TOWN OF MERRIMAC SEWER RATE STUDY MERRIMAC, MASSACHUSETTS

Prepared for

TOWN OF MERRIMAC 4 School Street Merrimac, Massachusetts

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TABLE OF CONTENTS

Section No.	Title	Page No.
1.0 INTRODU	ICTION	1
2.0 BACKGRO	DUND	1
3.0 REVENUE	SUMMARY	3
4.0 TOTAL CO	OST OF SERVICE	4
4.1	Operations and Maintenance (O&M) Costs	4
4.2	Debt Service Costs	4
	Capital Expenditures	
5.0 RATE EVA	ALUATION	7
6.0 RECOMM	IENDATIONS	9
7.0 EVALUAT	TION OF SELECT BOARD RECOMMENDATION (REVISED FEBRUARY 23	3, 2022)11

LIST OF APPENDICES

APPENDIX A PREVIOUS (2017/2018) RATE STUDY

LIST OF TABLES

<u>Tabl</u>	e No.	Title	Page No.
1	CURRENT WASTEWATER RATES		2
2	WASTEWATER RATE COMPARISON		
3	TOTAL REVENUE AND PROJECTIONS		
4	PROJECTED ANNUAL CAPITAL EXPENDITU	RES	5
5	TOTAL COST OF SERVICE		6
6	RETAINED EARNINGS BALANCE		8
7	EXISTING AND RECOMMENDED WASTEW	ATER RATES	9
8	EXISTING AND RECOMMENDED SEWER BI	LLS	9
9	PROJECT RETAINED EARNINGS BALANCE \	WITH RECOMMENDED RATES	10
10	EXISTING AND RECOMMENDED WASTEW	ATER RATES	11
11	EXISTING AND RECOMMENDED SEWER BI	LLS	11
12	PROJECT RETAINED FARNINGS BALANCE \	WITH RECOMMENDED RATES	12

TOWN OF MERRIMAC SEWER RATE STUDY MERRIMAC, MAINE

1.0 INTRODUCTION

This report has been prepared in accordance with our proposal to complete a Sewer Rate Study dated December 4, 2020. The Town of Merrimac (Town) believes an evaluation of their current sewer rates is required because of significant sewer capital improvements in the planning phase and increased costs to operate the sewer system. The Town recently completed a Facilities Plan for the Wastewater Treatment Facility (WWTF). The Facilities Plan recommends significant improvements to the WWTF. Those improvements are estimated to cost \$20 to \$22 million. The design phase of the WWTF improvements is estimated to cost \$1,175,000. In addition, the Sewer Department has experienced significant increases in operating costs over the last two years. It is believed the increased costs are due to high inflation caused by the Covid-19 Pandemic and increased compliance requirements set forth in the Town's new General Permit (MAG580000) which became effective on January 1, 2022.

Sevee and Maher Engineers, Inc. (SME) has prepared this report to evaluate the current sewer rates, determine the adjustments needed to complete the recommended findings in the WWTF Facilities Plan, and compensate for the increased costs of operation. As part of this report, the necessary revenues were evaluated to meet existing and future operating and capital revenue requirements over a 5-year planning period. The information provided by the Town to complete this study consisted of the annual financial spreadsheets entitled "Town of Merrimac Sewer Changes in Balance" and the previous 2017/2018 Rate Study included in Appendix A (2017/2018 Report).

2.0 BACKGROUND

The Town of Merrimac last completed a Rate Study in 2017/2018 which was completed by Russell Consulting, LLC. and forecasted costs through 2019. The 2017/2018 Report found that a rate increase was not required in 2019 due to the relatively small deficits and the relatively large balances in the Town's unrestricted reserves. The Study goes on to recommend that wastewater rates be kept at the current levels for 2 to 3 years beyond 2019. In addition, the 2017/2018 Report recommended changes to the Town's fee structure for seasonal users and sewer only users. We understand that these changes were not incorporated by the Town. We recommend that the Town consider instituting those recommendations. Russell Consulting was not able to evaluate alternative rate structures because of the limited reporting options available in the Sewer Department's billing software. For these same reasons, SME did not evaluate the impact of alternative rate structures. The recommendations from the 2017/2018 Report were provided prior to the recently completed WWTF Facilities Plan, the projected increase in operating costs, or provisions for capital improvements.

The Town recently updated their sewer connection fees. For that reason, we did not evaluate the Town's connection fees as part of this study.

For the purposes of this report, we have assumed the 2017/2018 Report is accurate and that their recommendations were valid through 2019. The 2017/2018 Report included an evaluation of:

- Projected Total Costs of Service (Operation and Maintenance Expenses, Debt Service Costs, Renewal and Replacement Expenses, etc.);
- Revenue Sources (Revenue from Rates and Revenue from Other Sources); and
- Revenues Needed from User Fees.

A copy of the 2017/2018 Report is included as Appendix A.

The Merrimac wastewater system and WWTF was originally constructed in 1980 and currently consists of over fifty (50) miles of gravity sewer lines, approximately 650 sewer manholes, twelve (12) pump stations, approximately four (4) miles of force mains, an outfall pipe, and the WWTF. The Town of Merrimac has the authority to adjust wastewater rates to meet the future demands of the Town.

Merrimac's sewer rates were last updated in 2020 to accommodate the costs of inflation. The Town's sewer rates are based on a usage rate per 100 gallons with a minimum charge per quarter. The current rates are shown in Table 1.

TABLE 1
CURRENT WASTEWATER RATES

Description	Amount			
Regular User, Usage per 100 gallons (per quarter)	\$1.425 (\$68.00 min. charge for 1st 7,500 gallons)			
Sewer Only Users	\$150.00			
Seasonal Users	\$68.00			

There are currently approximately 2,100 sewer users in Merrimac. This includes seasonal users and sewer only users.

We performed a survey of current sewer rates for other regional municipalities. Generally, wastewater rates of other municipalities are based on a cubic foot rate. We converted the cubic foot sewer rates to rates per gallon and provided a cost comparison using various discharge volumes in Table 2.

TABLE 2
WASTEWATER RATE COMPARISON

Usage (gal)	Merrimac	Groveland	Andover	Amesbury	Newburyport	AVERAGE
5,000	\$68.00	\$53.91	\$26.54	\$121.88	\$90.77	\$72.22
10,000	\$103.63	\$76.31	\$58.42	\$121.88	\$156.54	\$103.35
15,000	\$174.88	\$120.76	\$87.63	\$145.38	\$222.31	\$150.19
20,000	\$246.13	\$165.21	\$116.84	\$193.84	\$288.08	\$202.02
25,000	\$317.38	\$209.66	\$146.05	\$242.30	\$380.00	\$259.08

The Town's sewer rates are generally higher than other regional municipalities. This can be partially attributed to the Town's limited number of commercial and industrial users compared to the other Towns surveyed. The Town of Groveland has similar demographics to Merrimac; however, their sewer is discharged to Haverhill's WWTF and likely sees some shared cost savings as a result.

3.0 REVENUE SUMMARY

The sewer revenues as reported by the Town from 2019 to 2021 are included in Table 3. The total revenue consists of operating revenue and connection revenue. Operating revenue primarily includes revenue collected from sewer rates and generally makes up to 99 percent of the total sewer revenue. Connection fee revenue consists of fees charged to new users for connection to the sewer system. The Town also maintains a Betterment Fund which enables extensions of the sewer system that are financed by impacted users. For the purposes of our revenue calculation and projections, we did not include the Betterment Fund because it operates independently of the sewer rate and connection revenue.

SME projected the future revenue over the next 5 years if the current rate structure remained unchanged. The operating revenue has averaged approximately 2 percent growth over the last 5 years, with the exception of 2020 in which operating revenue grew at approximately 10 percent. The growth in 2020 appears to be an outlier and was therefore excluded from the average operating revenue projections. We assumed that the trend of 2 percent growth would continue throughout our operating revenue projections.

The connection fees over the last five years have averaged approximately \$63,000, with a significant increase in 2020 and 2021. The Town projects the connection fee revenue will decrease significantly over the next 5 years due to limited amount of land available for new development, and the potential impacts of a correction in the economy from inflationary pressures. Therefore, the Town predicts a conservative estimate of an average of 4 sewer connections per year over the 5-year planning period. As a result, the total sewer connection revenue for the next five years was assumed to be \$9,800 per year.

TABLE 3
TOTAL REVENUE AND PROJECTIONS

	2019*	2020*	2021*	2022	2023	2024	2025	2026
Operating Revenue	\$966,389.69	\$1,032,901.45	\$1,152,937.64	\$1,175,996	\$1,199,516	\$1,223,507	\$1,247,977	\$1,272,936
Connections	\$33,888.26	\$71,663.42	\$87,144.92	\$9,800	\$9,800	\$9,800	\$9,800	\$9,800
TOTAL	\$1,000,277.95	\$1,104,564.87	\$1,240,082.56	\$1,185,796	\$1,209,316	\$1,233,309	\$1,257,777	\$1,282,736
Note:	•				•			

Balances for 2019, 2020, and 2021 are as reported to SME by the Town.

4.0 TOTAL COST OF SERVICE

4.1 Operations and Maintenance (O&M) Costs

The Town's O&M costs include Salaries and Wages (personnel wages, overtime, benefits, clothing, etc.), engineering, electricity, heating, communications, office, supplies, chemicals, etc. The Town's O&M Costs were steady from 2019 to 2020, but increased during 2021. We expect those costs to continue to increase in the future. The reported O&M costs for 2019 through 2021 are included in Table 5. We included an annual inflation of 3 percent in our projected O&M costs through the 5-year planning period. The Town does track Lease Payments for equipment separately from other O&M costs. For consistency, the Lease Payments were separated and included in Table 5. The projected Lease Payments also include an annual 3 percent inflation.

4.2 Debt Service Costs

Debt Service Costs are the principal and interest payments on bank loans and bonds for large system improvements. Historically the Town has borrowed funds or issued bonds to complete significant improvements to the wastewater system and WWTF. Since 2019, the Town's Debt Services Costs have decreased as loans have been paid. The estimated values for 2022 to 2026 continue the trend of decreasing debt service costs and is anticipated to reduce the debt service costs to \$0.00 after 2026.

4.3 Capital Expenditures

The Town currently does not have a provision in their rate structure for capital expenditures. Capital expenditures including system improvements are necessary to maintain the sewer assets in continuous operation, to update aging equipment, to repair system failures, and to meet new stricter permitting requirements. If possible, a portion of these costs should be paid with the Department's revenue or reserve funds. It is understood that costs for asset repairs and system improvements are now included in the departments O&M Costs and partially paid with connection fee revenue. For the purposes of this study, we assumed that the Town would incur the costs of several capital expenditures and improvements

during this study's 5-year planning period. The expenditures and estimated annual costs are summarized below in Table 4.

TABLE 4

PROJECTED ANNUAL CAPITAL EXPENDITURES

Capital Expenditure/Improvement	Estimated Annual Cost		
WWTF Equipment Failures (Emergency)*	\$100,000		
General Collection System Upgrades*	\$50,000		
Design of WWTF Upgrades**	\$303,000		
TOTAL PROJECTED ANNUAL EXPENDITURES	\$453,000		

Notes:

- * Estimated expenditures from 2019 to 2021 for emergency equipment failures. Similar expenditures projected to continue through 5-year planning period. Actual costs not provided by Town.
- ** Design of WWTF Upgrades estimated to cost \$1,175,000. This cost includes 3% inflation and is divided amongst the last 4 years of the 5-year planning period.

We did not include projected costs to construct the WWTF upgrades because it is understood that the Town intends to develop the design of the upgrades over the next rate-cycle and pursue outside funding sources to assist with those costs during the following 5-year rate cycle.

The total cost of service for the wastewater system and the WWTF are summarized in Table 5 below for the last three years, with projections for the next five years based on the information provided above.

TABLE 5
TOTAL COST OF SERVICE

	2019*	2020*	2021*	2022	2023	2024	2025	2026
Salaries, Benefits and Expenses	\$857,804.25	\$854,747.40	\$888,055.40	\$914,697.00	\$942,138.00	\$970,402.00	\$999,514.00	\$1,029,500.00
Debt Service	\$180,371.70	\$170,098.51	\$157,595.50	\$145,000.00	\$132,000.00	\$122,000.00	\$112,000.00	\$0.00
Lease	\$22,581.27	\$24,953.87	\$25,419.12	\$26,182.00	\$26,967.00	\$27,776.00	\$28,609.00	\$29,468.00
Capital Expenditures	\$0.00	\$0.00	\$0.00	\$0.00	\$453,000.00	\$453,000.00	\$453,000.00	\$453,000.00
TOTAL	\$1,078,757.22	\$1,104,799.77	\$1,071,070.02	\$1,085,879.00	\$1,554,105.00	\$1,573,178.00	\$1,593,123.00	\$1,511,967.00

Note:

^{*} Balances for 2019, 2020, and 2021 are as reported to SME by the Town.

The Total Cost of Service including potential capital expenditures was \$1,071,070 in 2021 and projected to increase to \$1,511,967 by 2026.

5.0 RATE EVALUATION

SME projected the sewer account balance or retained earnings at the end of each year of the 5-year planning period. The balance was estimated based on the annual beginning account balance, the total sewer revenue, and the total cost of service. This information is summarized in Table 6. If the Town maintains existing sewer rates, the wastewater department is projected to be operating at a deficit in 2023. This is the result of increased operating costs and planned capital expenditures. The wastewater department is projected to deplete its retained earnings account in early 2024. Significant negative account balances are projected in 2024, 2025 and 2026.

TABLE 6 RETAINED EARNINGS BALANCE

	2019*	2020*	2021*	2022	2023	2024	2025	2026
Retained	\$269,332.81	\$142,013.96	\$212,202.99	\$381,216	\$481,133	\$136,345	\$-203,527	-\$-538,874
Earnings*								
Total	\$1,000,277.95	\$1,104,564.87	\$1,240,082.56	\$1,185,796	\$1,209,316	\$1,233,307	\$1,257,777	\$1,282,736
Revenue								
Total Cost of	\$1,078,757.22	\$1,104,799.77	\$1,071,070.02	\$1,085,879	\$1,554,105	\$1,573,178	\$1,593,123	\$1,511,967
Service								
Ending	\$190,853.54	\$196,779.06	\$381,215.53	\$481,133	\$136,345	\$-203,527	-\$538,874	-\$768,104
Balance*								

Note: Retained Earnings and Ending Balance for 2019, 2020, and 2021 are as reported to SME by the Town. It should be noted that the beginning and ending balances don't match.

Due to the age of the WWTF and the increasing costs of annual repairs needed to the WWTF, we recommend that the Town attempt to maintain a balance of 50 percent of the department's total cost of service. This is not an uncommon account balance goal in the industry. Table 6 illustrates that based on the information and assumptions provided by the Town, a rate increase is required to fund planned capital improvements and maintain an appropriate sewer account balance.

6.0 RECOMMENDATIONS

Based on the information and assumptions provided by the Town, SME recommended the Town increase sewer rates to finance planned capital expenditures and improvements, and maintain an adequate sewer account balance. To accommodate the findings of this Study, it is recommended that sewer rates increase by 18 percent. The recommended rates reflecting an 18 percent increase are listed in Table 7. The sewer rates should be monitored annually to review actual revenue versus costs and re-evaluated after 5 years to determine if the rates are appropriate for the Town's future operating costs and capital improvements.

TABLE 7

EXISTING AND RECOMMENDED WASTEWATER RATES

Description	Existing Rate	Recommended Rate	
Regular User, Usage per 100 gallons (per	\$1.425 (\$68.00 min. charge for 1st 7,500	\$1.682 (\$80.24 min. charge for 1st	
quarter)	gallons)	7,500 gallons)	
Sewer Only Users	\$150.00	\$177.00	
Seasonal Users	\$68.00	\$80.24	

The quarterly and annual bill increases based on various sewer flows with the recommended sewer rates are listed in Table 8.

TABLE 8

EXISTING AND RECOMMENDED SEWER BILLS

Usage (gal)	Existing Rates	Recommended S Quarterly Increase		Annual Increase
5,000	\$68.00	\$80.24	\$12.25	\$48.96
10,000	\$103.63	\$122.29	\$18.67	\$74.66
15,000	\$174.88	\$206.39	\$31.52	\$126.06
20,000	\$246.13	\$290.49	\$44.37	\$177.49
25,000	\$317.38	\$374.59	\$57.22	\$228.86

Table 6 was updated with total revenue projections reflecting an 18 percent rate increase and is included as Table 9.

TABLE 9 PROJECTED RETAINED EARNINGS BALANCE WITH RECOMMENDED RATES

	2019	2020	2021	2022	2023**	2024**	2025**	2026**
Retained	\$269,332.81	\$142,013.96	\$212,202.99	\$381,216	\$694,577	\$567,465	\$449,589	\$340,642
Earnings*								
Total	\$1,000,277.95	\$1,104,564.87	\$1,240,082.56	\$1,399,240	\$1,426,993	\$1,455,302	\$1,484,177	\$1,513,629
Revenue								
Total Cost of	\$1,078,757.22	\$1,104,799.77	\$1,071,070.02	\$1,085,879	\$1,554,105	\$1,573,178	\$1,593,123	\$1,511,967
Service								
Ending	\$190,853.54	\$196,779.06	\$381,215.53	\$694,577	\$567,465	\$449,589	\$340,642	\$342,303
Balance				· ·				

Notes:

- * Retained Earnings are as reported by the Town
 ** Total Revenue based on Recommended Sewer Rates

As shown, the recommended rate increase of 18 percent will permit the Sewer Department to maintain a positive operating balance throughout the planning period and to increase the retained earnings ending balance and although the balance is not 50 percent of the total cost of service, the balance stabilizes in 2025 and begins to increase. The findings of this report are based on the information and assumptions provided by the Town. SME recommends that the findings be evaluated on an annual basis versus actual costs and revenues to confirm the assumptions of this report.

7.0 EVALUATION OF SELECT BOARD RECOMMENDATION (REVISED FEBRUARY 23, 2022)

This rate study was presented to the Merrimac Select Board on February 14, 2022. It is understood that the Board was opposed to an 18 percent sewer rate increase. It was suggested by the Board that a 12 percent rate increase would be a reasonable compromise and would be supported by the Board. The recommended rates reflecting a 12 percent increase are listed in Table 10.

TABLE 10

EXISTING AND SELECT BOARD RECOMMENDED WASTEWATER RATES

Description	Existing Rate	Recommended Rate (12% Increase)
Regular User, Usage per 100 gallons (per	\$1.425 (\$68.00 min. charge for 1st 7,500	\$1.596 (\$76.16 min. charge for 1st
quarter)	gallons)	7,500 gallons)
Sewer Only Users	\$150.00	\$168.00
Seasonal Users	\$68.00	\$76.16

The quarterly and annual bill increases based on various sewer flows with the recommended sewer rates are listed in Table 11.

TABLE 11

EXISTING AND SELECT BOARD RECOMMENDED SEWER BILLS

Usage (gal)	Existing Rates	Recommended Rates	Quarterly Increase	Annual Increase
5,000	\$68.00	\$76.16	\$8.16	\$32.64
10,000	\$103.63	\$116.06	\$12.44	\$49.74
15,000	\$174.88	\$195.86	\$20.99	\$83.94
20,000	\$246.13	\$275.66	\$29.24	\$118.14
25,000	\$317.38	\$355.46	\$38.09	\$152.34

Table 6 was updated with total revenue projections reflecting a 12 percent rate increase and is included as Table 12.

TABLE 12

PROJECTED RETAINED EARNINGS BALANCE WITH RECOMMENDED RATES

	2019	2020	2021	2022	2023**	2024**	2025**	2026**
Retained Earnings*	\$269,332.81	\$142,013.96	\$212,202.99	\$381,216	\$623,429	\$423,758	\$231,883	\$47,470
Total Revenue	\$1,000,277.95	\$1,104,564.87	\$1,240,082.56	\$1,328,092	\$1,354,434	\$1,381,303	\$1,408,710	\$1,436,665
Total Cost of Service	\$1,078,757.22	\$1,104,799.77	\$1,071,070.02	\$1,085,879	\$1,554,105	\$1,573,178	\$1,593,123	\$1,511,967
Ending Balance	\$190,853.54	\$196,779.06	\$381,215.53	\$623,429	\$423,758	\$231,883	\$47,470	\$-27,833

Notes:

- * Retained Earnings are as reported by the Town
- ** Total Revenue based on Recommended Sewer Rates

As shown in Table 12, the wastewater department is project to be operating at a deficit in 2026 with a 12 percent rate increase. If a 12 percent rate increase is instituted at this time, SME highly recommends that the Town evaluate the total cost of service and revenues annually and consider future rate increases to ensure that the wastewater department maintains a positive operating balance.

APPENDIX A

PREVIOUS (2017/2018) RATE STUDY



REPORT ON SEWER RATES FOR THE TOWN OF MERRIMAC, MA.

1.0 INTRODUCTION

The determination of revenue requirements consists of the identification of all of the costs incurred in providing sewer service, both ongoing operating and maintenance costs and the annualized cost of funding the construction of both expansion and replacement facilities.

There are two general methods of determining total revenue requirements of a sewer utility. The method that is applied usually follows from the type of ownership. With the cash method the total cost of service for a publicly held or government owned utility consists of the sum of O&M expenses, payments in-lieu-of taxes (if required), debt service payments, and Renewal and Replacement (R&R) expenditures that are paid for with current revenues and/or established reserves. Using the utility approach, the total cost of providing service for a privately held or investor owned utility is the sum of O&M expenses, taxes, depreciation and a return on rate base. The main difference between the two approaches is in the treatment of capital expenditures. The utility method relies on both depreciation charges and a return on investment. With the cash method, capital expenditures consist of (1) debt service payments for long term capital expansion facilities, and (2) maintenance capital or capital outlays from current revenues that is used to pay for R&R projects.

Almost all publicly owned utilities estimate their revenue requirements using the cash basis approach. This method simply sums the cash amounts needed by the utility to pay all of its expenses over a full fiscal year. Thus, the term "Total Revenue Requirements" is synonymous with "Total Cost of Service". Total costs are comprised of two major components: Operation and Maintenance (O&M) costs and Capital Costs. O&M costs are routine or periodically incurred costs in providing sewer service on an ongoing basis, and are generally incurred during a utility's accounting period (one fiscal year). Some of the larger categories of O&M costs include: salaries and wages, electric power, chemicals, materials and supplies, and rental equipment. Capital costs relate to capital items or plant and equipment and are predominantly facilities that provide benefits for more than one year. Larger fixed plant facilities (e.g. a pump station) are often in service for 30 or more years.

To a large degree the mix and amounts of factor inputs, and in turn total O&M costs needed to operate a sewer utility, are determined by the types of capital facilities it owns and operates, the age of those facilities, and their general condition. Capital costs are subdivided into debt service costs (or the cost of loans incurred to finance major capital expansion projects), and capital maintenance costs (or capital projects that are funded from current revenues). These capital maintenance costs are also called Renewal and Replacement (R&R) costs, pay-as-you-go capital costs (for obvious reasons) and simply capital outlays. In essence, they are usually relatively small capital projects that are needed to keep the existing facilities in sound working condition over their expected useful lives. Even though these items are clearly capital costs that have benefits in more than one fiscal year, they are usually included in the annual operating budget and are included as an annual revenue requirement in a manner similar to O&M costs.

2.0 PROJECTED TOTAL COSTS OF SERVICE (OR TOTAL REVENUE REQUIREMENTS)

The total annual costs incurred by the Merrimac Sewer Department (the "Department") in fulfilling its responsibility of operating the current facilities and providing for the continued operability and capacity in the future consists of three major components: Operation and Maintenance expense (Section 2.1), the amortized cost of borrowed funds (Debt Service) (Section 2.2), and Renewal and Replacement expense (Section 2.3). Each of these costs is described below along with a forecast of component and total costs through Fiscal Year 2019 (Section 2.4).

2.1 OPERATION AND MAINTENANCE EXPENSES

The Town of Merrimac's sewer system has existing treatment and pumping facilities, and over fifty miles of collection pipes and sewer mains. To operate these facilities, the major expenses incurred by the Department include labor, fringe benefits, materials and supplies and related services. For accounting and budgeting purposes, the Department segregates its O&M costs into two general categories: Salaries & Wages, and Expenses. Salaries & Wages include individual wages, standby, overtime and clothing allowance. Expenses are divided into several line items. Some of those that are relatively large include—Electricity, Well Cleaning, Software/Billing Costs, Office Expenses, Stock, Chemicals, Indirect Overhead, and Benefit Reimbursements.

Actual expenditures for Salaries, Benefits and Expenses (SBE) in fiscal years 2015 to 2017 are shown on Schedule 2.4.1, line 1a., along with budgeted figures for FY2018, and forecasted costs for FY2019. Actual SBE expenses have averaged about \$810,000 over the last 3 years. The current budget year provides for an increase of approximately 12.8% for these expenses, and for FY2019 an additional increase of 1% has been estimated. Two other costs that the Town accounts for separately that are considered part of O&M costs are Lease Payments and OPEB contributions. These are listed on Schedule 2.4.1 at lines 1b. and 1c., respectively.

Schedule 2.4.1

5011	beneduce 2.7.1									
	TOTAL COSTS OF SERVICE Sewer Enterprise Fund									
		FY2015	FY2016	FY2017	FY2018	FY2019				
1.)	Operations and Maintenance Expenses									
1a.)	Salaries, Benefits and Expenses	\$825,077	\$775,475	\$818,112	\$922,944	\$931,605				
1b.)	Lease Payments	\$10,659	\$21,682	\$22,056	\$22,440	\$22,747				
1c.)	OPEB Transfers and Interest		\$31,000	\$31,000	\$31,000	\$31,000				
				·						
2.)	Debt Service Payments	\$206,031	\$201,005	\$195,834	\$185,546	\$180,372				
3.)	Capital Costs (Funded with User Fees)	\$0	\$0	\$0	\$0	\$0				
	Articles from Surplus	\$216,800			\$50,000	\$100,000				
	Other - Petty Cash		\$50	\$50						
	Other - Transfer out - Oper. Encumb.			\$30,000						
4.)	Total Costs of Service	\$1,258,567	\$1,029,212	\$1,097,052	\$1,211,930	\$1,265,724				

2.2 DEBT SERVICE COSTS

Debt service consists of the principal and interest payments on bonds and bank loans issued to finance larger system improvements. The Town has issued bonds and/or borrowed funds at various times for the acquisition, construction and improvements to the sewer system. For the three historic years the Department has on average been incurring Debt Service Costs of about \$200,000. For the current budget year, the Sewer Department has outstanding debt for which it will be required to make total principal and interest payments of \$185,546, and in FY2019 the

total debt service expense will decrease to approximately \$180,400. These payments are summarized on schedule 2.4.1, line 2.

2.3 RENEWAL AND REPLACEMENT EXPENSE

Public sector utilities, equally with the private sector, must generate funds to renew and replace capital facilities. The reason is obvious—both governmental and private utilities rely on service and use charges for their revenues, and accordingly, both must include provisions in their rate structures for meeting basic facility needs. Renewal and Replacement funds (R&R), as used in the governmental utility context (where there are no income tax liabilities), have the following objectives:

- ➤ Provide financial resources for maintaining the fixed assets of the utility in an acceptable and continuously operable condition
- Enable the utility to meet progressively restrictive legal and regulatory requirements through upgrading and modernization of the system
- ➤ Ensure that financial resources are sufficient to affect the necessary replacements, particularly during emergency conditions or system failures, as well as modernization, at the time they are needed

R&R projects should be paid for with current revenues and/or available reserve funds. Unrestricted funds available for such projects include Retained Earnings, Reserve for Expenses and the R&R Fund, which is currently referred to by the Town as the Operations Encumbered Fund (or Reserve). As of the end of the most recently completed fiscal year (FY2017, ending June 30, 2017) the balances in these funds were \$780,009, \$45,000 and \$272,898, respectively (about \$1.1 million collectively). These balances along with the budgeted amount for FY2018 and the estimated amounts for FY2019 are shown in Schedule 2.4.2 on the lines labeled "Ending Balance" for each Fund. As a policy, maintaining a level of total funds at or near \$1 million is not unreasonable for a utility of this size and age of facilities. However, given recent annual expenditures for R&R projects, a total level of \$500,000 to \$750,000 would also be reasonable. For purposes of this study, it is recommended that the combined funds from these three reserves be maintained at about \$750,000. Thus, attempting to maintain this total level, if total rate revenues are insufficient to cover all costs after these funds are reduced to a total of \$750,000 or

less, then any expected deficit should have to be covered by increasing rates proportionately.

Schedule 2.4.2

	Reserve For Expenses								
	<u>FY2015</u>	FY2016	FY2017	FY2018	FY2019				
Beginning Balance	\$50,000	\$45,000	\$45,000	\$45,000	\$45,000				
Addition - Fees and Interest									
Deduction - Transfer to R&R Fund				*	* . =				
Transfer out - Operating	\$50,000	\$45,000	\$45,000	\$45,000	\$45,000				
Transfer In - Betterments	\$45,000	\$45,000	\$45,000	\$45,000	\$45,000				
Ending Balance	\$45,000	\$45,000	\$45,000	\$45,000	\$45,000				
		7 1/ 201							
Operatin	g Encumbered I								
	FY2015	FY2016	FY2017	<u>FY2018</u>	<u>FY2019</u>				
Beginning Balance	\$147,622	\$283,689	\$256,431	\$272,898	\$222,898				
Additions									
Funds set aside for Capital									
Improvements	\$216,800								
Transfer from Gen. Fund			\$30,000						
Transfer from Privilege Fund		\$0	\$60,000	\$0					
Deductions									
Capital Improvements from									
R&R Funds	400 707	***	*= 2 - 22	\$50,000	\$100,000				
Sewer Articles Expenses	\$80,535	\$27,258	\$73,533						
Close out Articles	\$198								
Ending Balance	\$283,689	\$256,431	\$272,898	\$222,898	\$122,898				
Retained Earnings (Unrestricted)									
	FY2015	FY2016	FY2017	FY2018	FY2019				
Beginning Balance	\$649,361	\$553,855	\$691,742	\$780,009	\$762,793				
Current Surplus/Deficit	\$95,506	\$137,887	\$88,267	\$17,216	\$59,187				

Additionally, funds from the Restricted Funds can be used to pay for certain qualifying projects.

These are comprised of the Betterment Fund and the Capital Connections Fund. As of the end of

\$553,855

\$691,742

Ending Balance

\$780,009 \$762,793 \$703,606

FY2017, the balances in these funds totaled about \$410,000. The Betterment Fund is increased by fees charged to private property owners whose properties have been improved ("bettered") by the extension of sewer pipes in the road adjacent to their properties. The Capital Connections Fund increases by fees charged to property owners who request a new or upgraded service to one or more buildings on their property. Both of these funds are designed to be self-sufficient. Over the next two years the balance in the Betterment Fund is expected to remain level at about \$115,000, and the balance in the Capital Connections Fund is expected to increase by about \$65,000 per year on average. [Need to explain what the OPEB Fund is here]. Balances in these three funds are shown on Schedule 3.2.

Schedule 3.2

	OPEB Fund									
		FY2015	FY2016	FY2017	FY2018	FY2019				
Beginning Balance		\$31,061	\$31,185	\$64,172	\$102,167	\$133,167				
Addition - Transfer from										
current Revs + Int		\$124	\$31,000	\$31,000	\$31,000	\$31,000				
Deduction to Gen. Fund										
Addition -Special Articles			\$1,987	\$6,995						
Ending Balance		\$31,185	\$64,172	\$102,167	\$133,167	\$164,167				

Capital Connections Fund									
		FY2015	FY2016	FY2017	FY2018	FY2019			
Beginning Balance		\$177,745	\$219,781	\$294,435	\$293,365	\$353,365			
Addition - Sewer Connection									
Fees + Int		\$42,036	\$74,654	\$58,930	\$60,000	\$70,000			
Transfer In/(Out)				\$60,000					
Addition -Special Articles									
Ending Balance		\$219,781	\$294,435	\$293,365	\$353,365	\$423,365			

Betterment Fund									
	FY2015	FY2016	FY2017	FY2018	FY2019				
Beginning Balance	\$81,926	\$111,535	\$126,780	\$118,646	\$113,646				
Addition - Betterment Fees	\$74,609	\$60,245	\$36,866	\$40,000	\$50,000				
Transfer In/(Out) - Reserve for									
Expenses	\$45,000	\$45,000	\$45,000	\$45,000	\$45,000				
Addition -Special Articles									
Ending Balance	\$111,535	\$126,780	\$118,646	\$113,646	\$118,646				

Actual annual Capital Costs (FY2015 through FY2017) funded from user fees and/or by drawing down reserves through the R&R Fund are shown on Schedule 2.4.1, line 3, along with estimated amounts for FY2018 and FY2019. Over the 5-year period shown on this schedule, capital improvement projects funded with current revenues or from reserves have been inconsistent—with a high of about \$217,000 in 2015, zero in FY2016, and only \$30,000 in FY2017. To begin

returning to a more consistent and higher level of funding going forward, it was assumed that in FY2018 about \$50,000 would be funded from current revenues and/or through reserves, and in FY2019 this should increase to about \$100,000.

2.4 TOTAL COST OF SERVICE (OR TOTAL REVENUE REQUIREMENTS)

Schedule 2.4.1, line 4 shows the total Cost of Service for the Department from FY2015 through FY2019 as the sum of the three major components described in the preceding sections—O&M Expense, Debt Service Payments, and R&R Costs. The total for the most recently completed fiscal year (FY2017) was \$1,097,052. The current budget year calls for a 10.5% increase to \$1,211,930. The projected total for FY2019 is \$1,265,724, which is about 4.4% higher than FY2018.

3.0 SUMMARY OF REVENUE SOURCES

There are two broad revenue classifications—revenue from rates (user fees) and revenues from all other sources. Revenues from rates consist of charges connected with the collection and treatment of wastewater, i.e. fixed service charges and charges for total discharges based on the level of water consumption. Revenues from other sources for the Merrimac Sewer Department (or non-user fee revenues) consist of four components: Interest and Other, Miscellaneous, Sewer Liens, and Transfers. Interest and Other consists predominantly of interest charges. There are numerous Miscellaneous revenue types—some examples are Inspection Fees, Saddle Fees, Disconnection Fees, and Interest Charges on overdue balances. Sewer Liens are obtained by placing liens on a customer's property for non-payment. Almost all of the transfers listed on Schedule 3.1 are derived by drawing down reserves in the Reserve for Expenses. Historic and forecasted revenues from all sources other than user fees are summarized in Schedule 3.1. Over the 5 years depicted on this schedule, total revenues from non-user fees have been in the range of \$197,000 to \$237,000. The levels estimated for FY2018 and FY2019 are \$230,000 and \$237,000, respectively. As demonstrated in the next section, these revenues directly lower the need to increase user fees for general sewer service.

Schedule 3.1

	SEWER ENTERPRISE FUND									
	Non User Fee Revenues									
			FY2015	FY2016	FY2017	FY2018	FY2019			
1.)	Interest and Other						\$2,000			
2.)	Miscellaneous		\$100,400	\$142,086	\$145,000	\$150,000	\$150,000			
3.)	Water Liens		\$46,536	\$41,359	\$28,859	\$35,000	\$40,000			
4.)	Transfers In/(Out)				\$6,546	\$0	\$0			
	Transfer from Reserve For Expenses		\$50,000	\$45,000	\$45,000	\$45,000	\$45,000			
5.)	Other									
	Close out Articles		\$198							
6.)	Total Non User Fee Revenues		\$197,134	\$228,445	\$225,405	\$230,000	\$237,000			

Revenues from user fees have remained fairly level in recent years (FY2015 – FY2017) averaging about \$955,000 per year. Given the level of uncertainty associated with the current economy and forecasts of future growth, we have based our projections on the assumption that total metered consumption, which is used as a surrogate measure of wastewater discharges, will increase at a conservative 0.5% per year through the end of FY2019. Therefore, the budgeted level for FY2018 is estimated to be about \$964,700, and the level for FY2019 is estimated to increase to \$969,500. These annual levels are listed on line 6 of Schedule 4.1 (next section).

4.0 REVENUES NEEDED FROM USER FEES

Schedule 4.1 summarizes the analysis from the preceding sections and results in both the Annual Revenues needed from user fees to breakeven (line 7) plus an amount equal to the deficit, if there is a deficit, or line 7 minus the amount of surplus in years where there is a surplus. Thus, if there are expected deficits going forward that cannot be covered adequately by reserves, then it becomes necessary to increase future rates to maintain self-sufficiency of the Enterprise Fund. Because the deficits projected for FY2018 and FY2019 are relatively small in comparison to the level of reserve funds, there is no need to increase rates in FY2019, and quite possibly for one or two years beyond FY2019. If the sum of the balances of the Unrestricted Funds at the end of a future year are expected to drop significantly below \$700,000, then it is time for the Department to seriously consider a rate increase.

Schedule 4.1

SCII	Schedule 4.1								
	SEWE	R ENTERPR	ISE FUND						
	(Rate Reven	ue Requiremen	ts and Net Inco	ome)					
		<u>FY2015</u>	FY2016	FY2017	FY2018	<u>FY2019</u>			
1.)	Total Costs of Service (Schedule TCOS)	\$1,258,567	\$1,029,212	\$1,097,052	\$1,211,930	\$1,265,724			
2.)	Minus Total Non User Fee Revenues (Schedule NUFR)	\$197,134	\$228,445	\$225,405	\$230,000	\$237,000			
3.)	Equals - Rate Revenue Requirements (before adjustment for discounts)	\$1,061,433	\$800,767	\$871,647	\$981,930	\$1,028,724			
4.)	Plus Expected Net Discounts (water charges only)	\$0	\$0	\$0	\$0	\$0			
	Equals - Total Rate Revenue								
5.)	Requirements (Line 3 + Line 4)	\$1,061,433	\$800,767	\$871,647	\$981,930	\$1,028,724			
6.)	Revenues from User Fees (Net of Discounts)	\$965,927	\$938,654	\$959,914	\$964,714	\$969,537			
7.)	Total Rate Revenues Including Net Discount (water charges only)	ES .							
8.)	Surplus/(Deficit) (Line 5 - Line 6)	\$95,506	\$137,887	\$88,267	\$17,216	\$59,187			

The annual Surplus or Deficit (line 8) is simply derived by subtracting Total Rate Revenue Requirements (line 5) or Total Costs from the Total Rate Revenues (line 6). From this schedule it is clear that the Department only incurred a relatively small deficit in FY2015 (\$95,506), followed by surpluses of \$137,887 and \$88,267 in FY2016 and FY2017, respectively. These deficits were easily covered from Unrestricted Reserve Funds. Over those 3 years the R&R fund had an average balance of about \$265,000, and the Retained Earnings balance averaged about \$675,000. However, a small deficit is projected for the current budget year \$17,000, followed by another relatively small deficit of about \$59,000 in FY2019. Again, these projected deficits are easily covered by balances in the Unrestricted Reserve Funds. At the end of FY2018, those same two Funds are expected to have a combined balance of just under \$1 million, and by the end of FY2019 even without a rate increase these two Funds are expected to have a combined balance of over \$800,000. These reserve levels are in line with historic levels and significantly higher than recommended levels. The next section presents recommended options relative to the need for rate increases and use of reserves going forward.

5.2 RATE INCREASE RECOMMENDATIONS

Through a combination of rate increases and use of Reserve Funds, three optional rate plans for the next fiscal year (FY2019) in particular, and in general, for four additional future years (FY2020 through FY2024) are presented.

As explained in the prior section there is no need to increase rates in FY2019, due to the relatively small deficits expected and the relatively large balances in the unrestricted reserves.

Given the need for a significant increase in water rates in FY2019, the Town may want to consider lowering sewer rates in FY2019 by 5% or 10% to offset the increase in water rates.

By keeping sewer rates at current level, the Department could avoid increasing its rates for another 2 or 3 years, knowing that reserves will likely drop below recommended levels at some point, triggering a rate increase to bring reserves back to appropriate levels.

5.3 RATE STRUCTURE AND OTHER CONSIDERATIONS

While the scope of work didn't include an evaluation of the sewer utility's rate structure, a few improvements to this utility's data gathering and rate structure should be evaluated further:

- Additional Reports from the Department's provider of billing software and related reports would be very useful and necessary in analyzing and designing alternative rate structures for the Sewer Utility. The central report that is needed for this (and one not currently being provided) is one that would contain the data necessary to derive a billing tabulation that is relied on to predict the level of revenues that would result from any change in the number of rate steps or the range of consumption to be covered by a particular step within a multi-step rate structure. This bill tabulation table is fully explained in AWWA's rate manual on Rates and Charges M1 (seventh Edition Appendix C Bill Tabulation Methods).
- The Department should eliminate the minimum use charge and level for two reasons: it is unfair to those using less than 30,000 gallons per year and it fails to discourage those using less than 30,000 gallons per year from wasting water.
- ➤ Sewer only users determine average residential use calculate total charges for that level of use as if it was a customer with water service, and charge all sewer only customers that amount on an annual basis (unless it turned out to be less than the current charge).
- ➤ Seasonal customers determine the monthly charge as determined above for sewer only users and charge that amount times the number of months of seasonal use.
- Consider changing its rate structure (number of steps and step ranges) to include considerations of conservation incentives, a first step or block for the level of use needed for health and sanitation purposes, and reduced charges or discounts for low income customers.