) Working capital allowance calculated as 120 days operation and maintenance expense

5.1 DEBT SERVICE COVERAGE

For existing debt, an annual debt service coverage test must be met regardless of whether additional bonds will be issued during the study period. The annual coverage test compares annual

net revenues with annual debt service. Bond covenants stipulate that annual Net Revenues Available for Debt Service must be at least 110 percent of annual principal and interest payments.

5.2 RATE COVENANT

A summary of the annual revenue bonds test found in the bond indentures for the Series 1992 Bonds and similarly, in Section 902 of Article IX of the outstanding EI ERA bonds, is as follows:

The City will fix, establish, maintain and collect such rates and charges for the use and services furnished by or through the System as will produce Revenues sufficient to (a) pay the costs of the operation and maintenance of the System; (b) pay the principal of and interest on the Bonds as and when the same become due at the Maturity thereof or any Interest Payment Date; (c) enable the City to have in each fiscal year Net Revenues not less than 110 percent of the amount required to be paid in such fiscal year on account of both principal of and interest on all System Revenue Bonds at the time outstanding; and (d) provide reasonable and adequate reserves for the payment of the Bonds and the interest thereon and for the protection and benefit of the System as provided in the Ordinance. The City will require the prompt payment of accounts for service rendered by or through the System and will promptly take whatever action is legally permissible to enforce and collect delinquent charges. The City will, from time to time as often as necessary, in accordance with and subject to applicable legal requirements, revise the rates and charges aforesaid in such manner as may be necessary or proper so that the Net Revenues will be sufficient to cover the obligations of the City under the provisions of the Ordinance. If in any fiscal year Net Revenues are less than as hereinbefore provided, the City will immediately employ a Consultant to make recommendations with respect to such rates and charges. A copy of the Consultant's report and recommendations shall be filed with the City Clerk and with the Purchaser of the Bonds and shall be furnished to any Owner of the Bonds requesting a copy of the same, at the cost of such Owner. The City is required, to the extent feasible, to follow the recommendations of the Consultant.

In order for parity bonds to be issued, two additional bonds tests exist, only one of which must be met for parity to be attained. The historical additional bonds test stipulates that net revenues available for debt service (adjusted as defined in the bond resolution) be 110 percent of average annual debt service. The future additional bonds test requires that net revenues available for debt service (adjusted as defined in the bond resolution) be 110 percent of average annual debt service for the average of the two years following commercial operation of the capital improvements financed from the proceeds of the issue.

The financial plan demonstrated herein assumes issuance of bonds in fiscal year 2018, and 2023. For purposes of this report, 110 percent coverage is assumed for all future bond issues. A summary of the EI ERA, SRF, and other conventional bonds additional bonds tests is as follows:

1. The City shall not be in default in the payment of principal of or interest on any Bonds or the Parity bonds or in making any payment at the time required to be made into the respective funds and accounts created by and referred to in this Ordinance or any Parity Ordinance; and
2. The City shall obtain a certificate showing either of the following:
 - a. The average annual Net Revenues Available for Debt Service as set forth in the last available annual audits for the two Fiscal Years immediately preceding the issuance of additional bonds, are at least 110 percent of the average annual debt service on the System Revenue Bonds, including the additional bonds proposed to be issued, to be paid out of the Net

Revenues Available for Debt Service in succeeding Fiscal Years. Interest to be paid on any SRF Program Bonds may be reduced by the SRF Subsidy, if any. If the City has made any increase in rates for the use and services of the System and the increase has not been in effect during all of the two Fiscal Years for which annual audits are available, the City may add the additional Net Revenues Available for Debt Service which would have resulted if the rate increase been in effect for the entire period to the audited Net Revenues Available for Debt Service; or

- b. The estimated average annual Net Revenues Available for Debt Service for the two Fiscal Years immediately following the Fiscal Year in which the improvements to the System being financed by the additional bonds are to be in commercial operation, as certified by the Consultant, is at least 110 percent of the average annual debt service on the System Revenue Bonds, including the additional bonds to be issued, to be paid out of the Net Revenues Available for Debt Service in succeeding Fiscal Years following the commencement of commercial operation of the improvements. Interest to be paid on any SRF Program Bonds may be reduced by the SRF Subsidy, if any. In determining the amount of estimated Net Revenues Available for Debt Service for the purpose of this subsection, the Consultant may adjust the estimated net income and revenues by adding the estimated increase in Net Revenues Available for Debt Service resulting from any increase in rates for the use and services of the System approved by the City.

Additional revenue bonds or other obligations of the City issued under the conditions set forth in this Section shall stand on a parity with the Bonds and shall enjoy complete equality of lien on and claim against the net revenues of the System with the Bonds, and the City may make equal provision for paying said bonds and the interest thereon out of the revenue Fund and may likewise provide for the creation of reasonable system debt service funds and system debt reserve funds for the payment of such additional bonds and the interest thereon out of moneys in the Revenue Fund.

Debt service coverage for existing and proposed bonds is shown in Table 11. The annual and future bond coverage test (Line 9 and 17) must meet or exceed 110 percent. The annual coverage ranges from a high of 163 percent in 2023 to low of 149 percent in 2019. The future additional bonds test minimum coverage of 110 percent is met every year, ranging from 133 percent to 143 percent.

The City needs to closely monitor both the annual debt service coverage and the additional bonds test as part of the annual budgeting process. Projected rate adjustments may need to be modified to assure that the City will meet the bond ordinance requirements.

Table 11 Debt Service Coverage Tests

Fiscal Years Ending June 30

Line No.	Description	2019	2020	2021	2022	2023
		\$	\$	\$	\$	\$
ANNUAL COVERAGE						
1	Total Operating Fund Revenues (a)	32,848,900	33,791,100	34,816,400	35,877,200	36,974,100
2	O&M Expense and Transfers	(14,086,100)	(14,674,900)	(15,193,400)	(15,724,900)	(16,275,300)
3	Net Operating Revenue	18,762,800	19,116,200	19,623,000	20,152,300	20,698,800
Debt Service (b)						
4	Existing Bonds	5,867,100	5,697,300	5,698,200	5,698,000	5,703,300
5	Existing SRF	5,620,100	5,657,100	5,697,500	5,741,000	5,782,700
6	Proposed Bonds	1,119,600	1,119,600	1,119,600	1,119,600	1,220,300
7	EIERA Subsidy (c)	0	0	0	0	0
8	Net Debt Service	12,606,800	12,474,000	12,515,300	12,558,600	12,706,300
9	Annual Coverage = Line 3 / Line 8 (d)	149%	153%	157%	160%	163%
ADDITIONAL BONDS TEST - FUTURE (e)						
10	Total Operating Fund Revenues (f)	32,848,900	32,841,500	32,886,100	32,934,300	32,985,400
11	O&M Expense and Transfers	(14,086,100)	(14,674,900)	(15,193,400)	(15,724,900)	(16,275,300)
12	Annual Appropriation Debt Service	(5,428,400)	(5,250,000)	(5,252,800)	(5,249,600)	(5,247,800)
13	Net Operating Revenue	13,334,400	12,916,600	12,439,900	11,959,800	11,462,300
14	Parity Debt Service (g)	6,897,900	9,076,000	8,703,600	8,758,900	8,816,600
15	Average Net Revenues Available for Debt Service (h)	12,678,250	12,199,850	11,711,050	n/a	n/a
16	Average Annual Debt Service (h)	8,889,800	8,731,250	8,787,750		
17	Future Coverage = Line 15 / Line 16 (i)	143%	140%	133%		

- (a) Includes interest on Capital Fund
- (b) Represents payments to bondholders.
- (c) EIERA Admin Fee less Interest on EIERA Reserve Fund
- (d) Requires 1.10 times coverage.
- (e) Additional Bond Test is for FY16 & FY17 Blacksnake Stormwater Separation Conduit
- (f) Does not include rate increases beyond FY20
- (g) All Existing Bonds & Only Proposed Bonds through FY20
- (h) Calculated as average of two years following test year.
- (i) Requires 1.10 times coverage.

6 Wastewater Rate Adjustments

The revenue requirements studies described in the preceding sections of this report provide a basis for the design of wastewater rates. It should be recognized, however, that these studies are the result of engineering estimates, based on historical data and, to some extent, upon judgment and experience. Detailed results should not be used as literal and exact answers, but as guides for rate adjustments. Judgment and City policy must enter into the final choice of rates, and consideration must be given to factors such as previous rate levels, existing contractual requirements, and past local practice.

6.1 PROPOSED WASTEWATER RATES

As indicated in Table 10, no rate increase is necessary in FY 2019. As such, the rates currently effective since July 1, 2017 will remain in effect through June 30, 2019.

6.2 COMPARISON OF TYPICAL CUSTOMER BILLS

A comparison of typical bills for various quantities of billable wastewater volume under the proposed schedule of wastewater rates with those under existing rates is shown in Table 12. The average residential user contributes approximately 4 Ccf per month, or approximately 3,000 gallons. At this level, a customer's monthly bill would remain \$59.97 (\$0.02 per gallon).

Table 12 Typical Retail Sewer Bills

Monthly Billed Sewer Volume	Inside City			Outside City		
	Existing Rates	Estimated Rates	Increase	Existing Rates	Estimated Rates	Increase
Ccf	\$	\$	%	\$	\$	%
0	37.69	37.69	0.0	88.45	88.45	0.0
2	48.83	48.83	0.0	113.91	113.91	0.0
4	59.97	59.97	0.0	139.37	139.37	0.0
6	71.11	71.11	0.0	164.83	164.83	0.0
10	93.39	93.39	0.0	215.75	215.75	0.0
30	204.79	204.79	0.0	470.35	470.35	0.0
50	316.19	316.19	0.0	724.95	724.95	0.0
75	455.44	455.44	0.0	1,043.20	1,043.20	0.0
100	594.69	594.69	0.0	1,361.45	1,361.45	0.0
150	873.19	873.19	0.0	1,997.95	1,997.95	0.0
200	1,151.69	1,151.69	0.0	2,634.45	2,634.45	0.0
500	2,822.69	2,822.69	0.0	6,453.45	6,453.45	0.0
1,000	5,607.69	5,607.69	0.0	12,818.45	12,818.45	0.0

¹ See Table 1.