REPORT ON WATER 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 water 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 water 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 water 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. an elevated water tank) are often in service for 50 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 water utility, are determined by the types of capital facilities it owns and operates, their age and 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 Water 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; namely 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 EXPENSE

The Town of Merrimac has existing well supplies, pumping and treatment facilities, storage tanks, and over fifty miles of underground pipe. 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 $642,000 over the last 3 years. The current budget year provided for an increase of approximately 9% for these expenses, and for FY2019 an additional increase of 2% 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 Transfers and Interest. These are listed on Schedule 2.4.1 at lines 1b. and 1c., respectively.

Schedue 2.4.1

WATER ENTERPRISE FUND Total Costs of Service						
		FY2015	FY2016	FY2017	FY2018	FY2019
1.)	Operations and Maintenance Expenses					
1a.)	Salaries, Benefits and Expenses	$649,413	$630,074	$646,786	$705,384	$719,492
1b,)	Lease Payments	$1,795	$3,652	$3,715	$4,105	$3,715
1c.)	OPEB Transfers and Interest	$18,000	$20,050	$30,000	$32,000	$34,000
2.)	Debt Service Payments	$173,547	$163,496	$214,431	$227,865	$300,000
3.)	Capital Costs (Funded with User Fees)	$168,000	$205,000	$155,000	$170,000	$185,000
4.)	Total Costs of Service	$1,010,755	$1,022,272	$1,049,932	$1,139,354	$1,242,207

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 water system. For the three year period FY2015-FY2017, the Department has on average been incurring Debt Service Costs of about $184,000. For the current budget year, the Water Department has outstanding debt, for which it will be required to make total principal and interest payments of $227,865, and in FY2019 the total debt service expense will increase to approximately $300,000. These payments are summarized on schedule 2.4.1, line 2..

2.3 RENEWAL AND REPLACEMENT EXPENSE

The public sector, equally with the private sector, must generate funds to renew and replace its 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 (R&R) funds, 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 both Retained Earnings and the Renewal and Replacement 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 are $161,225 and $408,112, respectively. These balances along with the budgeted amount for FY2018 and the estimated amounts for FY2019 are shown in Schedule 2.4.2 on the line Labeled "Ending Balance" for the R&R Fund. As general financial policy, maintaining a level of total funds at or near $500,000 is not unreasonable for a utility of this size given the age of its facilities. However, considering recent annual expenditures for R&R projects, a total level of $300,000 to $400,000 would also be reasonable. For purposes of this study, it is recommended that the combined funds from these two reserves be maintained at or near about $400,000. 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 $400,000 or less, then any expected deficit would have to be covered by increasing rates proportionately.

Schedule 2.4.2

Privilege Fee Fund (Restricted)					
	FY2015	FY2016	FY2017	FY2018	FY2019
Beginning Balance	$11,892	$57,557	$104,091	$48,331	$331
Addition -Fees and Interest	$45,665	$51,534	$44,240	$52,000	$50,000
Deduction - Transfer to R&R Fund		$5,000	$100,000	$100,000	$48,000
Addition					
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Ending Balance	$57,557	$104,091	$48,331	$331	$2,331

Operating Encumbered Fund (or R&R Fund)					
	FY2015	FY2016	FY2017	FY2018	FY2019
Beginning Balance	$290,071	$221,810	$333,732	$408,112	$364,759
Additions					
Funds set aside for Capital Improvements	$168,000	$205,000	$155,000	$170,000	$185,000
Transfer from Gen. Fund	$42,000				
Transfer from Privilege Fund		$5,000	$100,000	$100,000	$48,000
Deductions					
Capital Improvements from R&R Funds	$278,261	$56,078	$180,620	$313,353	$185,000
Transfer to Gen. Fund		$42,000			
Ending Balance	$221,810	$333,732	$408,112	$364,759	$412,759

Retained Earnings (Unrestricted)					
	FY2015	FY2016	FY2017	FY2018	FY2019
Beginning Balance	$280,918	$261,169	$195,615	$161,225	$28,567
Current Surplus/Deficit	$19,749	$65,554	$34,390	$132,658	$223,627
Ending Balance	$261,169	$195,615	$161,225	$28,567	$195,060

Additionally, funds from the restricted Privilege Fund can be used to pay for certain qualifying projects. As of the end of the FY2017, the balance in this fund was $48,331. This Fund is increased by one-time fees charged to developers and new customers and should be self-sufficient. Because this reserve fund is relatively low, and because the Town plans to transfer $100,000 to the R&R Fund in FY2018, the balance in that fund at the end of the year will be reduced to $331. Also, in FY2019 the Town plans to transfer $48,000 to the R&R Fund and with estimated fees of $50,000 added to this Fund, by the end of the year the balance will be about $2,330. Balances in this Fund are also shown on Schedule 2.4.2. Actual Capital Costs (FY2015 through FY2017) funded from user fees 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 have been in the narrow range of $155,000 to $205,000. The estimated amounts for FY2018 and FY2019 are both near the middle of this range at $170,000 and $185,000, respectively.

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 $1,049,932. The current budget year calls for an 8.5% increase to $1,139,354. The projected total for FY2019 is $1,242,207, which is about 9.0% 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 use of water, i.e., fixed service charges and consumption charges. Revenues from other sources for the Merrimac Water Department (or non-user fee revenues) consist of four components, namely Interest and Other, Miscellaneous, Water Liens, and Transfers. Interest and Other consists predominantly of interest charges. There are numerous miscellaneous revenue types—some examples are fees for unscheduled meter readings, tapping charges, turn-off and turn-on charges, and interest charges on overdue balances. Water liens are obtained by placing liens on a customer's property for non-payment. A single transfer listed in this section was derived by borrowing funds from the Town's General Fund. 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 $30,000 to $44,000. The levels estimated for FY2018 and FY2019 are $30,000 and $37,000, respectively. As demonstrated in the next section these revenues directly lower the need to increase user fees for general water service.

Schedule 3.1

NON USER FEES REVENUES Water Enterprise Fund						
		FY2015	FY2016	FY2017	FY2018	FY2019
1.)	Interest and Other	$2,376	$2,138	$503	$2,000	$2,000
2.)	Miscellaneous	$361	$6,427	$1,020	$3,000	$5,000
3.)	Water Liens	$30,803	$29,441	$22,039	$25,000	$30,000
4.)	Transfers In and Out			$20,143	$0	$0
5.)	Other					
6.)	Total Non User Fee Revenues	$33,540	$38,006	$43,705	$30,000	$37,000

Revenues from user fees have remained fairly level in recent years (FY2015 through FY2017) averaging about $950,000 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 will increase at a conservative 0.5% per year through the end of FY2019. Therefore, the budgeted level for FY2018 is approximately $976,700, and the level for FY2019 is estimated to increase to $981,580. These annual levels are listed on line 6 of Schedule 4.1 (next section).

Schedule 4.1

	WATER ENTERPRISE FUND (Rate Revenue Requirements and Net Income)					
		FY2015	FY2016	FY2017	FY2018	FY2019
1.)	Total Costs of Service (Schedule TCOS)	$1,010,755	$1,022,272	$1,049,932	$1,139,354	$1,242,207
2.)	Minus Total Non User Fee Revenues (Schedule NUFR)	$33,540	$38,006	$43,705	$30,000	$37,000
3.)	Equals - Rate Revenue Requirements (before adjustment for discounts)	$977,215	$984,266	$1,006,227	$1,109,354	$1,205,207
4.)	Plus Expected Net Discounts	$57,000	$58,053	$59,670	$59,000	$60,000
5.)	Equals - Total Rate Revenue Requirements (Line 3 + Line 4)	$1,034,215	$1,042,319	$1,065,897	$1,168,354	$1,265,207
6.)	Revenues from User Fees (Net of Discounts)	$957,466	$918,712	$971,837	$976,696	$981,580
7.)	Total Rate Revenues Including Net Discounts Line 4 + Line 6	$1,014,466	$976,765	$1,031,507	$1,035,696	$1,041,580
8.)	Surplus/(Deficit) (Line 7 - Line 5)	$19,749	$65,554	$34,390	$132,658	$223,627

4.0 REVENUES NEEDED FROM USER FEES

Schedule 4.1 summarizes the analysis from the preceding sections and includes both the Annual Revenues Needed from User Fees (line 7), and the Annual Surplus or Deficit (line 8). The latter amount (the Surplus/Deficit of Net Income) is derived by subtracting Total Rate Revenue Requirements (line 5) or Total Costs from the Total Rate Revenues including Net Discounts (line 7). From this schedule it is clear that the Department has incurred relatively small deficits in recent years averaging $40,000 from FY2015 through FY2017. These deficits were easily covered from unrestricted reserve funds. Over those three years the R&R fund had an average balance of about $320,000, and the Retained Earnings balance averaged about $200,000. However, without a rate increase before FY2020, the deficits in FY2018 and FY2019 are expected to reach $132,658 and $223,627, respectively. Furthermore, the R&R Reserve Fund decreases by about $44,000 in FY2018. By transferring $48,000 from the Privilege Fee Fund to the R&R Fund the balance in that Fund increases to $412,759 by the end of the year. and the Retained Earnings balance drops below $30,000 in FY2018, and becomes significantly negative in FY2019 (-$195,060). To cover this deficit (again without a rate increase), the R&R Fund would have to be drawn down by $195,060, leaving a combined balance of only $219,699 in the two unrestricted funds. This level of reserves is significantly below historic and recommended levels. The next section presents recommended options to improve the Department's deteriorating financial position.

5.0 EVALUATION OF NEEDED RATE INCREASES

5.1 RATE INCREASE ALTERNATIVES

In the sections that follow, three optional rate plans for the next fiscal year (FY2019) and possibly additional increases after FY2019 are presented, along with the resulting impacts to reserve levels. Because FY2018 is more than half over, the earliest practical date to change rates is at the start of FY2019.

5.1.1 – 25% Rate Increase in FY2019 with Relatively High Reserve Levels

By increasing the user fees by 25% in FY2019, there is a projected surplus of $21,768, an increase of $245,395 over the original deficit of -$223,627. Additionally, it results in leaving a positive balance of $50,335 in Retained Earnings. The R&R fund remains unchanged, which results in an increase in the total unrestricted reserves to $463,094.

5.1.2 – 20% Rate Increase in FY2019 with Average Reserve Levels

By increasing the user fees by 20% in FY2019, the deficit for that year is reduced to -$27,311 from -$223,627 (an increase of $196,316). Additionally, it results in leaving a positive balance of $1,256 in Retained Earnings. The R&R fund remains unchanged, which results in an increase in the total unrestricted reserves to $414,015.

5.1.3 – 15% Rate Increase in FY2019 with Relatively Low Reserve Levels

By increasing the user fees by 15% in FY2019, the deficit for that year is reduced to -$76,390 from -$223,627 (an increase of $147,237). Additionally, it results in reducing the negative balance to -$47,823 in Retained Earnings from -$195,060. The R&R fund is unchanged and the total unrestricted reserves increases to $364,936.

5.2 – Comparisons of Alternatives

The key results of each of these three options are summarized on Schedule 5.1

Schedule 5.1

COMPARISONS OF FY2019 RATE INCREASE ALTERNATIVES

Percent Increase	Net Income	Balance in RE	Combined balances Unrestricted Funds
25.00%	$21,768	$50,335	$463,094
20.00%	$27,311	$1,256	$414,015
15.00%	$76,390	$47,823	$364,936
0 Incr.	$223,627	$195,060	$217,699

From this comparison, it is clear that the Department should increase water rates in FY2019 and that there is a tradeoff between keeping the increase as small as possible while trying to maintain reserve levels at reasonable and appropriate levels. Thus, the lower the rate increase, the lower the level of unrestricted reserves. To keep the recommended levels of reserves above $400,000 by the end of FY2019, rates would have to be increase by about 20% beginning July 1st, 2018, and rates would likely need to be increased in another year or two. Alternatively, if the Department could be satisfied with unrestricted reserves between $300,000 and $400,000 for a year or two, it could keep the increase in FY2019 to 15% or even 10%. Under either of the two later options, however, there likely would be a need to increase rates another 5% to 10% in FY2020 or FY2021 in order to maintain unrestricted reserve at or near the $400,000 level.

6.0 RECOMMENDATIONS

6.1 RECOMMENDED RATE INCREASE

The recommended level that the Department should increase its rates by depends on whether or not it prefers to maintains reserve levels at recommended levels as soon as FY2019, or if it could tolerate less than recommended reserves levels for one or two years by keeping the rate increase level lower next year by 5% or 10%, but then there likely would be a need to increase rates again in FY2021. If the Department prefers to keep reserve levels at or near recommended levels, it should increase rates by about 20% in FY2019. If the Department prefers to spread the impact of rate increases to its ratepayers over two or three years it should increase rates by 15% or 10% in FY2019, but also recognize it will likely need to increase rates again in FY2020 or FY2021. If the Department decides to increase rates by 15% in FY2019, it would likely need to increase rates in FY2021 (or sooner in FY2020) by about 10%. If the Department decides to increase rates by 10% in FY2019, it would likely need to increase rates again in FY2021 (or sooner in FY2020) by more than 10% (perhaps as much as 15%).

Either of these three rate plans (next three years) should allow the Department to maintain the financial strength it has been able to sustain in recent years without rate increases. However, because of ever increasing costs of labor and materials, along with increasing regulations and the need to replace aging infrastructure, the need for an increase in its rates has become necessary. The tradeoff between customer impacts and maintaining adequate reserve levels is a decision that is best made by management of the Water Department and other Town Officials.

6.2 RATE STRUCTURE AND OTHER CONSIDERATIONS

While my scope of work did not include an evaluation of the water utility's rate structure, a few related matters and a couple of potential improvements to this utility's data gathering and rate structure should be evaluated further going forward. These issues are outlined below:

- 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 Water 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 in order to be able 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 consider eliminating its fixed charge, and replacing it with just consumption charges, or with a fixed service charge to cover meter and billing costs and only consumption charges to cover all other costs.

- The Department should 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.