

# **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**

<b>TOTAL COSTS OF SERVICE</b>						
<b>Sewer Enterprise Fund</b>						
	<u>FY2015</u>	<u>FY2016</u>	<u>FY2017</u>	<u>FY2018</u>	<u>FY2019</u>	
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**

<b>Reserve For Expenses</b>						
	<u>FY2015</u>	<u>FY2016</u>	<u>FY2017</u>	<u>FY2018</u>	<u>FY2019</u>	
Beginning Balance	\$50,000	\$45,000	\$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	\$45,000
Transfer In - Betterments	\$45,000	\$45,000	\$45,000	\$45,000	\$45,000	\$45,000
Ending Balance	\$45,000	\$45,000	\$45,000	\$45,000	\$45,000	\$45,000
<b>Operating Encumbered Fund (or R&amp;R Fund)</b>						
	<u>FY2015</u>	<u>FY2016</u>	<u>FY2017</u>	<u>FY2018</u>	<u>FY2019</u>	
Beginning Balance	\$147,622	\$283,689	\$256,431	\$272,898	\$222,898	\$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				\$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	\$122,898
<b>Retained Earnings (Unrestricted)</b>						
	<u>FY2015</u>	<u>FY2016</u>	<u>FY2017</u>	<u>FY2018</u>	<u>FY2019</u>	
Beginning Balance	\$649,361	\$553,855	\$691,742	\$780,009	\$762,793	\$762,793
Current Surplus/Deficit	\$95,506	\$137,887	\$88,267	\$17,216	\$59,187	\$59,187
Ending Balance	\$553,855	\$691,742	\$780,009	\$762,793	\$703,606	\$703,606

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

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**

<b>OPEB Fund</b>						
	<u>FY2015</u>	<u>FY2016</u>	<u>FY2017</u>	<u>FY2018</u>	<u>FY2019</u>	
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	

<b>Capital Connections Fund</b>						
	<u>FY2015</u>	<u>FY2016</u>	<u>FY2017</u>	<u>FY2018</u>	<u>FY2019</u>	
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	

<b>Betterment Fund</b>						
	<u>FY2015</u>	<u>FY2016</u>	<u>FY2017</u>	<u>FY2018</u>	<u>FY2019</u>	
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**

<b>SEWER ENTERPRISE FUND</b>						
<b>Non User Fee Revenues</b>						
		<u>FY2015</u>	<u>FY2016</u>	<u>FY2017</u>	<u>FY2018</u>	<u>FY2019</u>
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**

<b>SEWER ENTERPRISE FUND</b>							
<b>(Rate Revenue Requirements and Net Income)</b>							
		<u>FY2015</u>	<u>FY2016</u>	<u>FY2017</u>	<u>FY2018</u>	<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 NUFRR)	\$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	
5.)	Equals - Total Rate Revenue 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 Discounts (water charges only)						
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.