WASTEWATER -- FINANCE

THE UNIVERSITY OF TENNESSEE
CENTER FOR GOVERNMENT TRAINING

P.O. Box 24180
Nashville, Tennessee 37202-4180
(615) 251-1401

LETTER TO PARTICIPANTS

Municipal governments are under constant pressure to deliver services more efficiently. As a municipal government professional you must continually evaluate your performance in terms of productivity and effectiveness to keep pace with today's demands as well as to prepare for tomorrow's challenges. You must keep up with new trends, sharpen old techniques and acquire new skill. Your participation in *The University of Tennessee Municipal Training Program* (UTMT) will help prepare you for the challenges of public service.

The UTMT program is a comprehensive certificate program focusing on six major functions necessary for the smooth operation of municipal government. The courses included in each functional area are carefully tailored to meet the needs of municipal professionals. Courses are developed and delivered through a cooperative effort with The University of Tennessee's Municipal Technical Advisory Service, the Tennessee Municipal League, its affiliate organizations and state and national resources. In addition to the knowledge and management insights you will acquire, UTMT courses provide an opportunity for you to discuss issues and share ideas with other municipal professionals. I encourage you to learn more about the UTMT program.

Today's course materials were developed by Ms. Sharon Rollins, Public Works Consultant with The University of Tennessee Municipal Technical Advisory Service. Our sincere thanks is extended to Ms. Rollins.

On behalf of the staff of the Center for Government Training. I welcome you to *The University of Tennessee Municipal Training Program*. By your participation in this course, you are joining an outstanding group of municipal professionals who realize that education is a life-long process. We applaud your commitment to public service and professional development.

Sincerely,

Patricia Davis

Patricia C. Davis
Executive Director

ELEMENTS OF A UTILITY RATE STUDY

THE UNIVERSITY OF TENNESSEE
CENTER FOR GOVERNMENT TRAINING

and the
MUNICIPAL TECHNICAL ADVISORY SERVICE

In cooperation with the
TENNESSEE MUNICIPAL LEAGUE

PARTICIPANT MANUAL
February 1992

****

ABSTRACT

How can communities protect their multi-billion dollar water and wastewater treatment investments and give citizens clean, safe water? The key lies with municipal officials' ability to acquire sufficient operating revenues.

Sound financial management allows communities to acquire the necessary revenues to maintain financially self-sufficient water and wastewater operations.

The best source of revenue for paying water and wastewater treatment costs is user fees. Unfortunately, raising user fees is one of the most dreaded actions undertaken by local officials. If is not done correctly, the resulting political backlash and public resistance can be harmful for water and wastewater operations.

The workshop will help participants establish sound financial management practices, assess the financial health of water and wastewater systems and raise revenues through increasing user fees.

ACKNOWLEDGEMENTS

This notebook was prepared by Sharon Rollins of The University of Tennessee Municipal Technical Advisory Service.

****

****

TABLE OF CONTENTS

Pages

I. Welcome, Introductions, Purposes and Agenda I.1-4

II. The Importance of Good Financial Management II.1-5

III. Principals of Good Financial Management III.1-27

IV. Evaluating User Service Charge Systems IV.1-22

V. Determining User Service Charge Rates V.1-11

VI. Selling a User Charge Increase to Customers VI.1-9

****

****

FIGURES

	Page
Figure 1 ... Operating Ratio Worksheet	III-12
Figure 2 ... Coverage Ratio Worksheet	III-13
Figure 3 ... Revenue - Budget vs. Actual	III-14
Figure 4 ... Expense - Budget vs. Actual	III-15
Figure 5 ... Capital Investment Ratio Worksheet	III-16
Figure 6 ... Financial Reporting Checklist	III-22
Figure 7 ... User Service Charges Checklist	III-23
Figure 8 ... Wastewater Expense Budget	III-26
Figure 9 ... Wastewater Revenue Budget	III-27
Figure 10 .. List the Documents Needed	IV-6
Figure 11 .. Worksheet 1 - Management/Policies/Compliance	IV-14
Figure 12 .. Worksheet 2 - Financial Information	IV-15
Figure 13 .. Worksheet 3 - Financial Information	IV-16
Figure 14 .. Worksheet 4 - Financial Information	IV-17
Figure 15 .. Worksheet 5 - User Service Charge System	IV-18
Figure 16 .. Worksheet 6 - User Service Charge System	IV-19
Figure 17 .. Worksheet 7 - Wastewater Facility Tour	IV-20
Figure 18 .. Worksheet 8 - Calculating New Rates Manually	V-8
Figure 19 .. Worksheet 9 - Calculating New Rates Manually	V-9
Figure 20 .. Worksheet 10 - Calculating New Rates Manually	V-10
Figure 21 .. Worksheet 11 - Calculating New Rates Manually	V-11

****

****

I. INTRODUCTION

A. TRAINING TEAM AND PARTICIPANT INTRODUCTIONS

B. WORKSHOP OBJECTIVES

C. WORKSHOP AGENDA

****

****

I.A. TRAINING TEAM

Staff from The University of Tennessee Municipal Technical Advisory Service (MTAS) will lead this seminar. MTAS provides technical assistance to Tennessee cities and towns in the areas of finance and accounting, law, engineering and public works and municipal management.

MTAS provides field based assistance, sponsors and administers research projects, produces publications and houses a technical reference library.

PARTICIPANTS

Your participation in this course is vital. Please feel free to share your own experiences, comments and questions during the workshop

****

****

I.B. WORKSHOP OBJECTIVES

(1) To emphasize that communities' ability to protect their investment in water and wastewater infrastructure and to maintain sound operations depends on generating sufficient operating revenues.

(2) To emphasize that the best source of revenues is user fees.

(3) To demonstrate how to determine if a financial management system is healthy.

(4) To demonstrate how to evaluate a user service charge system.

(5) To demonstrate how to determine rates through use of a computer rate model.

(6) To demonstrate how to sell a rate increase.

****

****

I.C. WORKSHOP AGENDA

8:30 - 9:00	Registration
9:00 - 9:30	Introductions and Workshop Objectives
9:30 - 9:45	The Importance of Good Financial Management
9:45 - 10:30	Principals of Good Financial Management
10:30 - 10:45	Break
10:45 - 12:00	Evaluating User Service Charge Systems
12:00 - 1:15	Lunch
1:15 - 2:15	Determining User Service Charge Rates
2:15 - 2:30	Break
2:30 - 3:30	Selling a User Charge Increase to Customers
3:30 - 4:00	Summary

****

****

II. THE IMPORTANCE OF GOOD FINANCIAL MANAGEMENT

A. WHY COMMUNITIES MUST WORK HARDER AT FINANCIAL SELF-SUFFICIENCY

B. THE IMPACT OF FINANCIAL SELF-SUFFICIENCY ON COMMUNITIES

C. WHAT COMMUNITIES MUST DO

****

****

II.A. WHY COMMUNITIES MUST WORK HARDER AT FINANCIAL SELF-SUFFICIENCY

- *The 1987 Clean Water Act amendments place more financial responsibility for wastewater facility construction on local governments.*

- *EPA grants (for facility construction) are no longer available; SRF loans are available, but the entire principal and interest must be repaid over a 20 year period.*

- *The loaners (EPA and states) must have assurance that the borrower is a good risk; i.e. they must have assurance that the borrower is able to make repayments.*

- *This leads to greater front-end scrutiny of the borrower's user charge system.*

- *User charge systems are the principal method enterprise fund operations have for raising revenues.*

- *Water and wastewater operations are usually run as enterprise funds. This means that the operations are run as a self-supporting business.*

- *The Tennessee Wastewater Facilities Act of 1987 forced fiscal self-sufficiency on municipalities who operate a wastewater facility.*

* **1987 Clean Water Act Amendments**

Out with Grants

In with SRF Loans

****

****

- *Since 1972 these amounts have been spent in the EPA Construction Grants program.*

- *All that federal and state grant money had the effect of reducing user charges by an average of 50%.*

* **$ Spent in the Wastewater Grants Program Since 1972**

Federal	**$53 Billion**
States	**$20 Billion**
Local	**$20 Billion**

****

****

II.B. IMPACT OF FINANCIAL SELF-SUFFICIENCY ON COMMUNITIES

- *An EPA study showed that 37% of the EPA wastewater funded systems are not collecting sufficient revenue from user service charges and hookup/impact fees to cover operating cost.*

- *The average shortfall in these inadequately funded systems is 25%.*

- *The Tennessee experience has been that of approximately 250 municipal wastewater systems, almost 200 have appeared before the wastewater finance board in the last 4 years because of financial problems.*

- *As communities assume more of the burden of capital projects as well as operation and maintenance costs, they must raise user charges.*

* **37% EPA wastewater funded systems experiencing shortfalls in revenue**

* **Water systems confront new monitoring costs**

- *Amendments to the Safe Drinking Water Act equate to new monitoring requirements for water systems. The associated costs will surely require those water systems to generate additional revenues.*

****

****

II.C. WHAT COMMUNITIES MUST DO

- *Communities need to undertake major tasks. They must improve financial management of their water and wastewater operations. This probably means they need to raise user service charges.*

* **Implement Financial Self-Sufficiency**

Improve Over-All Financial Management

Raise User Service Charges

****

****

III. PRINCIPLES OF GOOD FINANCIAL MANAGEMENT

A. CHECK FINANCIAL HEALTH

B. IMPROVE FINANCIAL HEALTH

C. BUILD FINANCIAL HEALTH

****

****

III. PRINCIPLES OF GOOD FINANCIAL MANAGEMENT

A. CHECK FINANCIAL HEALTH

* Introduction

- *Many people find financial terms confusing. The language of accountants and auditors is often technical and intimidating for non-accountants. But, even if you have no experience with financial terms, you already know some important basics about finance. You have certain expenses like rent, food, utilities and so forth to pay each month. You know how much money you'll earn each month. You know how to balance expenses and income. This section will present some simple financial management tools that are easy to apply to check the financial health of a water or wastewater utility.*

- *A financial health check lets you guage the health of your utility's operation, and its helps you take corrective measures to make sure your operation is self-supporting.*

* Ratios

- *Ratios are quick ways of checking on the financial health of a utility operation.*

****

****

- *There are several financial ratios which indicate different aspects of a system's financial health. Ratios can be easily calculated from the wastewater system's accounting records. This section will go through the process step-by-step.*

- *By calculating ratios every often, you can build a financial trend. This trend will provide a quick assessment of past operations in a simple, easily understood manner. Ratios can be plotted on a graph to provide a visual display of financial health over time.*

- *Trends also allow you to project what will happen next month ... the next two months and so forth. They give an early warning signal of corrective actions that you should take ... like, raising revenues or cutting expenses.*

- *Ratios can be used to compare operations of one utility with another.*

- *If your utility combines the accounting for water and wastewater operations, you will need to segregate water revenues from wastewater revenues and water expenses from wastewater expenses before calculating ratios.*

* Definitions

- *Before we begin calculating ratios, we will need to cover some basic financial terms. These terms show up on utility financial records.*

****

****

- *Revenue is system income primarily from user service charges. Operating revenues also come from special charges such as hookup and impact fees, interest income from investments, late payments, penalties and forfeited meter deposits. In some older systems, taxes and assessments are revenue sources.*

- *User Service Charge. The User Service Charge (USC) is the largest revenue source. It is the fee charged users for the collection and treatment of wastewater (or the treatment and distribution of water).*

- *Hookup/Impact Fees. Hookup fees are charges for new customers connecting to existing water and sewer lines. An impact fee is a charge, usually imposed on developers, to compensate the system for the impact of growth on the system's infrastructure.*

- *Taxes/Assessments. Taxes/assessments usually pertain to older water and wastewater systems that use property taxes or front footage assessments (or some other basis of assessment) as revenues.*

- *Interest Earnings. Interest income comes from investments like checking accounts, savings accounts and treasury bills.*

- *Other revenue sources may include sales from treatment by-products such as sludge compost, or the penalties charged for not paying the sewer bill on time.*

****

****

- *Operating Expenses are the full cost of operating your system. They include salaries and benefits, administration costs, utility costs, chemicals, supplies, equipment replacement costs, and the principal and interest payments on debt.*

- *Salaries and Benefits are the largest costs for most operations. This includes wages and fringe benefits earned by employees... regular pay, overtime, sick and annual leave, health benefits, bonuses, longevity pay and so forth.*

- *Administration Costs are the costs associated with providing facilities for conducting business, liability insurance, postage and so forth.*

- *Utilities. These costs are for utilities associated with the operation ... such as water, electricity, gas and fuel oil. Electricity keeps pumps pumping. Gas may be used for heating or perhaps in burning sludge. Water is used throughout the plant.*

- *Chemical Costs include all chemicals necessary for the operation.*

- *Equipment Replacement Costs are the costs of obtaining and installing equipment or accessories necessary to maintain the capacity and performance for which the treatment facility was designed and constructed. Some equipment such as motors will wear out and must be replaced during the life of the treatment facility. This should not be confused with normal maintenance expenses. Equipment Replacement Costs are generally included in depreciation expense. Depreciation is an estimate of how much value the utility's plant and equipment lose in a given time period.*

****

****

- *Principal and Interest. The repayment of principal and associated interest on debt are considered an operating cost. This is also called debt service costs.*

- *Supplies and Parts include lab supplies, gaskets, belts, lubricants and so forth.*

- *Other. There may be other expenses such as contracts for equipment service, engineering services and so forth.*

- *A word about what operating expenses do not include. They do not include the cost of new capital facilities such as more treatment capacity or additional lines.*

* **Operating Ratio**

- *Refer to figure 1*

- *Now, we are ready to compute the operating ratio. Operating ratio is total revenues divided by total operating expenses.*

- *An operating ratio of 1.00 is the minimum acceptable for a self-supporting utility. Anything less than an operating ratio of 1.00 spells financial trouble.*

****

****

- *Since monthly revenues and operating expenses vary widely, it's best to calculate the operating ratio on a year-to-date basis.*

- *Pay attention to the trend in operating ratios from year-to-year. A steady or upward trend in the operating ratio indicates good financial health. If the ratio trend is falling, you need to take action to get the utility back in good financial shape.*

- *Charting the operating ratio history gives a quick visual assessment of how you are doing.*

* Coverage Ratio

- *Coverage ratio measures whether the utility operation has enough revenue to pay its debt service (principal and interest) on its loans and bonds and still have enough money left to cover contingencies. Contingencies are unexpected problems. An example is a natural disaster.*

- *Lenders and bond agencies are particularly interested in the coverage ratio because it indicates whether money will be available to pay off debt service if the utility operation incurs unusual expenses.*

- *Refer to figure 2*

****

****

- *The coverage ratio is calculated by:*

  (1) Totaling all revenues received during the year, from all sources.

  (2) Totaling all NON-DEBT expenses for the year. This is all operating expenses excluding principal and interest payments.

  (3) Subtracting all non-debt operating expenses from all revenues.

  (4) Divide the result by the yearly debt service expenses.

- *Although bond requirements differ, a coverage ratio of 1.25 is common. Our example has a high coverage ratio - 1.7. This can happen when a system deliberately builds reserves prior to embarking on a big building program to improve its infrastructure.*

- *Again, the coverage ratio, like the operating ratio, is usually computed at the end of the year. It can also be charted to provide a visual aid.*

- *If the coverage ratio drops below the minimum required by the bond or loan requirements, an increase in user charges is generally needed.*

* **Budget vs. Actual Comparisons**

- *Before we start on this section, let's review a couple of points. (1) If your utility offers both water and sewer service, develop separate budgets for each service. (2) At the beginning of the budget year (this may be calendar or fiscal), prepare SEPARATE revenue and expense budgets.*

- *Refer to figure 3*

****

****

- *Budget vs. Actual comparison for revenues:*

- *The budget to actual comparison lets you see how your ACTUAL revenues and expenses compare to your BUDGETED revenues and expenses.*

- *We recommend this comparison be done often.*

- *List the amount of revenue budgeted at the beginning of the year.*

- *Next, list the amount of revenue received to date.*

- *Then divide the actual revenue received by the total budgeted. Compare that to the percentage of the year completed.*

- *For example, at the end of September we have these results:*

  Total Revenue Budgeted for year = $1,790,000

  Total Revenue received through Sept. = $424,000

  $424,000/$1,790,000 x 100% = 23.7%

  Three months (July - September) or 25% of the budget year has passed and you've collected only 23.7% of the revenues. This could be a sign that your ACTUAL revenue will not match the BUDGETED revenue for the year. There could be some reason why revenue for that particular quarter is off. One cause may be due to timing. Billing usually lags use by at least one month.

****

****

- *Also, you'll want to look at the individual revenue items to find out which ones are low and why.*

- *It is also helpful to compare the percent of budget received this period to the percentage of revenue received last year at this same time.*

- *If it seems that slow revenues will continue, then you will need corrective action.*

- *Budget vs. Actual comparison for expenses:*

- *Refer to figure 4*

- *A budget vs. actual test for expenses is similar to the one we conducted for revenues.*

- *Here our total budgeted operating expenses for the year is $1,475,000. Actual operating expenses at the end of the first quarter are $375,500.*

- *Calculate the % of budget expenses year to date:*

  $ 375,500/ $1,475,000 x 100% = 25.5%

  We are running slightly higher than expenses budgeted at this point. There may be some good reasons for this.

- *It's a good idea to compare the percentage spent with the percentage from the same time last year and to investigate individual items that are headed over budget.*

****

****

- *It is important that revenues and expenses work together. Look at both budgets. In the case above, actual revenues are lower than actual expenses, so we may be headed for trouble.*

* Capital Investment Ratio

- *Take care of your utility investment by having a healthy capital investment ratio.*
- *The capital investment ratio is a measure of how many resources the utility is putting toward improving and replacing capital assets.*
- *Capital items are components of the utility that have a long life and a substantial cost. Examples are buildings, water and sewer lines, treatment plants, major equipment and vehicles.*
- *Refer to figure 5*
- *Calculate the capital investment ratio at the end of the year by: Totaling all money spent on capital assets and dividing by the total revenues.*
- *We cannot give rules or guidelines for the capital investment ratio. It can be low for a utility with new facilities; high for ones with older facilities.*
- *It's best to judge what your capital investment ratio should be by comparing it to earlier years.*

****

OPERATING RATIO WORKSHEET

(Year to Date)

TOTAL REVENUE

User service charges	$_____
Hook-up/Impact Fees	_____
Taxes/Assessments	_____
Interest Earnings	_____
Other Revenue	_____
Total Revenue	$_____

TOTAL OPERATING EXPENSES

Administration	$_____
Wages	_____
Benefits	_____
Electricity	_____
Chemicals	_____
Fuel & Utilities	_____
Parts	_____
Equipment Replacement Fund	_____
Principal and Interest Payments	_____
Other	_____
Total Operating Expenses	$_____

OPERATING RATIO

Total Revenue		$_____
	divided by	
Total Operating Expenses		$_____
	equals	
Operating Ratio		_____

COVERAGE RATIO WORKSHEET

Total Revenue $_____

minus

Non-Debt Expenses $_____

equals

Revenue Available
for Debt Service $_____

divided by

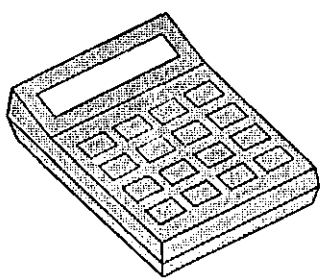
Debt Service Expenses $_____

equals

Coverage Ratio _____

Revenue
Budget vs. Actual

% of Year Completed to Date:_____	$ Budget Total	$ Received Current Year To Date	% of Budget Received Current Year To Date	% of Budget Received Last Year To Date
User Charges				
Taxes/ Assessments				
Hook-up Fees				
Impact Fees				
Interest				
Other Revenue				
Total Revenue				



Expense
Budget vs. Actual

% of Year Completed to Date:_____	$ Budget Total	$ Spent Current Year To Date	% of Budget Spent Current Year To Date	% of Budget Spent Last Year To Date
Administration				
Wages				
Benefits				
Electricity				
Chemicals				
Fuel & Utilities				
Parts				
Equipment Replacement Fund				
Principal & Interest Payments				
Other				
Total Operating Expenses				

CAPITAL INVESTMENT RATIO WORKSHEET

TOTAL CAPITAL OUTLAYS $_____

divided by

TOTAL REVENUE $_____

equals

CAPITAL INVESTMENT RATIO _____

****

III.B. IMPROVE FINANCIAL HEALTH

* Financial Reporting

- *Financial reports are a must! Without them, the manager cannot know how revenue is coming in and how many expenses are being paid out.*

- *The financial reports need to be accurate and timely. By the 10th of the month, you should have adequate financial information to guage the financial health of the previous month.*

- *Figure 6 shows a financial reporting checklist.*

- *First, ask whether water and wastewater operations are accounted in a separate enterprise fund.*

- *We've already said that water and wastewater operations need to be accounted separately. But, what's an enterprise fund?*

- *To operate as an enterprise fund means that the water or wastewater utility is operated in a manner similar to private business enterprises. The intent is that the costs of providing the service is recovered primarily through user service charges. Another way to think about it - enterprise funds are self-supporting - the user pays.*

****

****

- *Enterprise-type funds are accounted for on an accrual basis. Under accrual basis accounting, revenues are recorded when they are earned (whether or not cash is received at that time) and expenses are recorded when goods and services are received or incurred (whether cash disbursements are made at that time or not).*

- *Reports should be up-to-date for the previous month by the 10th of the following month, and records should be kept for at least 4 years.*

- *Accuracy in reporting is very important. That's why it is important to have yearly audits performed by a CPA.*

- *Certified Public Accountants (CPAs) audit in a form which conforms with Generally Accepted Accounting Principles (GAAP). We have used a simplified approach here.*

* **User Service Charge Systems**

- *The following discussion applies to wastewater user service charge systems. The same principles are applicable for water systems.*

- *By now, you realize that the health of the user service charge system is crucial to the entire utility operation.*

- *As we've already mentioned, the user service charge is the central and most important piece of a utility's revenue puzzle.*

- *It usually accounts for 80-90% of a utility's total revenues.*

****

****

- *Figure 7 shows some characteristics of a good user service charge system.*
- *Are costs identified?*
- *Are costs allocated proportional to use?*
- *What are the flow characteristics for each customer's class?*
- *Is each customers' use known?*
- *Are customers billed proportional to use?*
- *Does the billing cycle provide timely revenues?*
- *Do your procedures assure collection of delinquent bills?*
- *The rate (along with other minor revenue sources) must cover the FULL cost of providing the service.*
- *For wastewater, the user service charge should charge each user their proportionate share of the operation, maintenance, and depreciation (including equipment replacement) costs based on quantity and quality of discharge. If the discharge from all users is substantially equal - as expected from residential customers - then user fees would be based on the volume of wastewater.*
- *But, for commercial and industrial users who discharge high-strength waste, a surcharge should be imposed.*

****

****

- *Know the basis for assessing the customer's use. Wastewater is usually not metered for residential and commercial usage. Normally, usage is based on water meter readings. It may be necessary to adjust water meter readings for water not discharged to the sanitary sewer system. If meters are not used, usage may be a uniform flat charge or based on equivalent dwelling units.*

* **User Service Charge Structures.**

- *Look at the user service charge structure. Are the customers billed proportional to use?*

- *A commonly used rate structure is the uniform flat rate - customers pay the same fee regardless of quantity of use. This is only used on systems where no water meters are available. As you can readily see this structure is unfair. The user will either be paying too much or too little. This structure promotes waste.*

- *The single block rate is recommended. In this structure, each customer pays a minimum bill + a charge per 1,000 gallons (or c.f.) This system is fair because the charge for the service is in direct portion to usage. (Don't forget high strength dischargers have a surcharge added to the usage bill).*

- *The main features of the single block rate structure are a minimum bill + a charge per 1,000 gallons (or c.f.) The minimum bill covers the cost of billing (preparing the bill and postage). The total treatment rate (for wastewater) equals total costs for operation, maintenance, equipment replacement and debt service divided by total volume of treated wastewater.*

****

****

- *Another structure is the decreasing block rate - where the price of usage declines as the amount used increases. The decreasing block rate discourages conservation.*

- *And increasing block rate is where the price of usage increases as the amount used increases. The increasing block rate encourages conservation.*

- *Customers accept rates that they view as fair and equal without any special rates for specific customers. This describes a uniform rate structure.*

* Key Elements of a User Service Charge System for Wastewater

- *The user service charge should include the costs of transporting and treating inflow/infiltration. When I/I costs cannot be assigned to any particular user or user category, the costs are distributed proportionally among all users. Collect surcharges for high strength wastes. A formula for this charge can be developed.*

- *The key to a good billing and collection system is to make sure that user service charges are collected very soon after providing the service. Time is money!*

- *Establish a policy for collecting delinquent bills. This policy needs to be written; be fair to both the utility and the customers, enforced and tracked.*

- *Remember, user service charges have a short life span. Examine your user service charge yearly and adjust if needed. Keep customers informed at least annually of the current rate structure.*

****

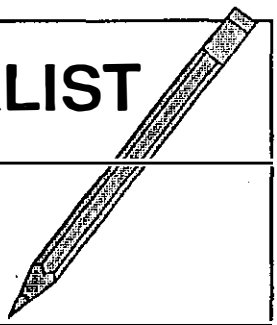
FINANCIAL REPORTING CHECKLIST

Is this done at your utility?

	Yes	No	Unsure
Water and wastewater operations are accounted for in separate *enterprise funds.*			
Each utility uses *accrual accounting* methods.			
Each utility receives monthly reports of revenues and expenses.			
Reports show both budget and actual figures.			
Reports arrive by the 10th day of the following month.			
The utility keeps its financial reports for at least four years.			

USER SERVICE CHARGES CHECKLIST

Is this done at your utility?



	Yes	No	Unsure
All costs are identified.			
Costs are allocated proportionately based on use.			
Flow characteristics are known for each customer class.			
Each customer's use is known or fairly estimated.			
Customers are billed proportionately to use.			
Billing cycle provides timely revenues.			
Established procedures assure collection of delinquent bills.			

****

III.C. BUILD FINANCIAL HEALTH

* Improve Budgeting

- *You can build better financial health through improved budgeting for the utility.*

- *The key to good budgeting is to have a thorough understanding of the demands on the utility and the way the utility meets those demands.*

- *Be involved in preparing and using the budget. Then you will have a better understanding of it.*

- *Think of a budget as a financial road map.*

- *We've already discussed the importance of comparing the projected budget to the actual budget at the end of every month. But, how do you prepare a budget?*

- *Start preparing the budget for next fiscal year about 3 months before the end of this fiscal year.*

- *For the expense budget: establish the required debt service costs and reserves. The debt service costs are the annual principal and interest payments on loans and bonds. The debt service reserve are funds set aside to provide additional security for a debt obligation. The amount needed for this purpose is generally specified in loan and bond agreements. The debt service reserve is in addition to your loan repayment.*

- *See figure 8*

****

****

- *Next, establish the depreciation (equipment replacement fund) level.*

- *Next, estimate the cost of operating the system. This includes salaries, benefits, chemicals, utilities and administrative costs.*

- *Refer to figure 9*

- *For the revenue budget, try to estimate revenues as accurately as you can. When in doubt, estimate revenues low and expenses high.*

- *Let's take another look at the main revenue and expense components of your utility budget.*

* **Long Range Budgeting**

- *Don't just think short-term or year-to-year. You'll need to develop capital planning skills to build future improvements.*

- *Capital projects are things like new plants or plant expansions, new line extensions, sewer line rehabilitation and so forth.*

- *Capital planning involves figuring out needed improvements; establishing timetables; and developing a financing plan to fund the improvements.*

****

Figure 8

WASTEWATER EXPENSE BUDGET
199____

ADMINISTRATION	$_____
WAGES	$_____
BENEFITS	$_____
ELECTRICITY	$_____
CHEMICALS	$_____
FUEL AND UTILITIES	$_____
PARTS	$_____
EQUIPMENT REPLACEMENT FUND	$_____
PRINCIPAL AND INTEREST PAYMENTS	$_____
OTHER	$_____
TOTAL OPERATING EXPENSES	$_____

WASTEWATER REVENUE BUDGET
199___

USER SERVICE CHARGES	$_____
HOOK-UP/IMPACT FEES	$_____
TAXES/ASSESSMENTS	$_____
INTEREST EARNINGS	$_____
OTHER	$_____
TOTAL REVENUE	**$_____**

****

IV. EVALUATING USER SERVICE CHARGE SYSTEMS FOR WASTEWATER

A. EVALUATING REVENUES AND EXPENSES

B. THE EVALUATION PROCESS

C. USER SERVICE CHARGE WORKSHEETS

D. SUMMARIZE FINDINGS

****

****

IV.A. EVALUATING REVENUES AND EXPENSES

- *Let's review. Our main objective here is to make sure water and wastewater utilities are financially self-sufficient.*
- *We've just defined and discussed the revenue components of a utility operation. They are:*

* **User Service Charge - the largest component**
* **Hookup/Impact Fees**
* **Taxes and Assessments**
* **Interest Earnings**
* **Other**

- *Likewise, we've defined and discussed these expense components. They are:*

* **Salaries and Benefits - the largest component**
* **Utilities**
* **Chemicals**
* **Equipment Replacement Costs**
* **Administrative**
* **Other Expenses**

****

****

IV.B. THE EVALUATION PROCESS

1. **Understand Why Evaluation of the User Service Charge System is Important**

2. **Gather Information**

3. **Decide What You Want to Accomplish**

4. **The Review**

****

****

IV.B. THE EVALUATION PROCESS

1. Understand Why Evaluation of the User Service Charge System is Important

- *Now we will apply our knowledge of financial management and user charges. We will evaluate the user charge components of a utility's financial management system. This is the major revenue generating system for the utility.*

- *To do this, clearly defined goals you want the evaluation to accomplish. Two major goals would be - Is enough money coming in to pay for expenses? Do user rates need to be adjusted?*

- *Primarily you want to check the financial health of the system. To do this, you will need to use the ratios and checklists previously discussed as well as other financial documents.*

- *List ratios, financial health checks and documents you'll need to see.*

- *Your purpose is to determine whether the operation is financially sound. You must probe, gather information and become very familiar with the operation to determine this. You will need to research the audit reports, budgets and other financial statements of the utility, the debt service schedules, the rate schedule, management policies and ordinances, talk to the staff and visit the facilities.*

- *You will need to size up what's right and what needs improving in this operation. Try to be objective. Look at the operation like an outsider would.*

- *It's wiser to do a self-evaluation and make your own adjustments rather than be in a position of having to react to a state or federal evaluation.*

****

****

2. Gather Information

- *Make a list of records to review. For instance, you will need the most recent audit report, the current budget, current year-to-date revenues, current year-to-date expenses, the water/wastewater rate schedule, the sewer use ordinance, debt service schedules and contracts with other utilities. See figure 10.*

3. Decide What You Want to Accomplish

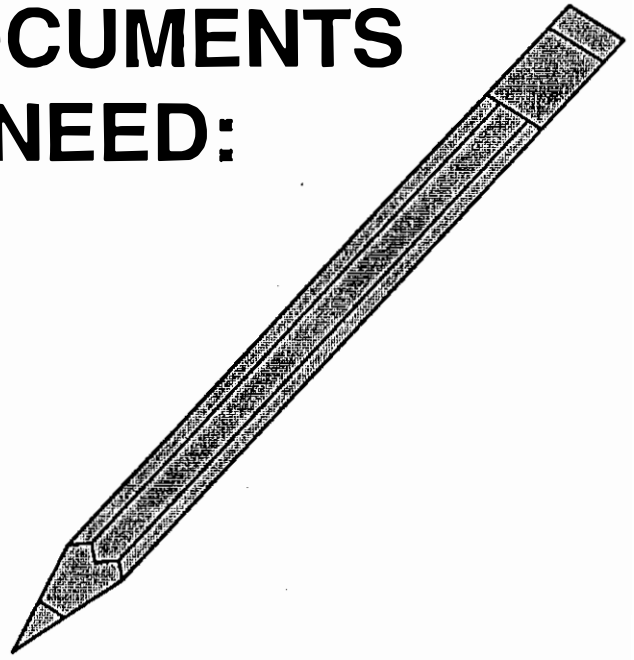
- *You main purpose is to determine whether the operation is financially sound. In order to do that, you'll have to probe and gather specific clues to reach a conclusion.*

4. The Review

- *Use the checklists and worksheets; information gained during conversations with staff; and what you observed at the treatment facility.*

****

LIST THE DOCUMENTS YOU'LL NEED:



Most recent audit

Current budget

Current year-to-date revenues and expenses

Rate schedule

Sewer use ordinance

Contracts with other utilities

Debt service schedules

****

IV.C. USER SERVICE CHARGE WORKSHEETS

* **Management/Operating Policies/Compliance**

  Worksheet 1

* **Financial Information**

  Worksheets 2-4

* **User Service Charge System**

  Worksheets 5-6

* **Wastewater Facility Tour**

  Worksheet 7

****

****

IV.C. USER SERVICE CHARGE WORKSHEETS

* Management/Operating Policies/Compliance

Worksheet 1

- *Enforcement Activity*

- *City officials need to be familiar with the compliance status of the utility operation. Talk to managers and superintendents and check correspondence files to determine if the utility has any outstanding permit violations or compliance problems. If violations have occurred within the last 12 months, find out what they were. Are they recurring? How were they solved? Find out when the last regulatory inspection was performed and the outcome.*

- *Talk with your staff. Discuss any violations of the NPDES permit or any drinking water violations within the last 12 months. Find out the nature of the violations. Were they recurring? Have they been solved? How serious were the violations? Have fines been levied?*

- *Did insufficient operating revenues contribute to the violations?*

****

****

- *Accounting Reports*

- *Find out whether the utility receives monthly accounting reports for wastewater revenues and expenses. Look at them.*

- *Written Policies and Procedures*

- *Find out whether the utility has a sewer use or pretreatment ordinance. Are there written policies and procedures for collecting delinquent bills, service cut-off, meter testing, line extensions and so forth. Find out how long since they were updated.*

- *Organizational Structure*

- *Look at the system's organizational structure. Is there a direct line of authority and responsibility?*

- *Think of the problem situations like these present: (1) A superintendent is responsible for keeping enough chemicals on hand to operate the treatment facility, but he does not have the authority to originate purchase orders for those chemicals; (2) A manager is responsible for operating the treatment facility, but the manager does not have authority to conduct performance evaluations or decide on disciplinary actions and merit increases for the employees.*

- *Management Climate*

- *What kind of work environment does management foster? Are workers generally satisfied? Does management delegate? What is the turnover rate? Do people like working here? Why? Why not? Be objective!*

****

****

* **Financial Information**

Worksheets 2-4

- *First, look for separate budgets for revenues and expenses. The budget should show separate line items. Of course the water and wastewater budgets should be separate from other governmental utility budgets like garbage disposal.*

- *What are the total annual budgeted REVENUES for the wastewater operation?*

- *What are the total annual budgeted EXPENSES for the wastewater operation?*

- *Next, what are the actual revenues to date?*

- *How do they compare with budgeted revenues to date? You will need the latest revenues report for this comparison.*

- *What are actual expenses to date? How do they compare with budgeted expenses? You will need the latest expense report for this comparison.*

- *Simply subtract total operating expenses from total revenues to determine if the utility operation has a cash flow problem.*

- *Does the utility have a plan (or reserves) to cover a revenue deficit?*

- *The utility should review user service charges annually and adjust them to reflect expenses. Do they?*

- *An equipment replacement fund is very important. Does your utility have a line item in your budget for this expense? Are funds set aside for depreciation?*

****

****

- *What percentage of OM&R funds are set aside for equipment replacement?*

- *ERF (%) = ERF Costs/(Total Operating Expenses) - (P&I Payments) X 100%*

- *Finally, does a certified public accounting firm review the utility accounts?*

* **User Service Charge System**

Worksheets 5-6

- *Take a close look at the rate schedule, sewer use ordinance and policy manual.*

- *Does the rate schedule specify a minimum charge?*

- *Does the rate schedule specify a uniform rate based on volume of usage?*

- *Are the costs of collection and treatment shared proportionally by each user group?*

- *Are users notified annually of the rates? How?*

- *Find out how the costs for treating I/I are covered. Are they distributed proportionally to each user group?*

- *Compute the treatment rate cost.*

- *How does your utility determine usage? Water meters? Other?*

****

****

- *Does the Sewer Use Ordinance and rate schedule provide for surcharges?*
- *How does the utility determine surcharges? Based on what measurement?*
- *What does a typical customer in this community pay per month?*
- *Find whether the bills are separated by service. Is the water bill separated from the wastewater? the garbage pick-up?*
- *Are there contractual agreements between the treating utility and other political jurisdictions served by the utility? For example: do users outside the utility's political boundary pay the same rate as inside users? Do those outside jurisdictions have proportional rate schedules?*

* **Wastewater Facility Tour**

Worksheet 7

- *Tour your town's treatment facility, starting at the head of the plant.*
- *As you walk through, notice the state of repair, maintenance, and cleanliness. Is the concrete cracking? Do handrails need painting? Are pumps leaking? Is the chemical feed area neat? Is the fan working in the chlorine feed room? How are the treatment processes performing? Are the operators knowledgeable of the treatment processes?*

****

****

- *Is the laboratory clean and organized?*

- *Is the facility adequately staffed?*

- *Are the operators certified? Do they receive training periodically?*

- *Summary*

- *At the end of the evaluation, summarize*

  (a) List the findings
  (b) Outline an action plan for solving problems
  (c) Follow-up
  (d) Communicate

****

Figure 11

Worksheet-1

Utility/Community Name: _____

Name of Local Contact: _____

Telephone Number: (_____) _____ Date _____

User Service Charge Worksheet

Management/Operating Policies/Compliance

1. Describe any NPDES permit violation(s) which occurred within the last 12 months and the reason(s) for the violation(s).

2. Did insufficient operating revenues contribute to the NPDES violation(s)?

Yes ☐ No ☐

3. Does the utility receive monthly accounting reports for wastewater revenues and expenses?

Yes ☐ No ☐

4. Does the utility have a pretreatment ordinance?

Yes ☐ No ☐

5. Does the organizational structure of the wastewater utility present any operational problems?

Yes ☐ No ☐

6. What is the annual personnel turnover rate?

☐

7. Are the procedures for collecting delinquent wastewater bills adequate?

Yes ☐ No ☐

Worksheet-2

Figure 12

Financial Information

1. Does the wastewater budget show revenues and expenses by line item? (Note: The wastewater budget should be separate from other governmental utility budgets like water, garbage disposal, etc.)

Yes ☐ No ☐

2. What are the total annual budgeted revenues for the wastewater operation?

TOTAL BUDGETED REVENUES	
	$
User service charges	
Hookup/impact fees	
Taxes/assessments	
Interest earnings	
Other	
Total Budgeted Revenues	

3. What are the total annual budgeted expenses for the wastewater operation?

TOTAL BUDGETED OPERATING EXPENSES	
	$
Salaries and benefits	
Utilities	
Equipment replacement fund	
Chemicals	
Supplies and parts	
Contract services	
Administration	
Principal and interest payments	
Other	
Total Budgeted Operating Expenses	

4. What are actual revenues to date? How do they compare with budgeted revenues to date?

BUDGETED REVENUES VS. ACTUAL		
	$ Budgeted	$ Actual
Total Revenues		

5. What are actual expenses to date? How do they compare with budgeted expenses to date?

BUDGETED EXPENSES VS. ACTUAL		
	$ Budgeted	$ Actual
Total Operating Expenses		

6. Does the wastewater utility show a cash flow problem?

Yes ____ **No** ____

ACTUAL REVENUES & EXPENSES	
	$
Total Revenues	
Total Operating Expenses (-)	
Cash Available	

7. How does the utility cover a revenue deficit?

Figure 14

8. Does the utility review user service charges and adjust them annually to reflect budgeted or actual expenses?

Yes ☐ No ☐

9. Does the utility have an equipment replacement fund (ERF)?

Yes ☐ No ☐

10. What percentage of operation, maintenance and equipment replacement funds are set aside for equipment replacement?

$$\text{Equipment Replacement Fund (ERF) (\%)} = \frac{\text{ERF Costs}}{\text{(Total Operating Expenses) - (P\&I Payments)}} \times 100\%$$

ERF (%) = _____

11. Does a certified public accounting firm review the utility accounts?

Yes ☐ No ☐

Figure 15
Worksheet-5

User Service Charge System

1. Does the utility distribute the wastewater collection and treatment costs proportionally to each user, user class or political jurisdiction?

Yes ☐ No ☐

2. Does the utility use a sewer use ordinance that incorporates a proportionate wastewater rate schedule? (Attach a copy.)

Yes ☐ No ☐

3. Does the utility distribute the I/I costs proportionally to each user, user class or political jurisdiction?

Yes ☐ No ☐

4. Does the rate schedule specify a uniform rate for wastewater treatment based on the volume of usage?

Rate = $ ☐ /1000 gal Yes ☐ No ☐

5. Does the rate schedule provide for a minimum charge?

Yes ☐ No ☐

6. What is the minimum charge?

$ ☐

7. Are customers notified annually of the wastewater rates?

Yes ☐ No ☐

8. What is the actual total operation, maintenance, equipment replacement and debt service costs per 1000 gallons of wastewater treated by the utility?

$$\text{Treatment Rate} = \frac{\text{OM\&R + Debt Service Costs}}{\text{Total Flow}} = \$ \square \text{ /1000 gal}$$

Worksheet-6

Figure 16

9. How does the utility determine wastewater user fees? (Check one)

   Water meter readings? ☐

   Equivalent dwelling unit? ☐

   Other? (Specify) ☐ _____

10. Does the rate schedule specify surcharges for high-strength wastes?

   Yes ☐ **No** ☐

11. How does the utility determine surcharges?

12. What is the average annual wastewater bill for a typical residential user?

   $ _____

13. Are users billed separately for wastewater services?

   Yes ☐ **No** ☐

14. Do all political jurisdictions served by the utility have a sewer use ordinance which incorporates a proportional wastewater rate schedule?

   Yes ☐ **No** ☐

15. Do users outside the utility's political boundary pay the same rate as inside users?

   Yes ☐ **No** ☐

16. Do all serviced political jurisdictions meet the same user service charge system conditions as the wastewater treating utility? (If No, describe.)

   Yes ☐ **No** ☐

Figure 17

Worksheet-7

Wastewater Facility Tour

1. What is the current average flow treated at the facility (gallons per day)? _____ gpd

2. Does the facility appear to operate normally? Yes No

3. Is any equipment out of service? (Specify)

Yes No

4. Does maintenance appear satisfactory? Yes No

5. Is good housekeeping evident? Yes No

6. Is the laboratory clean and well-organized? Yes No

7. Are adequate chemicals, supplies and parts on hand?

Yes No

8. Is staffing adequate for the operation? Yes No

9. Are operators certified? Yes No

10. Does the staff receive formal training? Yes No

11. Do operational and compliance records appear adequate?

Yes No

12. Note other comments or problems:

****

IV.D. SUMMARIZE FINDINGS

* **Cite Problems**

* **Recommend Solutions**

* **Follow-up**

****

****

IV.D. SUMMARIZE FINDINGS

* **Cite Problems**

- *Review the problems you noted during the evaluation:*

- *Worksheet 1*

- *Worksheets 2-4*

- *Worksheets 5-6*

- *Worksheet 7*

****

****

V. DETERMINING USER SERVICE CHARGE RATES

A. GETTING STARTED

B. CALCULATE USER CHARGES

****

****

V.A. GETTING STARTED

- *Before determining what your utility's user service charge rates should be, you'll have to gather some information. Most of this information has already been discussed.*

- *Financial Statement*

- *From the latest fiscal year financial statement, obtain all wastewater collection and treatment expenses.*

- *Current User Service Charge Rate Schedule*

- *Next, gather information on the current rate schedule used to bill customers. Usually wastewater usage is based on metered water usage.*

- *Determine the breakdown by class of user - residential, commercial or industrial.*

- *Total Wastewater Collected and Treated*

- *Next, you will need to gather information on the total annual flow (expressed in gallons) through the treatment plant for the same 12 month period covered by the financial statement.*

- *This information can be obtained from wastewater plant meter readings.*

- *Total Annual Influent BOD and SS*

- *Information on annual pounds of biochemical oxygen demand (BOD) and suspended solids (SS) treated by the plant over the same 12 month period can be obtained from treatment plant records.*

****

****

V.B. CALCULATE USER CHARGES

- *UT/MTAS has developed a computer program which uses the information outlined above to help calculate user service charge rates. The computer program is easy to use. It can be used by those who are not proficient in computer operations, and it comes with a step-by-step instruction manual. The computer program requires an IBM-PC or PS/2 compatible computer.*

- *A major advantage of using the computer model is that assumptions can be easily changed.*

- *Step 1*

- *Gather the information mentioned above: financial statements, the current rate schedule, total wastewater treated, influent biochemical oxygen demand and suspended solids and usage by customer classification.*

****

****

- *Step 2*

(1) Current rate structure:

Minimum bill = $2.50

Total Gal Treated		
From	*To*	*Rate per 1000 gallons*
0	*2,000*	*$3.50*
2,001	*5,000*	*3.50*
5,001	*10,000*	*3.50*
10,001	*25,000*	*3.50*
25,001	*100,000*	*3.50*
100,001	*over*	*3.50*

- *(2) Expenses are as previously covered.*

Administration	*= $125,000*
Wages and Fringe Benefits	*= $450,000*
Electricity, fuel and utilities	*= $175,000*
Chemicals and parts	*= $ 50,000*
Equipment replacement fund	*= $200,000*
Principal and interest payments	*= $450,000*
Other	*= $ 25,000*

Total expenses are $1,475,000

- *Record total expenses on line 26, figure 20.*

****

****

- *(3) Revenues other than user charges are:*

Connection and impact fees	*= $25,000*
Taxes/assessments	*= $10,000*
Interest	*= $50,000*
Other	*= $ 5,000*
Minimum service fee	*= $20,000*

Total revenue (other than user charges) = $110,000

- *Record total (other) revenue on line 27, figure 20.*

- *(4) Total annual wastewater flow through the treatment plant is: 700,000,000 gallons.*

annual residential metered water flow	*= 250,000,000 gallons*
annual commercial metered water flow	*= 100,000,000 gallons*
annual industrial metered water flow	*= 150,000,000 gallons*
annual total metered water flow	*= 500,000,000 gallons*
annual total wastewater plant flow	*= 700,000,000 gallons*

- *Record flow information on lines 1-4a, figure 18.*

- *(5) Normal and actual BOD and SS loadings*

- *Normal BOD and SS loadings are 0.229 lbs/100 gallons. For 500,000,000 flow, this is 0.229 lbs/100 gallons x 500,000,000 = 1,147,000 lbs. BOD and SS annually. Record this on lines 13 and 17, figure 19.*

- *Actual measured BOD is 2,200,000 lbs./year.*

- *Actual measured SS is 2,200,000 lbs./year.*

- *Record actual BOD and SS on lines 12 and 16, figure 19.*

****

****

- *Excess BOD and SS = 2,200,000*
  - 1,147,000

  1,053,000 lbs.

- *Record excess BOD and SS on lines 14 and 18, figure 19.*

- *Percentage excess BOD and SS = 1,053,000/1,147,000 X 100% = 91.8% In other words, the treatment plant receives almost two times the BOD and SS loadings normally generated by residential users.*

- *This is also calculated by using lines 12-19 of figure 19.*

- *Step 3*

  Rate Calculations

- *Continue with lines 26-30 of the worksheet. We stated previously: total expenses are $1,475,000; total other revenues are $110,000; net expenses are $1,475,000 - $110,000 = $1,365,000.*

- *Line 29 is thousands of gallons of wastewater = 700,000,000/1,000 = 700,000. Lines 15 and 19 were both 91.8%.*

- *Fill in lines 31 and 32 of the worksheet. Calculate the portion of treatment costs attributable to normal strength wastewater:*

  100 / (100 + 91.8) = 52.1%

- *The portion attributable to excess BOD (or SS) = 100% - 52.1% = 47.9%*

- *Actual wastewater rate (per 1,000 gallons) = ($1,365,000 x .521) / 700,000 = $1.02/1,000 gal.*

****

****

- *New user service charge rate, including infiltration/inflow (per 1,000 gallons) = $1.02 x (700,000,000 / 500,000,000) = $1.43 / 1,000 gallons.*

- *Thus, a 7,000 gal./mo. residential user would pay 7 x $1.43 = $10.01.*

- *Actual Industrial Surcharge Rate (per 1,000 gallons) = ($1,365,000 x .479) / 150,000 = $4.36/1,000 gal.*

- *New industrial wastewater surcharge rate, including infiltration/inflow (per 1,000 gallons) = $4.36 x (700,000,000 gal/ 500,000,000 gal) = $6.10/1,000 gallons.*

- *Total new industrial wastewater surcharge rate = $1.43 + $6.10 = $7.53*

- *Thus a 100,000 gal/mo industrial user would pay $7.53 x 100 = $753/mo.*

- *Refer to figure 21. Calculate lines 31-34b.*

- *Recall, that in section IV, we used the wastewater user service charge rate of $3.50/1000 gallons for all customers (residential and industrial). We calculated the monthly charge for an average 7,000 gallons/mo. residential was $24.50. Add the minimum bill of $2.50 and this is $27.00/mo.*

- *Here, we just calculated the average monthly bill for the same 7,000 gallons/mo. residential user at $10.01. Add minimum bill and this is $12.51.*

- *Since our example system has not implemented a surcharge for excess BOD and suspended solids, industries got a break in the cost of wastewater treatment. Guess who picked up the tab for the remainder? The residential (and commercial) users.*

- *This system needs to implement its sewer use ordinance and equitably distribute the costs of O&M among customers.*

****

How the Program Works and Calculating New Rates Manually

The *Lotus* 1-2-3 program which calculates your wastewater user service charges is designed to minimize the time and effort required for this task. If you wish to gain a more complete understanding of the program, the following worksheet describes how the program calculates the user service charge rates. You can use the step-by-step worksheet to manually calculate new user rates if you don't have access to an IBM-compatible computer with *Lotus* 1-2-3.

If you meter fresh water, fill in items 1 through 4a.
If you don't meter fresh water, enter only items 3 and 4a.

Annual Residential Metered Water Flow (gallons)	_____	1
Annual Commercial/Institutional Metered Water Flow (gallons)	_____	2
Annual Industrial Metered Water Flow or Wastewater Flow (gallons)	_____	3
Total Annual Metered Water Flow (1+2+3)	_____	4
Total Annual Wastewater Flow	_____	4a

If you don't meter fresh water, fill in Items 5 - 11.

Type of Unit	Number of Units	EDUs per unit	Total EDUs (Units x EDUs per)	
Single family residences	_____	1.00	_____	5
Apartments (1-2 bedrooms)	_____	0.75	_____	6
Apartments (3+ bedrooms)	_____	1.00	_____	7
Commercial/Institutional	_____	2.50	_____	8
Restaurants and taverns	_____	10.00	_____	9
Industries	_____			
Grand Total EDUs (5+6+7+8+9)			_____	10

Non-Industrial Wastewater Flow
[Item 4a *minus* Item 3] _____ 11

For both metered and unmetered systems, fill in Items 12 - 19, and 20 - 23 or 26 - 32.

Total Annual Influent BOD (pounds) _____ 12

Calculate Normal Annual Influent BOD (pounds)
[Item 4a *times* .002294 pounds per gallon] _____ 13

Calculate Excess BOD
[Item 12 *minus* Item 13] If Item 12 is less than Item 13, enter 0. _____ 14

Percentage Excess BOD
[(Item 14 *divided by* Item 13) x 100] _____ 15

Total Annual Influent SS (pounds) _____ 16

Calculate Normal Annual Influent SS (pounds)
[Item 4a *times* .002294 pounds per gallon] _____ 17

Calculate Excess SS
[Item 16 *minus* Item 17] If Item 16 is less than Item 17, enter 0. _____ 18

Percentage Excess SS
[(Item 18 *divided by* Item 17) *times* 100] _____ 19

If both Items 15 and 19 equal zero, then complete Items 20 through 23 and the appropriate metered item (24) or unmetered items (25 through 25e).

Total Expenses (see pages 11-16) _____ 20

Other Revenue (see pages 17-18) _____ 21

Net Expenses [Item 20 *minus* Item 21] _____ 22

1,000s of Gallons Wastewater [Item 4a *divided by* 1,000] _____ 23

Metered Water

Actual Wastewater Rate (per 1,000 gallons)
[Item 22 *divided by* Item 23] _____ 24

New User Service Charge Rate (per 1,000 gallons)
[Item 24 *times* (Item 4a *divided by* Item 4)] _____ 24a

Unmetered Water

New User Service Charge Rate (per 1,000 gallons)
[Item 22 *divided by* Item 23] _____ 25

Residential, per month
[((Item 11 *divided by* 12,000) *divided by* Item 10)
times Item 25] _____ 25a

Apartments, 1-2 bedroom, per month
[Item 25a *times* 0.75] _____ 25b

Apartments, 3+ bedrooms, per month)
[Item 25a *times* 1.00] _____ 25c

Commercial/Institutional, per month
[Item 25a *times* 2.50] _____ 25d

Restaurants/Taverns, per month
[Item 25a *times* 10.00] _____ 25e

If either item 15 or 19 is greater than zero, then complete Items 26 through 32 and the appropriate metered items (33 through 34b) or unmetered items (35 through 36a).

Total Expenses (see pages 11-16) _____ 26

Other Revenue (see pages 17-18) _____ 27

Net Expenses [Item 26 *minus* Item 27] _____ 28

1,000s of Gallons Wastewater [Item 4a *divided by* 1,000] _____ 29

Enter Item 15 or 19, whichever is greater _____ % 30

Portion of Treatment Costs Attributable to
Normal Strength Wastewater
[100 *divided by* (100 *plus* Item 30)] _____ 31

Portion of Treatment Costs
Attributable to Excess BOD or SS
[Item 30 *divided by* (100 *plus* Item 30)] _____ 32

Metered Water

Actual Wastewater Rate (per 1,000 gallons)
[(Item 28 *times* Item 31) *divided by* Item 29] _____ 33

New User Service Charge Rate (per 1,000 gallons)
[Item 33 *times* (Item 4a *divided by* Item 4)] _____ 33a

Actual Industrial Wastewater
Surcharge Rate (per 1,000 gallons)
[(Item 28 *times* Item 32) *divided by* (Item 3 *divided by* 1,000)] _____ 34

New Industrial Wastewater
Surcharge Rate (per 1,000 gallons)
[Item 34 *times* (Item 4a *divided by* Item 4)] _____ 34a

Total New Industrial User Service Charge Rate
(per 1,000 gallons) [Item 33a *plus* Item 34a] _____ 34b

Unmetered Water

New User Service Charge Rate (per 1,000 gallons)
[(Item 28 *times* Item 31) *divided by* Item 29] _____ 35

Residential, per month
[((Item 11 *divided by* 12,000) *divided by* Item 10)
times Item 35] _____ 35a

Apartments, 1-2 bedroom, per month
[Item 35a *times* 0.75] _____ 35b

Apartments, 3+ bedrooms, per month
[Item 35a *times* 1.00] _____ 35c

Commercial/Institutional, per month
[Item 35a *times* 2.50] _____ 35d

Restaurants/Taverns, per month
[Item 35a *times* 10.00] _____ 35e

New Industrial Wastewater
Surcharge Rate (per 1,000 gallons)
[(Item 28 *times* Item 32) *divided by* (Item 3 *divided by* 1,000)] _____ 36

Total New Industrial User Service Charge Rate
(per 1,000 gallons) [Item 35 *plus* Item 36] _____ 36a

****

VI. SELLING A USER CHARGE INCREASE TO CUSTOMERS

A. A GOOD PUBLIC EDUCATION PROGRAM IS THE KEY TO SUCCESS

B. HOW DO YOU CONDUCT A PUBLIC EDUCATION CAMPAIGN?

C. ONCE YOU'VE INCREASED USER CHARGES, HOW DO YOU KEEP ON TRACK?

****

****

VI.A. A GOOD PUBLIC EDUCATION PROGRAM IS THE KEY TO SUCCESS

* **Many Water and Wastewater Operations Are Facing Very Serious Financial Problems**

* **Improving Overall Financial Management is a Way Out of Those Problems**

* **The Difference Between Suicide and Success is PUBLIC EDUCATION!**

- *How can you tell whether your public education is successful? Two tests are:*
  - *(1) Little or no public opposition*
  - *(2) Higher user charges are not an election issue*

****

****

VI.B. HOW DO YOU CONDUCT A PUBLIC EDUCATION CAMPAIGN?

* **Plan Ahead**

Think Through What You've Been Doing and Why

- *Successful public education programs do not just happen. Like anything worthwhile - they require time and effort.*

- *Start early and think through your operation. What's right with it and what needs improvement.*

- *Ask yourself - Are we really managing well here? Is management top-heavy? Can operating costs be cut? Do we let past due accounts slide? You may need an outside expert to help evaluate your operation.*

Decide on Other Steps to Take

- *Initiate water conservation practices.*

- *Shape the workers into a leaner, team-oriented group.*

****

****

* Get Ready to Meet the Public

- *Take photos of facilities, equipment and people. These visuals will help later.*
- *Document the improvements you have made.*
- *Document the remaining needs.*

* Budget for the Public Education Program

- *The size of the budget will depend on the objectives.*

Staff

- *You may use existing staff who take on additional duties to put together the educational program; or, you may hire someone for these responsibilities or use outside consultants.*

Materials and Services

- *Budget for brochures, posters, slides, videos, advertisements and other promotional items.*

Overhead

- *Don't forget about budgeting for postage, office space, and supplies. If your public education program is small, these may be absorbed into the existing operating budget.*

****

****

* **Shape the Message**

What Do you Want To Say?

- *Establish the value. People are willing to pay a fair price for something they value. Tell users what they are getting for their money.*

- *Describe and emphasize the benefits. Had any recent construction or major repairs? Show them! Highlight activities which increased efficiency.*

- *Give cost comparisons. How does the wastewater user charge compare with the cost of cable TV? the cost of basic phone service?*

- *Link community growth and economic development to wastewater treatment services. Did your town attract a new industry because adequate sewerage services were available?*

- *Emphasize increased property values. Having sewer service is an asset. Just ask someone who has to rely on a failing septic tank/drainfield system.*

- *Discuss public health benefits of eliminating water borne diseases and providing a clean environment.*

- *Think through the objectives -- increase revenue to issue bonds, to construct new facilities, to establish public trust and support. Different objectives will require different approaches. Will this be an on-going program?*

- *Money and snazzy graphics aren't enough. Your message is what will convince your audience. Be honest and straightforward!*

****

****

* **What Methods Will be Used?**

- *How can you best convey the message? Will meetings do it? Plant tours for certain groups? Technical reports? Newspaper advertising? TV?*

- *Think about methods, objectives, budget, the spokesperson and time frame considerations.*

* **Choose Spokesperson(s)**

Who Are

- **Organized**
- **Enthusiastic**
- **Great Communicators**
- **Natural Leaders**
- **Familiar with the Subject**

- *Who's the messenger? You need a primary spokesperson - an insider - to take the lead. The public will trust a messenger they know. The spokesperson should be enthusiastic, familiar with the subject, a good communicator, and able to lead and shape opinions into consensus.*

****

****

* **Get the Message Out**

Target Audiences

- **Start with the Workplace**
- **Local Government Officials**
- **Community Groups**
- **Media**
- **Youth**
- **General Public**

- *Start the message in the work place. Turn your staff into a public relations team. What they say in casual comments can create a positive or a negative image of the utility operation. Educate employees in answering questions and complaints.*

- *Target audiences and identify what information they will need.*

- *Target local government officials, business and civic leaders. Public officials need detailed information for decision-making. Use graphs to simplify complex information. Take them on tours of the system. Show them your success stories. Business and civic leaders will want to know how services (or lack of them) will affect the community's business and economic health.*

- *Target the media. Work with them! They can help you tremendously. The media are the eyes and ears of the public. You'll get radio, TV and newspaper coverage. Make sure it's the kind of coverage you want!*

- *Reporters are interested in how issues affect the public, particularly "quality of life" issues. Educate them about wastewater treatment. Treatment is complicated. Your challenge is to explain complex processes, problems and proposed solutions in easy-to-understand terms.*

- *Target youth. Youth will be future rate payers and they have enormous influence on the current rate payers - their parents. Youth are eager to learn. Sponsor a water science fair, give wastewater plant tours.*

****

****

- *Target the general public. How do you reach the people who do not belong to a civic group, read a newspaper or have children? Use a newsletter with the monthly bill, use a telephone opinion survey or use displays at libraries and shopping malls.*

* **Evaluate and Document**

- *Evaluate your public education program so you can improve next time. Ask: Did we accomplish our objectives? Did we gain public support?*

- *Use an opinion poll.*

- *Keep track of complaint calls. Track media reports to help in your evaluation.*

- *Keep files so you won't have to start from scratch next time your system needs a rate increase.*

****

****

VI.C. ONCE YOU'VE INCREASED USER CHARGES, HOW DO YOU KEEP ON TRACK?

* **Make Small Annual Adjustments**
* **Move the Utility Operations Out of the Political Realm**
* **Use Monthly Billing**
* **Bill Separately for Water, Wastewater, Trash Disposal, Etc.**
* **Continue PUBLIC EDUCATION**

****

The University of Tennessee does not discriminate on the basis of race, sex, color, religion, national origin, age, handicap, or veteran status in provision of educational opportunities or employment opportunities and benefits.

The University does not discriminate on the basis of sex or handicap in the educational programs and activities, pursuant to the requirements of Title IX of the Educational Amendments of 1972, Public Law 92-318; and Section 504 of the Rehabilitation Act of 1973, Public Law 93-112 and the Americans With Disabilities Act of 1990, Public Law 101-336, respectively. This policy extends to both employment by and admission to the University.

Inquiries concerning Title IX, Section 504, and the Americans With Disabilities Act of 1990 should be directed to Mr. Gary Baskette, Director of Business Services, 109 Student Services and Administration Building, Knoxville, Tennessee 37996-0212, (615)974-6622. Charges of violation of the above policy should also be directed to Mr. Baskette.