Massachusetts Department of Revenue *Division of Local Services*
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Town of Dudley

Water and Sewer Costing Analysis

February 2000

INTRODUCTION

At the request of the Dudley Board of Selectmen, the Massachusetts Department of Revenue, Division of Local Services, has prepared this FY2000 costing analysis of the town's water and sewer operations. This report provides the board of selectmen, water commission, sewer commission, finance and advisory committee and other town officials and residents with an objective assessment of the costs of providing water and sewer services and the operating revenues available to meet these costs.

The primary goal of this analysis, along with the determination of the full cost of water and sewer services, is to determine whether water and sewer operations are subsidized by the tax levy. A subsidy from the tax levy occurs when the total cost of water and sewer department operations exceeds the water and sewer service revenues.

This analysis is based on information gathered from the town's financial records as well as conversations with various town officials. An overview of the analysis can be found in the executive summary. The summary is followed by two sections, one covering water service and the second covering sewer service. Each of these sections includes a brief explanation of the service, as well as detailed revenue and cost information.

This report is based upon the best available information. The following analysis makes no judgments regarding the management of the water and sewer departments or the cost effectiveness of wither service. Rather it is intended to provide town officials with a methodology for calculating indirect costs and to provide management information to be used during the rate-setting process.

EXECUTIVE SUMMARY

The primary goal of this analysis is to determine the full cost of providing water and sewer services, including the direct and indirect costs, and to determine the extent to which these services receive operating subsidies from the tax levy. An operating subsidy is the difference between the total cost of providing a service and the revenue it generates. The information gathered through this costing study can be used to set fees and charges that will fully recover the costs of providing these services. However, costing is an ongoing function; services that fully recover all costs in one year may not recover full costs in subsequent years unless annual adjustments are made for increases in the costs of providing services.

TABLE A: FY2000 OPERATING SUBSIDY—WATER AND SEWER		
	Water	**Sewer**
Operating Revenues	**892,695**	**981,966**
Operating Costs		
Direct Costs	427,183	865,246
Debt	287,230	240,822
Indirect Costs	28,662	30,734
Depreciation Expense	72,741	10,060
TOTAL COST	**815,816**	**1,146,862**
Operating Surplus/Subsidy	**76,879**	**(164,896)**
Percentage of Costs Recovered	**109%**	**85.6%**

As shown in **Table A**, the water enterprise is expected to generate a FY2000 operating surplus of **$76,879.** It is important to note that the estimated operating revenues reflect the water maintenance fee adopted by the water commissioners in November of 1999. This maintenance fee is $25 per quarter for each residential user and will be included in three of the four quarterly bills to be issued this fiscal year. This fee increase was prompted by a $209,000 deficit in the water enterprise fund from FY99 that the enterprise fund must recover through its rates in FY2000. This deficit has not been included in our estimates of FY2000 water costs.

For sewer operations, the operating subsidy is **$164,896** with **85.6 percent** of costs being recovered through sewer revenues **(See Table A)**. The reader should be aware that we have included the capital assessment from Webster and the French

River interceptor and Garden City debt service as sewer operating costs, even though the town has voted to fund these costs from the tax levy or general fund. If these costs were excluded, the sewer enterprise would generate a surplus of **$23,992** since total operating costs would be reduced to **$957,974**.

Another significant issue for sewer costs centers on the longstanding disputes between Dudley and Webster regarding assessments for the Webster sewer treatment facility for operating and capital costs. The sewer costs depicted in this report reflect our estimates of total operating and capital assessments for FY2000 and do not include amounts owed from previous fiscal years. For example, the town will be paying Webster about $38,000 per year through March of FY2002 for capital assessments Dudley owed from FY94-FY96. Operating assessments for FY97 through FY99 are also in dispute with Webster contending that Dudley owes more than $270,000 for this period. According to the Dudley Sewer Commissioners, these amounts will be the subject of future negotiations.

Since the town adopted enterprise fund accounting for water and sewer operations in the late 1980s, Dudley town officials have never agreed upon a method of calculating and reporting indirect costs. While direct costs, including personnel costs, equipment and supplies, and facility costs are clearly identifiable, indirect costs are not so readily attributable to a service or department since they may be shared by several other services or departments. This report should be helpful in determining indirect costs by clearly identifying all the costs attributable to water and sewer operations. As shown in **Table A**, we have determined total indirect costs to be **$28,662** and **$30,734** for water and sewer operations respectively.

Methodological Considerations

In defining the annual operating revenues and costs for this report, the following points should be considered.

Determination of Direct and Indirect Costs

Dudley town meeting traditionally appropriates certain clearly identifiable costs for water and sewer operations within their respective budgets. These costs include employee benefits for water and sewer employees, property insurance for water and sewer assets and gasoline costs. In this analysis, we have considered these costs as direct costs for water and sewer operations because they are directly attributable to each service and are budgeted in this manner by town meeting.

Indirect costs include personal service costs and indirect departmental costs such as insurance, pension costs and other departmental salaries which are incurred by departments other than water or sewer, but related to the delivery of water and sewer service. As a general rule, indirect costs are appropriated outside of a given

department's budget. Our indirect cost allocations are based on our own analysis and are independent of the amounts appropriated at the 1999 annual town meeting.

Determination of Annual Depreciation Expense

Depreciation is calculated in order to recognize the cost of utilizing a fixed asset in a given reporting period. In general, depreciation is calculated by dividing the purchase price of the asset by its useful life. We have calculated depreciation expenses for most water and sewer fixed assets. However, depreciation expenses for certain fixed assets with current debt still outstanding have not been included in this analysis. Since debt service is already reflected in this analysis, the calculation of depreciation for these assets would result in a double counting of costs for rate-setting purposes.

FY2000 Sewer Treatment Costs and Capital Assessments

Webster charges Dudley a uniform monthly charge that has been calculated by multiplying a projected FY2000 per million gallon processing rate as determined by Webster, by Dudley's calendar 1999 actual flow, divided by twelve. Any changes in Webster's actual operational costs or in Dudley's actual FY2000 flow are calculated at the end of the fiscal year. The end result of this calculation will result in either an additional charge or a credit during FY2001. While this arrangement assures Dudley of predictable monthly charges, it also sets up several variables that usually result in the town ending the year owing Webster additional amounts for treatment costs.

As previously mentioned, several disagreements have arisen between Dudley and Webster over the amount Dudley owes for processing charges. For example, Dudley owed some processing charges related to FY93 through FY96 until the towns agreed to resolve their differences over the calculation of these processing costs. Though Dudley finally paid these outstanding charges in 1996, differences persist between the two towns over processing cost calculations. As a result, Webster claims that Dudley owes balances ($275,145) related to processing charges for FY97 through FY99. The Dudley Sewer Commissioners plan to contest the underlying calculations for these charges and negotiate a lower amount due.

Dudley has also agreed to pay a capital assessment of 17 percent of the total cost of the construction of the Webster wastewater treatment plant. Similar to what has occurred with the processing costs, Dudley did not pay capital assessments for FY94 through FY96 because of disagreements with Webster. Both towns subsequently worked out a payment plan whereby Dudley will pay $3,189 monthly for 60 months until March of 2002 for a total due of $191,322. However, the town makes these payments from the budget line item for its FY2000 processing costs. This practice will exacerbate the projected shortfall in this account and may cause the town to be close to $60,000 short of meeting its projected processing costs.

Fire Protection

The water department is concerned that it does not receive compensation for public fire protection service. This service consists of maintaining a system of fire hydrants and the backup facilities required to provide an adequate water supply in the event of a fire. This issue is complicated by the fact that about half of the town residents are not town water users and receive little benefit from the hydrant system. Ideally, in a community where the hydrant system served the entire town, these fire protection costs should be funded by the tax levy. When these costs are funded in the tax levy, residents pay an amount proportional to the value of the property receiving the fire protection. In Dudley, water fees and a fire protection assessment to commercial and industrial users cover these costs.

The town has wrestled with this fire protection issue for many years. Based on the above discussion, however, we believe that this situation will not be resolved successfully as a technical costing issue. Rather, since neither method of funding these costs, through the tax levy or water fees, is uniformly fair and equitable, this matter is probably best resolved through local negotiation. Therefore, we recommend that the town's chief executive officials, financial officers and the water commissioners reach a compromise by negotiating an agreed upon amount to assess the town for fire protection. The water commissioners are considering assessing town buildings such as schools, town hall and the library a charge for the fire protection line that connects to those buildings. This seems to be an appropriate first step since these facilities serve all town residents.

WATER COSTING ANALYSIS

The town began construction of the water system in the early 1900s. Today, it services about 2,153 customers. The Dudley water system mainly services the densely populated town center where the older homes are located. This is also the location of the three wells that provide the town's entire water supply. Roughly 50 percent of the town consists of areas where homes are not connected to the water system for general water use. In some areas where developers have built new homes, the developers have installed hydrants at their own expense. Residents in these newer developments use the water system for fire protection purposes only.

In past years, there has been a "moratorium" on allowing new homeowners to connect to the town water supply. This ban on new connections was implemented because the town has had to pump from all three wells at full capacity to meet the demand for water. Recently, this ban was partially lifted due to the implementation of a leak detection program. Due to the success of this program, the water department partially lifted the moratorium in 1999 and allowed 30 new water connections. In 2000, the department plans to allow 30 more new connections. As the leak detection program progresses, the water department will not have to pump from all three wells full time; it can use the capacity of 1 ½ wells to meet the daily demand and save one well for emergency use only.

Since 1994 the water department has made major improvements to the town's water distribution system. The water department issued bonds and also depleted its retained earnings to pay for some of these projects directly. The debt service on these improvements plus normal operating costs have caused the department to incur a $209,000 deficit for FY99. Recently, in attempts to significantly reduce this deficit, the water department increased rates in the fall of 1998 from $2.05 for each 100 cubic feet of water used to $3.00 feet each 100 cubic feet of water used. Also, in the fall of 1999, the water commissioners voted to implement a maintenance fee in addition to the charges based upon water consumption. This fee is based upon the size of the water pipe that connects the home or building to the water system and is intended to cover the overall costs of maintaining and operating the water system. Prior to the rate increase in 1998, the water department had not changed rates in 12 years.

The Dudley water department is administered by a three-member commission that is responsible for overall operations and rate setting. Day to day operations of the water department are directed by the water superintendent with the assistance of 3 full-time employees and one part-time clerk. Water department financial activity is accounted for in an enterprise fund that allows revenues and expenditures to be accounted for separately with any surplus remaining for water related expenditures.

TABLE 1: FY2000 ESTIMATED WATER REVENUE AND OPERATING COSTS

Estimated Operating Revenues	**892,695**
Estimated Operating Costs	
Direct Costs	
Salaries	181,084
Operating Expenses	157,431
Employee Benefits	66,710
Capital	21,958
Total Direct Costs	**427,183**
Debt	**287,230**
Indirect Costs	
Indirect Personal Service Costs	26,804
Indirect Departmental Costs	1,858
Total Indirect Costs	**28,662**
Depreciation Expense	**72,741**
Total Estimated Operating Costs	**815,816**
Operating Surplus	**76,879**

WATER OPERATING REVENUE

Water User Fees: Water operating revenues are primarily from user fees. These fees are assessed and billed on a quarterly basis and have accounted for approximately 90 percent of total operating revenue over the past two years. Dudley assesses water fees based on a uniform charge of $3.00 per100 cubic feet of water consumption. There are approximately 2,145 residential customers and 8 commercial customers.

We calculated our FY2000 revenue estimate for water user charges by computing a 3-year average of water consumption for each month of the year. The averages for each month were then multiplied by the rate of $3.00 per 100 cubic feet of water consumption feet to arrive at an estimate of the total amount to be billed for user charges. We then applied a 94 percent collection rate[1] to arrive at our estimated figure of $629,314.

Based on actual collections of water user charges through December of 1999 and discussions with the collector regarding payments for the first two billings, we believe $629,314 is a sound estimate for water user charges for FY2000.

[1] We averaged the collection rates for FY98 and FY 99 to arrive at our FY 2000 estimate of 94 percent. For each fiscal year, we determined the collection rate by dividing the actual amount of water user charges that were billed by the total amount of user charges actually collected. We used the same method to arrive at a 95 percent collection rate for sewer user charges.

Maintenance Rate Schedule: In November 1999, the town implemented a maintenance fee to help pay for the overall maintenance and operation of the water system. We estimate this fee will generate approximately **$154,056** in revenue in FY2000. We also used a 94 percent collection rate to arrive at this figure. Since the maintenance fee was put into effect in the fall of 1999, these charges will appear on only the last three quarterly bills. Rate-payers will be billed four times rather than three times per year for this fee in FY2001. The water department will receive about an additional $51,353 in revenue (or a total of $205,409) over four billing periods.

Water Liens Receivable: The collector intends to lien a total of $74,269 (including interest) for delinquent water fees on the third and fourth quarter tax bills. Similar to water user fees, we applied a 94 percent collection rate to this amount and allocated **$69,813** in water liens to water operating revenue.

Fire Protection: Commercial customers are assessed a fire protection charge twice per year based on the size of the water line connected to the building (see **Appendix 1** for more detail on water fees and other charges). Since there have been no changes in these charges, our figure is based on last year's actual amount.

Storage Tank Rental: The water department charges a cellular phone company $2,001 per month for rental of the Dresser Hill Road storage tank.

Miscellaneous Charges: This amount includes fees for new connections to the water system as well as penalties for late bill payments. Customers who receive both water and sewer services are billed for both services on one invoice. For customers who receive both services, the town charges a $5 demand fee per quarter on all overdue bills. For bills that remain unpaid after the due date, the town assesses an interest charge of 14 percent per annum. Our FY2000 revenue projection of **$12,000** for miscellaneous charges is a conservative estimate based upon a 3-year average of these charges.

Table 2 shows our projection of total revenue for the water department for FY2000.

TABLE 2: FY2000 WATER REVENUE PROJECTION	
Water User Charges	629,314
Maintenance Rate Schedule	154,056
Water Liens Receivable	69,813
Water Tower Rental (Cellular Phone Co.)	24,012
Fire Protection	3,500
Miscellaneous Charges	12,000
TOTAL	**892,695**

WATER OPERATING COSTS

Two types of costs are incurred by the town in providing water service: **Direct** and **Indirect.**

Water Direct Costs

Direct costs reflect amounts allocated by town meeting to the water department's FY2000 budget. The only exceptions to this are that we used a lower estimate of water expenses which reflects anticipated savings for electric costs and a slightly different allocation for water department employee benefits. **Table 1** on **page 6** summarizes direct water costs.

Water Salaries: Direct salaries for water personnel, including meter readers and commissioners total **$181,084.** This figure includes overtime, vacation and sick-time buy back for water personnel.

Water Expenses: Direct operating expenses of the water department for FY2000 are **$157,431.** This amount includes total expenses as approved by town meeting for ordinary water main repair and construction materials, electricity, maintenance and office expenses ($135,411). We have also included $3,300 for gasoline costs for water operations based on last year's usage. Total direct operating expenses also include property, boiler and machinery, general liability, public official liability and automobile insurance costs ($18,720). These have been allocated based on actual premiums for the water department as provided by the town's carrier, the Massachusetts Interlocal Insurance Association.

Employee Benefits: These expenses include water employee benefits such as health, dental and life insurance, worker's compensation, retirement and Medicare/social security. These expenses are allocated by totaling actual costs to the town for these benefits for each water department employee. Also included is

each water department retiree or retiree's spouse who is eligible for insurance. Expenses for water employee benefits total **$66,710.**

Water Capital Items: This line item of **$21,958** is appropriated for capital purchases for the water department. This also includes the annual cost of leasing one backhoe.

Debt Service: FY2000 debt service (including principal and interest) for the water department totals **$287,230**. This figure includes the FY2000 debt service on bonds issued to finance construction of a new well and pumping station, new lines, upgrade over 15,000 feet of water main, and the construction of the Dresser Hill Road water storage facility. It also includes the first annual payment on an interest free loan from the state Department of Environmental Protection.

Water Indirect Costs

Indirect costs consist of water-related expenses that are incurred by other departments. Included as indirect costs are the salaries and benefits of other town employees that provide support in the provision of water service. Other expenses such as the apportioned expenses of departments that offer support to water operations are included as indirect departmental costs. For purposes of this study, we have calculated indirect costs based on our conversations with town officials. **Table 3** provides a summary of these costs.

Water Indirect Personal Service Costs

Indirect personal service costs primarily include the apportioned salaries of personnel budgeted in other departments who nonetheless support the delivery of water service. They also include health and life insurance, Medicare/social security, worker's compensation insurance and pension costs of support personnel from other town departments.

Indirect Support Salary Costs

Based on conversations with town officials, the offices of the town administrator/MIS director, selectmen, accountant, personnel board, collector, treasurer and town hall custodian have been identified as offices whose personnel support water operations.

Town Administrator/MIS Director: The town administrator estimates that she devotes 1 hour per week of her office time to water related activities. The town administrator's water related activities include handling labor issues, procurement procedures, and assisting the water department with grant applications. We have allocated 2.5 percent of the town administrator's salary, or **$1,000**, to water operations. As MIS director, the town administrator receives an $8,000 annual stipend. Out of the total stipend, the MIS director estimates that **$1,500** (18.75 percent) should be allocated to water operations.

Collector: We have allocated 20 percent of the collector's salary, or **$7,065**, to water operations. Based on discussions with the collector, she estimates that approximately 20 percent of her time is spent on water related activities such as the collection of bills and posting to accounts. The collector also answers questions and phone inquiries about water bills, and processes municipal lien certificates. This entails listing all taxes and other assessments, including water and sewer rates and other charges, which at the time, constitute unrecorded liens on a parcel of real estate. The assistant collector performs many of the same functions as the collector, with the exception of preparing municipal lien certificates. We have allocated 16 percent of her time, or **$3,157**, to water operations.

Treasurer: The treasurer estimates that she spends approximately 13 percent of her time (including the time of the assistant treasurer) on water-related activities. This includes the handling and posting of water funds and the preparation of notes and bonds related to water projects. Therefore, we have allocated 13 percent of the treasurer's office salaries (including 13 percent of the assistant treasurer's salary), or **$8,410**, to water operations.

Town Hall: A custodian is responsible for the cleaning of town hall including the water department office which is located in town hall. Since the office occupies approximately 2 percent of the town hall, we have allocated 2 percent of his salary, or **$140.**

Other Support Departments: For the selectmen, accountant and personnel board, we have allocated 5.4 percent of the salary costs to support water service based on the proportion of direct water costs (net of debt service) to the total town budget (net of debt service).

Indirect Support Benefit Costs

Health, Dental and Life Insurance: For personnel who support water operations, these costs have been calculated by multiplying the actual costs to the town per employee by the salary percentage allocated to support water service. Total group insurance costs for personnel who support water services are estimated at **$660.**

Medicare and Social Security (FICA): The town's Medicare tax is calculated by taking 1.45 percent of the salaries of employees hired after March of 1986. Since all employees are enrolled in the Worcester County Retirement system, the town is relieved from contributing to Social Security. Water department indirect Medicare costs are calculated by multiplying 1.45 percent times the apportioned salaries of support personnel hired after March of 1986. Medicare costs are expected to total **$142** for FY2000.

Workers' Compensation Insurance: Workers' compensation insurance costs are allocated based on the current workers' compensation policy which assigns fixed

premiums to each category of worker. The applicable rate was then applied to the apportioned salaries of support personnel to determine actual workers' compensation insurance costs. Since the worker's compensation insurance cost for each employee who supports water operations is less than $10, we have excluded them from this analysis.

Pensions: The town contributes to the Worcester County Retirement System. Indirect FY2000 pension costs for water operations have been apportioned based on the FY2000 proportion of water support personnel to the salaries of all town employees participating in the retirement system. This ratio was then applied to the FY2000 pension appropriation, yielding an estimate of **$3,145.**

TABLE 3

FY2000 Indirect Personal Service Water Costs

	Salaries	Health Dental Life	Medicare	Workers' Comp	Pensions	Total
Support Personnel						
Administrator/MIS Dir.	2,500		37		347	2,884
Selectmen	380				52	432
Accountant	916		13		126	1,055
Treasurer	5,326	18			734	6,078
Assistant Treasurer	3,084	83	45		425	3,637
Collector	7,065	207			973	8,245
Assistant Collector	3,157	293	47		448	3,945
Town Hall	140	33				173
Personnel Board	289	26			40	355
TOTAL	22,857	660	142	-	3,145	**26,804**

Water Indirect Departmental Costs

We have allocated 5.4 percent of the cost of producing the annual town report and the annual town audit to water operations. This percentage is the ratio of direct water costs (net of debt service) to the total town budget (net of debt service). According to the collector, the water department prints and mails their own bills and pays for their own postage. Since there are essentially no collector's office expenses associated with the water department, we have apportioned no collector's office related indirect departmental costs. The town administrator/MIS director and accountant also estimate that their office expense attributable to water operations is negligible. For the remaining offices that support water services, we apportioned the expense budgets as described below.

Treasurer: We have determined that approximately 8.5 percent of the treasurer's office expense budget is spent in support of water service. This expense allocation mainly covers the cost of the town payroll service and paper materials such as checks and W-2 forms.

Town Hall: Since the water department occupies approximately 2 percent of town hall total office space, we have allocated 2 percent of town hall expenses (maintenance, heating oil, and all utilities such as water, sewer and electric), or **$440**, as water indirect departmental costs.

TABLE 4: FY2000 INDIRECT DEPARTMENTAL WATER COSTS

	FY2000 Appropriation	Water
Audit	11,000	594
Annual Town Report	2,500	135
Treasurer	8,100	689
Town Hall	22,000	440
TOTAL		**1,858**

Water Depreciation Expense

We have included costs associated with the depreciation of water-related fixed assets and motor vehicles. Depreciation is calculated in order to recognize the annual expense associated with the utilization of a fixed asset over its useful life.

Table 5 shows the depreciation costs for water fixed assets with two exceptions. First, we have excluded those assets whose cost is currently being serviced by debt in order to avoid double-counting the costs of these assets for rate-setting purposes. Since the town is paying debt service on bonds issued to cover the replacement cost of several mains, construction of a new well, pumping station, and water storage facility, depreciation costs for these assets have not been included in our analysis.

Secondly, we have excluded those areas that are in existence beyond their useful lives. Useful life estimates for fixed assets have been determined in accordance with Internal Revenue Service regulations for depreciation. We have calculated costs using the straight-line method and are assuming no salvage value for water fixed assets.

The reader should also note that we relied on the water department's engineer to assist us in determining the value of certain depreciable water mains less than 50 years old (exclusive of water mains with ongoing debt service). The engineer assisted us in determining length, diameter and estimated age of the mains, as well as advising us on the estimated current replacement cost of these assets. To estimate original purchase price, we deflated these replacement costs back to the estimated date of original purchase using an inflation index from the Bureau of Labor Statistics. The engineer also assisted us in estimating that there is approximately one fire hydrant for every 500 feet of water main, with a replacement cost of $1,500 per hydrant.

TABLE 5: FY2000 Water Depreciation Expense

Vehicle/Equipment	Purchase Price	Depreciable Cost	Useful Life	Annual Depreciation
Booster Station	3,800	3,800	50	76
Station #3 (Purchased in 1962)	35,000	35,000	50	700
Aux. Generator at Station #3	60,000	60,000	10	6,000
New Pump and Motor (1995)	95,000	95,000	30	3,167
Pump Equipment	25,000	25,000	30	833
Water Mains	1,838,162	1,838,162	50	36,763
Hydrants	74,819	74,819	50	1,496
Valve Shed	10,000	10,000	50	200
Valves and Vault Systems	90,000	90,000	50	1,800
Replacement of Water Meters	200,000	200,000	50	4,000
Field Equipment	5,093	5,093	10	509
Telemetering	8,700	8,700	30	2,900
1997 John Doe Backhoe Loader	55,000	55,000	6	9,167
1998 GMC 400 Truck	30,777	30,777	6	5,130
TOTAL				**72,741**

SEWER COSTING ANALYSIS

General oversight and rate-setting authority for the Dudley sewer department rests with a three-member, elected sewer commission. The collection and treatment of sewerage is handled by two separate entities. Collection is handled by the town's sewer department which maintains about 20 miles of sewer lines, 11 pumping stations, and holding tanks. Less than half of the town is sewered with about 1,572 users. Including the superintendent, the department has 3 full-time employees and a full-time clerk.

All of Dudley's sewerage is pumped to the town of Webster and treated at the Webster Water Pollution Control Facility. The plant became fully operational in 1991 and was built as the result of an order by the Federal Environmental Protection Agency. The plant handles sewerage from the towns of Webster and Dudley as well as several private industrial users. An intermunicipal agreement between Dudley and Webster signed in 1986 governs cost allocations between the two towns. Under the terms of the agreement, Dudley is billed monthly for its sewerage treatment. (See **Sewer Direct Costs** below).

TABLE 6: FY2000 ESTIMATED SEWER REVENUE AND OPERATING COSTS	
Estimated Operating Revenues	**981,966**
Estimated Operating Costs	
Direct Costs	
Salaries	136,694
Operating Expenses*	522,270
Employee Benefits	44,923
Treatment Plant Capital Assessment	151,359
Capital	10,000
Total Direct Costs	**865,246**
Debt	**240,822**
Indirect Costs	
Indirect Personal Service Costs	28,111
Indirect Departmental Costs	2,623
Total Indirect Costs	**30,734**
Depreciation Expense	**10,060**
Total Estimated Operating Costs	**1,146,862**
Operating Subsidy	**164,896**

**This amount includes an estimate of $459,000 for FY2000 sewerage processing costs by the Webster wastewater treatment plant.*

During the late 1990s, the sewer department completed two major expansions which provided 249 additional connections. Since the late 1990s, the sewer department has experienced surpluses, although throughout much of the 1990s this department also incurred several deficits. One reason why these deficits occurred was because the rates for sewer user charges were not generating sufficient revenue to cover expenses. The sewer department also claims that over the years, Webster's sewerage treatment charges have exceeded the amount the town has budgeted for these costs, and that these charges also contributed to past deficits. However, actions taken by the town to relieve the sewer department of the Webster capital assessment and certain debt service payments, have boosted retained earnings for FY99 to $405,081.

Like water operations, the sewer department's financial operations are accounted for as an enterprise fund which allows revenues and expenditures to be accounted for separately from the general fund with any surplus retained for sewer-related projects.

SEWER OPERATING REVENUE

Sewer User Fees: Dudley generates sewer receipts primarily from user fees. Our estimate of $702,673 for FY2000 is based on the actual amount collected in sewer user charges in FY99. Total sewer user fees have accounted for over 90 percent of total operating revenues over the past three years. There are 1,572 residential accounts and 8 business accounts, all of which are billed quarterly. Dudley assesses sewer fees based on a uniform flat fee of $192.81 for each customer annually[2] plus a rate of $2.70 per 100 cubic feet of water usage. The flat fee is calculated by dividing an amount for fixed costs including salary expenses, estimated indirect costs, and various other costs by the number of users. The sewer department deducts the amount it receives in sewer rate relief from the total figure it uses for costs (see **Sewer Rate Relief** below). The rate payment is calculated by dividing the FY2000 estimated sewerage processing cost by the previous year's cubic feet of flow (see **Appendix 2).** The average annual sewer user charge is about $491.

User Charges for New Connections: The Phase 1 expansion, completed in 1998, provided 134 possible new connections; 94 connections in Phase 1 have actually occurred. The newly completed Phase 2 and Phase 3 expansion project provided 115 possible new connections out of which 63 have actually occurred since August 1999. The sewer department anticipates more homeowners will tie into the system in the spring of 2000. User charges from new connections since August 1999 were estimated by multiplying 63 new connections by three-fourths of the FY99 average annual sewer bill of $491 (.75 x 491=368) since these new customers will be billed

[2] For each customer, the flat fee is broken up into quarterly payments of $48.20.

for only three of the four billing quarters. We applied a 95 percent collection rate to the total of $23,184 to arrive at our estimate of **$22,025.**

Sewer Liens Receivable: The collector intends to lien a total of $167,209 (including interest) on the third and fourth quarter tax bills. Similar to sewer user fees, we applied a 95 percent collection rate to this amount and allocated **$158,849** in tax liens to sewer operating revenue. Since these sewer liens represent delinquent amounts for more than one year, these revenues are not likely to recur in this amount next fiscal year.

Sewer Rate Relief: The Commonwealth's Sewer Rate Relief Fund was established in 1993 to help mitigate the escalating costs of sewer service in Massachusetts. Generally speaking, Dudley's award from the Sewer Rate Relief Fund is computed at 20 percent of the sewer department's eligible debt service. In FY99 the town received **$26,741** in sewer rate relief. For this analysis, we are using the same figure, although the town has applied for a total award of $32,764 for FY2000. The Department of Environmental Protection is currently reviewing the additional projects that have been submitted for FY2000.

Charges for New Connections: In addition to sewer fees the department charges $1,200 for each new connection to the sewer system. This fee is waived, however, for homeowners in the newly expanded areas of the system if they connect within one year after the expanded system has become operable. The sewer commissioners felt this waiver would provide an incentive for homeowners to tie into the new system. We based our estimate of **$13,222** on the FY99 actual amount of fees collected for new connections.

Apportioned Assessed Betterments with Interest: Since the assessors have not yet prepared the FY2000 betterment commitment, we have based our estimate of **$45,636** on the amount actually collected in FY99.

Late Fees: Customers who receive both water and sewer service are billed for both services on one invoice. For customers who receive both services, the town charges a $5 demand fee per quarter on all overdue bills and assesses interest 14 percent interest per annum on all bills that remain unpaid after the due date. For customers who receive only sewer, the town charges a $2.50 demand fee per quarter on all over due bills. The collector has received $619 in demand fees and $790 in interest penalties through December 1999. We doubled the total of these two figures to arrive at our FY2000 estimate of **$2,820.**

Interest on Investments: This is an estimate of how much money the sewer enterprise will earn in FY2000 from its invested cash balances. We anticipate the sewer enterprise will earn approximately **$10,000** in investment income.

TABLE 7: FY2000 SEWER REVENUE PROJECTION	
Sewer User Charges	702,673
User Charges from New Connections since August 1999	22,025
Sewer Liens Receivable	158,849
Sewer Connection Charges	13,222
Apportioned Assessed Betterments/Interest	45,636
Late Fees	2,820
State-Sewer Relief	26,741
Interest on Investments	10,000
TOTAL	**981,966**

SEWER OPERATING COSTS

Two types of costs are incurred by the town in providing sewer service: **Direct** and **Indirect**.

Sewer Direct Costs

Direct costs reflect amounts allocated by town meeting to the sewer department's FY2000 budget. These costs include the salaries and employee benefits for sewer employees, operating and capital assessments for the Webster sewer treatment facility, property and liability insurance and gasoline and various other sewer department expenses. For the Webster operating assessment and some sewer employees are numbers differ slightly from the amounts appropriated in the FY2000 sewer department budget. **Table 6** on **page15** summarizes the direct sewer costs.

Sewer Salaries: Direct salaries for sewer personnel, including the office clerk and commissioners' salaries, total **$136,694**. This figure includes vacation, personal and sick time buy back.

Sewer Operating Expenses: Direct operating expenses of the sewer department for FY2000 are **$63,270**. This amount includes total expenses for ordinary sewer repair and construction materials, electricity, maintenance, office expenses and legal expenses ($47,750). The total amount for direct operating expenses also includes property and other insurance for the sewer department ($14,280) and gasoline costs ($1,240).

Employee Benefits: These expenses include health and life insurance, Medicare/social security, worker's compensation insurance and pension costs of sewer personnel. Unemployment costs are excluded from this analysis because no

such costs exist for FY2000. We have allocated a total of **$44,923** to sewer employee benefits.

Engineering: The sewer department budgets **$1,000** for the cost of private engineers for sewer-related work.

Webster Processing: The Dudley annual town meeting appropriated $440,000 for the FY2000 treatment costs at the Webster treatment plant. However, Webster has estimated these costs to be $459,000 for FY2000. For rate-setting and costing purposes, we have used Webster's FY2000 projection of **$459,000**, since up to this point, flow amounts have increased slightly over FY99. Also, according to the Dudley sewer superintendent, wet season rainfall could easily increase flow to the point where processing costs will exceed Dudley's budgeted amount.

Sewer Capital Items: This line item of **$10,000** is budgeted for capital purchases of the sewer department. Similar appropriations are made annually.

Webster Capital Assessment: As previously discussed under **Methodological Considerations**, the selectmen voted in 1997 to pay annual capital assessments for the Webster treatment plant out of the tax levy or general fund. For FY2000, the total payment (including debt and interest) for this assessment is **$151,359**. Although the town voted to pay this assessment out of the general fund, we are allocating this payment as a direct cost for sewer operations.

Debt Service: We estimated total for sewer debt service costs at **$240,822** for FY2000. This includes **$203,293,** the amount the town has budgeted for debt service costs for the design, engineering and construction costs of Phases I, II and III of the sewer expansion project, and the debt service costs of **$19,618** and **$17,911** for the French River interceptor and Garden City projects respectively.

Sewer Indirect Costs

Sewer-related expenses that appear in other departmental budgets are considered indirect costs. Included as indirect costs are the salaries and benefits of other town employees that provide support in the provision of water service. Other expenses such as the apportioned expenses of departments that offer support to sewer operations are included as indirect departmental costs. For purposes of this study, we have calculated indirect costs based on our conversations with town officials. **Table 8** provides a summary of these costs.

Sewer Indirect Personal Service Costs

Indirect personal service costs primarily include the apportioned salaries of personnel budgeted in other departments who nonetheless support the delivery of sewer service. They also include health and life insurance, Medicare/social security, worker's compensation insurance and pension costs of support personnel from other town departments.

As with water department indirect support personal service costs, the sewer related salary and benefit costs for the town administrator/MIS director, collector, treasurer, assistant assessor and town hall custodian have been apportioned based on our conversations with town officials. For the selectmen, accountant and personnel board, we have allocated 11 percent of the salary and benefit costs to support sewer service based on the proportion of direct sewer costs (net of debt service) to the total town budget (net of debt service).

Town Administrator/MIS Director: The town administrator estimates that she devotes 1 hour per week of her office time to sewer related activities. The town administrator's sewer related activities include handling labor issues, procurement procedures, and assisting the sewer department with grant applications. We have allocated 2.5 percent of the town administrator's salary, or **$1,000**, to sewer operations. As MIS director, the town administrator receives an $8,000 annual stipend. Out of the total stipend, the MIS director estimates that **$1,500** (18.75 percent) should be allocated to sewer operations.

Collector: We have allocated 15 percent of the collector's salary, or **$5,300** to sewer operations. The collector performs the same functions for sewer-related activities as for water-related activities. Although the majority of payments collected are for both water and sewer services, there are some payments received from customers who use only the water service and others who use only sewer. Approximately 714 customers use only the water service while 70 use only sewer. Therefore, we have allocated a higher percentage of the collector's salary to water than to sewer since the collector must process more water bills than sewer bills. The assistant collector performs many of the same functions as the collector, with the exception of preparing municipal lien certificates. We have allocated 11 percent of her time, or **$2,170**, to sewer operations.

Treasurer: The treasurer estimates that she spends approximately 13 percent of her time (including the time of the assistant treasurer) on sewer related activities. This includes the handling and posting of sewer funds and the preparation of notes and bonds related to sewer projects. Therefore, we have allocated 13 percent of the treasurer's office salaries (including 13 percent of the assistant treasurer's salary), or **$8,410**, to sewer operations.

Town Hall: A custodian is responsible for the cleaning of town hall including the sewer department office which is located in town hall. Since the office occupies

approximately 2 percent of the town hall, we have allocated 2 percent of his salary, or **$140.**

Assistant Assessor: The assistant assessor works 40 hours per week. She estimates that she works 3 hours per week preparing and updating spread sheets on sewer betterments showing initial betterment charges and also apportioned betterment charges plus interest. The assessors place apportioned betterment charges on the real estate tax bills. We have allocated 7.5 percent of the assistant assessor's salary, or **$1,848** to sewer operations.

Other Support Departments: We have allocated 11 percent of the salary costs of the accountant, selectmen and personnel board to sewer service based on the proportion of direct sewer costs (net of debt service) to the total town budget (net of debt service).

Table 8 details indirect personal service costs related to sewer services for the town of Dudley.

TABLE 8

FY2000 Indirect Personal Service Sewer Costs

	Salaries	Health Dental Life	Medicare	Worker's Comp	Pensions	Total
Support Personnel						
Administrator/MIS	2,500		37		347	2,884
Selectmen	774				107	881
Accountant	1,867		27		257	2,151
Asst. Assessor	1,848	18	27		254	2,147
Treasurer	5,326	18			734	6,078
Assistant Treasurer	3,084	83	45		425	3,637
Collector	5,300	207			973	6,480
Assistant Collector	2,170	293	47		448	2,958
Town Hall	140	33				173
Personnel Board	588	53			81	722
TOTAL	23,597	705	183	-	3,626	**28,111**

Sewer Indirect Departmental Costs

Indirect sewer departmental costs have been allocated to sewer operations in the same manner as they have been allocated for water service. We have calculated that approximately 11 percent of the annual town audit expense and the cost of printing the annual town report is spent in support of sewer operations. This percentage is the ratio of direct sewer costs (net of debt service) to the total town budget net of debt service. According to the town administrator/MIS director and the accountant, their office expenses attributable to water operations is negligible. The collector also estimates that since the sewer department prints and mails its bills and supplies the cost of postage for these mailings, there is no office expense attributable to sewer. For the remaining offices that support sewer services, we apportioned the expense budgets as described below.

Treasurer: We have determined that approximately 8.5 percent of the treasurer's office expense budget is spent in support of sewer service. This expense allocation mainly covers the cost of the town payroll service and paper materials such as checks and W-2 forms.

Town Hall: Since the sewer department occupies approximately 2 percent of town hall office space, we have allocated 2 percent of town hall expenses, or **$440**, as sewer indirect departmental costs.

TABLE 9: FY2000 INDIRECT DEPARTMENTAL SEWER COSTS

	FY2000 Appropriation	SEWER
Audit	11,000	1,210
Annual Town Report	2,500	275
Treasurer	8,100	698
Town Hall	22,000	440
TOTAL		**2,623**

Sewer Depreciation Expense

Our analysis includes costs associated with the depreciation of sewer-related fixed assets and motor vehicles owned by the town of Dudley. We have calculated depreciation costs using the straight-line method. We have not included any depreciation expenses associated with the Webster Water Pollution Control Facility. Estimates of the useful life of capital assets have been made in accordance with IRS regulations for useful life. As with water fixed assets, we have excluded those assets that are in existence beyond their useful lives. We are assuming no salvage

value for sewer fixed assets. **Table 10** shows the calculation of the FY2000 sewer depreciation to be **$10,060**.

TABLE 10: FY2000 Sewer Depreciation Expense

Vehicle/Equipment	Purchase Price	Depreciable Cost	Useful Life	Annual Depreciation
Pump Sta., Conant	5,270	5,270	50	105
Pump Sta., Pattison	5,272	5,272	50	105
Pump Sta., Tanyard	3,800	3,800	50	76
Pump Sta., Lakeview	13,545	13,545	50	271
Pump Sta., Lyon	15,000	15,000	50	300
New Garage at Sewer Plant	11,032	11,032	50	221
Mains, gravity	162,174	162,174	50	3,243
Mains, force	22,000	22,000	50	440
Roto Rooter	3,000	3,000	10	300
Portable Generator	10,000	10,000	10	1,000
1994 Ford F350 Truck	23,994	23,994	6	3,999
TOTAL				**10,060**

Appendix 1

FY2000 Dudley Water Department Rates and Fees

Flat rate of $3.00 per 100 cubic feet (748 gallons) for all users

Fire Protection Charge Billed Semi-Annually

Fee charged to owners of all private hydrants. Charge based on size of main.

3”	$40
4”	$62
6”	$124
8”	$156

Maintenance Rate Schedule Based on Mete Size (approx. Nov. 1999):

2”	$50
4”	$50
1½”	$35
¾”	$25

Replacement and Installation of Meters

Installation of meters on new homes--$500 (if curb stop available); $1,500 (if curb stop is not available)

Water Tank Rental

A cellular phone company is charged $2001/month for rental of antenna space on Dresser Hill Road storage tank.

Late Charges

$2.50 late charge per bill ($5 late charge for water users who do not use the sewer service) and 14 percent interest per annum on bills more than 30 days delinquent.

Appendix 2

FY2000 Dudley Sewer Department Rates and Fees

Two Rates

Flat fee -- $192.81 (equals fixed costs subsidies devided by number of users). Fixed costs = $289,671

Rate -- $2.70/100 CF (equals the sewerage treatment processing cost of $440,000 divided by the previous year's cubic feet flow).

Connection Fees

$1,200 per connection (for homes included in Phase I and II, the connection fee is waived if homeowner connects within one year of sewer availability).

Fee for Dwellings without Meters Connected to Sewer

There is an $800/yr. Charge for each living unit connected to the sewer system that is not metered. This applies to homes not connected to the water system but connected to sewer. These homeowners have the option of paying the $800/yr. Fee or installing a meter at their own expense.

Late Charges

$2.50 late charge per bill ($5.00 late charge for sewer users who do not use the water service) and 14 percent interest per annum on bills more than 30 days delinquent.