A University of Tennessee
Muncipal Technical Advisory Service
workshop

Managing Your Utility's Money

The Participant's Manual



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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 not done correctly, the resulting political backlash and public resistance can be harmful for water and wastewater operations.

This purpose of the workshop is to present financial management and user fee training for local officials. These seminars provide local officials with information they can understand and use in improving the financial health of water and wastewater treatment 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 Haig Farmer of the United States Environmental Protection Agency and Sharon Rollins of The University of Tennessee Municipal Technical Advisory Service. This notebook is available as EPA Office of Water publication number EPA 430/09-91-015.

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I. INTRODUCTION

A. WELCOME

B. TRAINING TEAM INTRODUCTIONS

C. WORKSHOP OBJECTIVES

D. WORKSHOP AGENDA

E. PARTICIPANT INTRODUCTIONS

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I.A. WELCOME

Notes:

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I.B. 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.

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

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I.C. WORKSHOP OBJECTIVES

(1) To emphasize that communities' abilities 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.

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I.D. 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**

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I.E. PARTICIPANT INTRODUCTIONS

Notes:

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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. HELP FOR COMMUNITIES

D. WHAT COMMUNITIES MUST DO

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

* 1987 Clean Water Act Amendments

  Out with Grants

  In with SRF Loans

* $ Spent in the Wastewater Grants Program Since 1972

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

* $ in Needs for Wastewater Facilities

Wastewater Needs	$83 Billion

****

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

* $5 billion surplus in 1986 to $45 billion deficit in 1990

* 37% EPA wastewater funded systems experiencing shortfalls in wastewater revenue (user fees, hookup/impact fees)

* Water systems confront new monitoring costs

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II.C. HELP FOR COMMUNITIES

* Small Communities Outreach and Education Program (SCORE)

Information Assistance

EPA Regional Office Coordinators

Networking other Federal and National Organizations

National Small Flows Clearing House

1-800-624-8301

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II.D. WHAT COMMUNITIES MUST DO

* **Implement Financial Self-Sufficiency**

  Improve Over-all Financial Management

  Raise User Service Charges

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III. PRINCIPALS OF GOOD FINANCIAL MANAGEMENT

A. CHECK FINANCIAL HEALTH

B. IMPROVE FINANCIAL HEALTH

C. BUILD FINANCIAL HEALTH

D. ADDITIONAL FACTORS THAT AFFECT FINANCIAL HEALTH

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III.A. CHECK FINANCIAL HEALTH

* Introductions

* Ratios

* Definitions

  Revenue Components

    User Service Charge
    Hookup/Impact Fee
    Taxes/Assessments
    Interest Earnings
    Other

  Operating Expense Components

    Salaries and Benefits
    Administrative Costs
    Utility Costs
    Chemical Costs
    Supplies and Parts
    Equipment Replacement Costs
    Principal and Interest
    Other

    (Operating expenses do not include new capital facilities and depreciation)

* Operating Ratio

* Coverage Ratio

* Budget Versus Actual Comparisons

* Capital Investment Ratio

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III.A. CHECK FINANCIAL HEALTH

* Introductions

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    Principal and Interest
    Other

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* Operating Ratio

* Coverage Ratio

* Budget Versus Actual Comparisons

* Capital Investment Ratio

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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		_____

FIGURE 1

COVERAGE RATIO WORKSHEET

Total Revenue $_____

minus

Non-Debt Expenses $_____

equals

Revenue Available
for Debt Service $_____

divided by

Debt Service Expenses $_____

equals

Coverage Ratio _____

FIGURE 2

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				

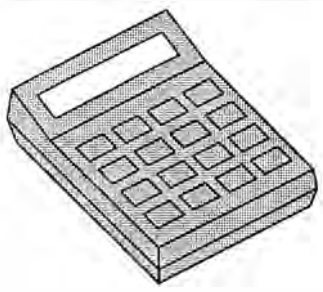


FIGURE 3

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				

FIGURE 4

CAPITAL INVESTMENT RATIO WORKSHEET

TOTAL CAPITAL OUTLAYS $_____

divided by

TOTAL REVENUE $_____

equals

CAPITAL INVESTMENT RATIO _____

FIGURE 5

****

III.B. IMPROVE FINANCIAL HEALTH

* **Financial Reporting**

  Operation accounted for as a separate enterprise fund

  Use accrual accounting methods

  Monthly reports are a must

  Report actual and budgeted figures

  Receive reports by the 10th of the following month

  Keep reports for at least 4 years

* **Purchasing**

  The purpose is to receive goods and services (1) on time and (2) at the lowest price

  Centralize purchasing

  Develop good specifications for goods and services

  Use a standard bid form

  Use purchase orders

  Develop emergency purchasing procedures

  Inspect goods upon delivery

  Develop inventory records/controls

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* User Service Charge Systems

  Largest revenue component - user charges account for 80 - 90% of total revenue

* User Service Charge Structures

  Uniform Rate

  Single Block Rate

  Decreasing Block Rate

  Increasing Block Rate

* Key Elements of a User Service Charge System for Wastewater

  Account for the costs of transporting I/I

  Add surcharges for high strength wastewater

  Examine the user service charge yearly

  Knowledge of federal, state and local requirements

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FINANCIAL REPORTING CHECKLIST



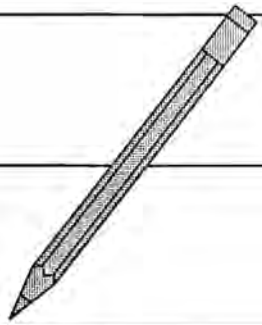
Is this done at your utility?

	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.			

FIGURE 6

PURCHASING CHECKLIST

Is this done at your utility?



	Yes	No	Unsure
Purchasing is centralized.			
Major purchases are based on specifications that define requirements.			
Standard quote/bid forms are used.			
No purchases are made without a purchase order.			
Exceptions are specified for emergency purchases.			
Goods are inspected immediately for quality and damage.			
Stock quantities are specified for all inventory items.			

FIGURE 7

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.			

FIGURE 8

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III.C. BUILD FINANCIAL HEALTH

* Improve Budgeting

  Develop a Financial Road-map

  Plan Early

  Estimate Revenues

  Estimate Expenses

* Long Range Budgeting

  Capital Planning

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III.D. ADDITIONAL FACTORS THAT AFFECT FINANCIAL HEALTH

* **Organizational Structure**

* **Staff Training**

* **Personnel Turnover**

* **Operating Procedures and Policies**

* **Customer Relations**

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IV. EVALUATING USER SERVICE CHARGE SYSTEMS FOR WASTEWATER

A. EVALUATING REVENUES

B. EVALUATING EXPENSES

C. A STEP-BY-STEP EVALUATION PROCESS

D. USER SERVICE CHARGE WORKSHEETS

E. REPORT ON FINDINGS

****

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IV. A. EVALUATING REVENUES

* User Service Charges

* Hookup/Impact Fees

* Taxes/Assessments

* Interest Earnings

* Other

****

****

IV.B. EVALUATING EXPENSES

* Salaries & Benefits

* Utilities

* Chemicals

* Equipment Replacement Costs

* Administrative

* Other Expenses

****

WASTEWATER EXPENSE BUDGET
199____

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

FIGURE 9

WASTEWATER REVENUE BUDGET
199___

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

FIGURE 10

****

IV.C. A STEP-BY-STEP EVALUATION PROCESS

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

2. **Recognize the Components of the User Service Charge System**

3. **Prepare for Appointment with Financial Management Staff**

4. **Accomplishments of the Review**

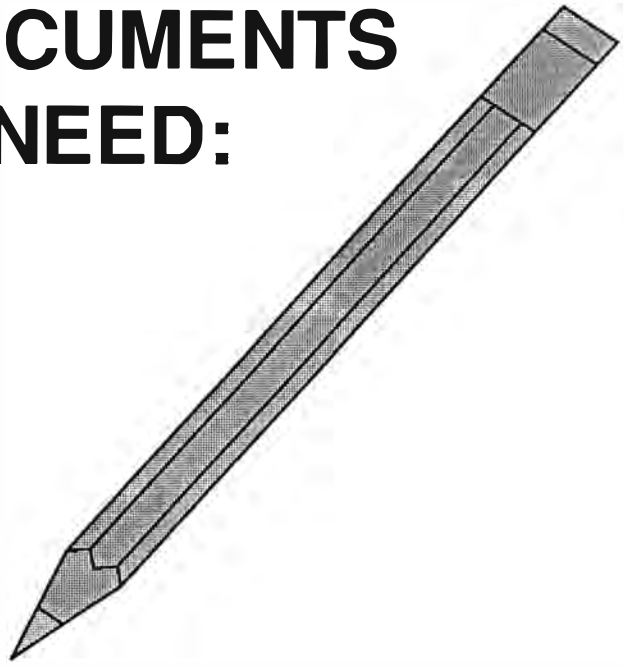
5. **Clearly Understand the Problems**

6. **The Report**

7. **Follow-up on the Report**

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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

FIGURE 11

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IV.D. 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

****

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 ☐

FIGURE 12

Worksheet-2

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

Worksheet-4

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

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?

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

Worksheet-6

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

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:

FIGURE 18

****

IV.E. DRAFT A REPORT OF FINDINGS

Follow-up the evaluation by writing a report:

* **Cite Problems**

* **Recommend Solutions**

* **Establish Response Deadline**

* **Follow-up**

****

Follow-up letter after a user charge evaluation

(Date)

Mr. James Sullivan
Finance Director
City of Anytown
100 S. Main St.
Anytown, USA

Dear Mr. Sullivan:

It was a pleasure to meet with you and your staff on (date) to discuss your wastewater utility's financial operations. As a result of our discussions and the tour of the wastewater treatment facility, I noted the following concerns.

1. The wastewater and water accounting systems are not separate. The water and wastewater operations need to be financially independent and self-sufficient. The Anytown wastewater treatment facility was partially financed by a grant from the U.S. Environmental Protection Agency. This means Anytown must establish a financial management system which separately accounts for wastewater revenues and expenditures. The system must also identify the basis for determining operation, maintenance, equipment replacement, debt service costs and user service charges.

2. The wastewater utility does not collect surcharges from users discharging high-strength waste although the city's wastewater system's sewer use ordinance requires a surcharge on those users whose wastes increase operation and maintenance costs. This ordinance must be enforced as a condition of your EPA grant.

FIGURE 19

3. The actual wastewater expenses to date at the half-way point in this fiscal year are $125,000. The total budgeted amount for the fiscal year is $200,000. This results in a projected deficit of $50,000 for the year. User service charges must be increased to provide the needed operating revenue since collection of surcharge revenues will not be sufficient to eliminate the deficit.

4. The wastewater unit volume rate is insufficient to cover the operational costs of the utility. A rough calculation showed that the OM&R costs are $1.20/ 1,000 gallons and debt service costs are $0.60 for a total rate of $1.80/ 1,000 gallons.

5. The accounting system does not budget for an equipment replacement fund. You need an equipment replacement fund to pay for equipment and accessories that wear out during the life of the treatment facility. The fund is not to be used for expanding the capacity or enhancing the treatment facility's performance. It must be used to keep the facility operating at the level for which it was designed and constructed. This is an EPA requirement.

6. At the treatment facility, the secondary clarifier sludge return pump was inoperable and a backup pump was not available. The sludge return pump is essential to proper operation. As we discussed during the visit, you should install a temporary pump as soon as possible and repair or replace the inoperable sludge pump. You need a backup pump to prevent this circumstance from reoccurring.

7. The treatment plant grounds were poorly maintained. The grass needed mowing; discarded equipment was lying around; spillage from the sludge hauling operation created a nuisance. The appearance of a wastewater treatment facility is usually a good indicator of the level of professionalism, motivation and training of the staff. It also may be an indicator of inadequate funding/staffing of the treatment facility. As a result of our discussions and tour of the facilities, it appears that additional staff is needed to achieve proper operation and maintenance.

FIGURE 19A

8. At the treatment facility, there was only a two-day supply of chlorine and a limited supply of laboratory reagents and chemicals on hand. Good management practice requires an adequate supply of essential chemicals and reagents on hand to operate and maintain the facility properly. From our discussion, it appears the Anytown utility should revise its purchasing procedure to allow the superintendent to order routine supplies directly without waiting for governing body approval.

9. This system had exceeded its monthly average BOD NPDES permit limit for two consecutive months. The major cause of this violation appears to be inadequate sludge return. The pump outage discussed above should be rectified immediately.

Many of the above concerns are consistent with the conclusion that Anytown's wastewater treatment facility needs more financial resources for proper operation and maintenance. I have enclosed a copy of EPA's publication Building Support for Increasing User Fees that tells how to increase the facility's revenue base.

Please develop a corrective action plan with compliance dates to address the above findings, and submit the plan to this office no later than (date).

Our office will be glad to work with the City of Anytown to protect its water quality and improve its wastewater financial operations. If you have questions about this report, please feel free to call me.

Sincerely,

Anne Taylor
Utility Board Manager

enclosure

FIGURE 19B

****

V. DETERMINING USER SERVICE CHARGE RATES

A. GETTING STARTED

B. UNDERSTAND THE THEORY

C. CALCULATE USER CHARGES

****

****

V.A. GETTING STARTED

* **Financial Statements**

  - **Expenses**
  - **Revenues Other Than User Charges**

* **Current User Service Charge Rate Schedule**

  - **Residential**
  - **Commercial**
  - **Industrial**

* **Data on Total Wastewater Collected and Treated**

  - **Total Annual Plant Flow**
  - **Biochemical Oxygen Demand (pounds/yr.)**
  - **Suspended Solids (pounds/yr.)**

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V.B. UNDERSTAND THE THEORY

* **Balance Revenues and Expenses by Adjusting the User Charge**

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V.C. CALCULATE USER CHARGES

* Use EPA's Computer Program

  - Assumptions Can Be Easily Changed

* Or, Calculate User Charges Manually

  - Step 1 - Gather Information

    Financial Records
    User Charge Schedules
    Sewage Treatment Data

  - Step 2 - Delineate User Charges, Expenses, Revenues, BOD and SS

    List All Expenses
    List All Revenue Other Than User Charges
    Determine the Basis for User Charges - Metered? Un-metered?
    List Theoretical and Actual Annual Plant Flow
    List Theoretical and Actual BOD (pounds/yr.)
    List Theoretical and Actual SS (pounds/yr.)

  - Step 3 - Calculate Rates

    Calculate Excess Flow
    Calculate Excess BOD and SS
    Calculate Current and Proposed Basic User Service Charge Rate
    Calculate Current and Proposed Basic Industrial Surcharge Rate

****

WASTEWATER COLLECTION AND TREATMENT EXPENSES FY 1990

Salaries and Fringe Benefits	$450,000
Utilities	175,000
Equipment Replacement Fund	200,000
Chemicals, Supplies and Parts	50,000
Contract Services	0
Administrative Costs & Office Supplies	125,000
Principal and Interest Payments	450,000
Other Costs	25,000
TOTAL EXPENSES:	**$1,475,000**

FIGURE 20

DETERMINING
USER SERVICE CHARGE RATES
OTHER WASTEWATER REVENUES

Connection Fees	$15,000
Special Assessments	10,000
Transfers from Other Funds	0
Interest on Investments	50,000
Other Revenues	15,000
Minimum Service Fee	20,000
TOTAL, OTHER REVENUES:	**$110,000**

FIGURE 21

FROM STP RECORDS . . .

TOTAL ANNUAL FLOW = 700,000,000 GALLONS

TOTAL ANNUAL BOD = 2,200,000 POUNDS

TOTAL ANNUAL SS = 2,200,000 POUNDS

FIGURE 22

DETERMINING USER SERVICE CHARGE RATES

NUMBER OF USERS BY TYPE - UNMETERED WATER

TYPE OF CUSTOMER	NUMBER OF CUSTOMERS
Single-Family Residences	8,000
Apartments (1-2 bedroom)	1,500
Apartments (3 or more bedrooms)	1,000
Commercial/Institutional	900
Restaurants and Taverns	100
Industrial	100

FIGURE 23

DETERMINING USER SERVICE CHARGE RATES METERED WATER

Minimum Bill = $2.50
Current Wastewater Services
Billing Schedule
Monthly Rates

Total Gallons Treated		Rate per
From . . .	*To . . .*	1,000 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	Over	3.50

FIGURE 24

ANNUAL METERED WATER FLOW

Residential	250,000,000 gallons
Commercial	100,000,000 gallons
Industrial	150,000,000 gallons
TOTAL	500,000,000 gallons

(WORKSHEET 8, LINE 4)

Annual Total Wastewater Flow	700,000,000 gallons

(WORKSHEET 8, LINE 4a)

FIGURE 25

WORKSHEET 8

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

Annual Residential Metered Water Flow (gallons)	_____	1
Annual Commercial/Institutional Metered Water Flow (gallons)	_____	2
Annual Industrial Metered Water 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 - 11a.

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**

FIGURE 26

WORKSHEET 9

Theoretical Non-Industrial Wastewater Flow
[Item 10 *times* 2.6 people *times*
100 gallons per day *times* 365 days] _____ 11

Theoretical Industrial Wastewater Flow
[Item 4 *minus* Item 11] _____ 11a

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

FIGURE 27

WORKSHEET 10

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 25 *times* 7.8 thousand gallons/month] _____ 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 and 34) or unmetered items (35 through 36).

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

FIGURE 28

WORKSHEET 10

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 25 *times* 7.8 thousand gallons/month] _____ 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 and 34) or unmetered items (35 through 36).

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

FIGURE 28

WORKSHEET 11

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

FIGURE 29

WORKSHEET 12

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 35 *times* (7.8 thousand gallons/month)] _____ 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 11a *divided by* 1,000)] _____ 36

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

FIGURE 30

Normal BOD and SS loadings
0.229 lbs./100 gallons of wastewater

0.229 lbs./100 gallons x 500,000,000 gallons =
1,147,000 lbs. BOD or SS

(WORKSHEET 9, LINES 13 AND 17)

Actual BOD or SS = 2,200,000 lbs.

(WORKSHEET 9, LINES 12 AND 16)

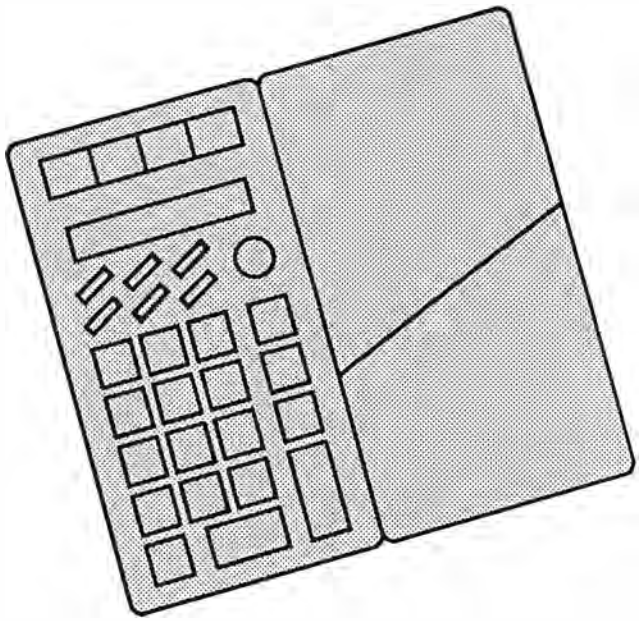


FIGURE 31

Excess BOD and SS

$$\begin{array}{r} 2{,}200{,}000 \text{ lbs.} \\ -\ 1{,}147{,}000 \text{ lbs.} \\ \hline 1{,}053{,}000 \text{ lbs.} \end{array}$$

$$\% \text{ Excess} = \frac{1{,}053{,}000}{1{,}147{,}000} \times 100\% = 91.8\%$$

(WORKSHEET 9, LINES 15 AND 19)

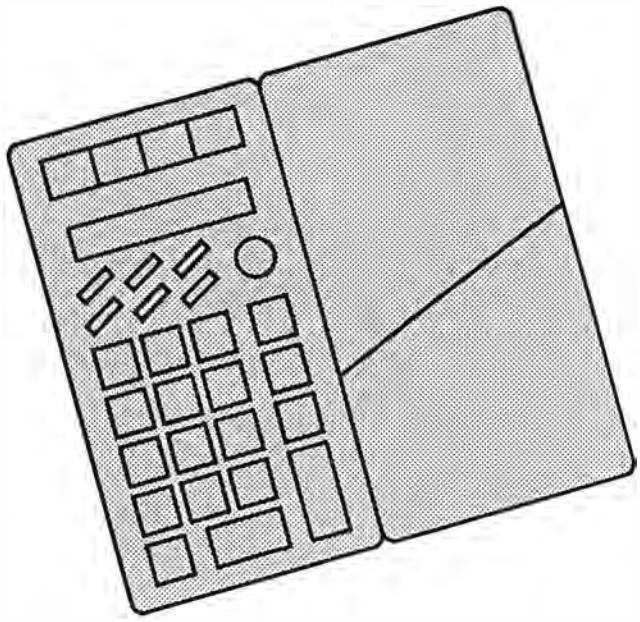


FIGURE 32

Excess BOD and SS

$$\begin{array}{r} 2{,}200{,}000 \text{ lbs.} \\ -\ 1{,}147{,}000 \text{ lbs.} \\ \hline 1{,}053{,}000 \text{ lbs.} \end{array}$$

$$\% \text{ Excess} = \frac{1{,}053{,}000}{1{,}147{,}000} \times 100\% = 91.8\%$$

(WORKSHEET 9, LINES 15 AND 19)

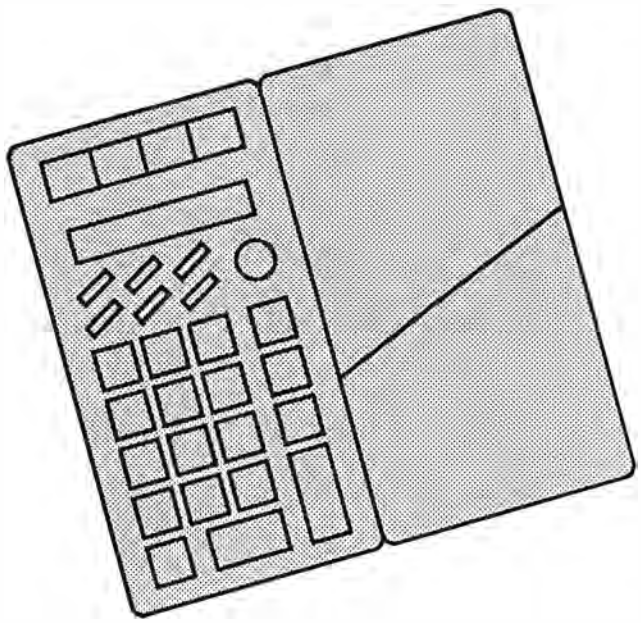


FIGURE 32

Excess BOD and SS

$$\begin{array}{r} 2{,}200{,}000 \text{ lbs.} \\ -\ 1{,}147{,}000 \text{ lbs.} \\ \hline 1{,}053{,}000 \text{ lbs.} \end{array}$$

$$\% \text{ Excess} = \frac{1{,}053{,}000}{1{,}147{,}000} \times 100\% = 91.8\%$$

(WORKSHEET 9, LINES 15 AND 19)

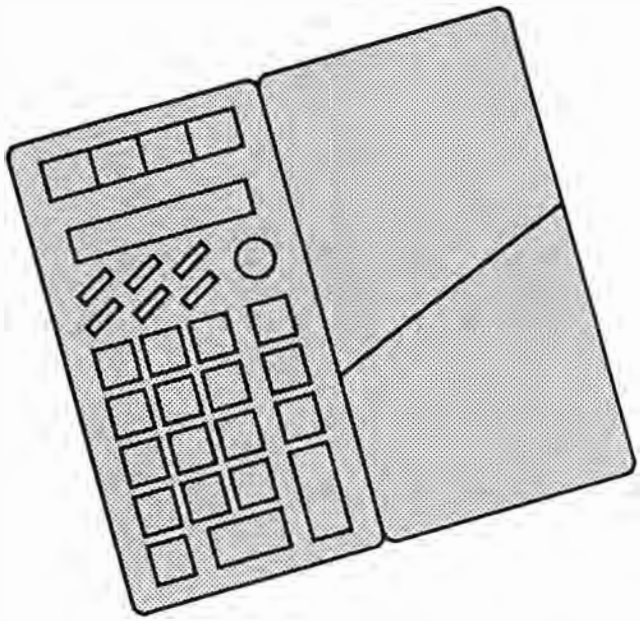


FIGURE 32

Portion of treatment cost attributable to normal strength wastewater

100 ÷ (100 + 91.8) =

.521 or 52.1%

(WORKSHEET 11, LINE 31)

Portion attributable to excess BOD or SS

100.0%
- 52.1%

47.9%

(WORKSHEET 11, LINE 32)

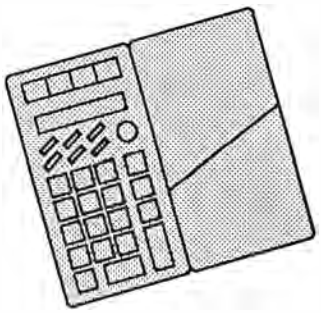


FIGURE 33

ACTUAL WASTEWATER RATE/1,000 GALLONS =

Net expenses x portion attributable to normal BOD or SS

÷

1,000s of gallons of wastewater treated

$$\frac{\$1{,}365{,}000 \times 0.521}{700{,}000 \text{ gallons}} = \$1.02$$

(WORKSHEET 11, LINE 33)

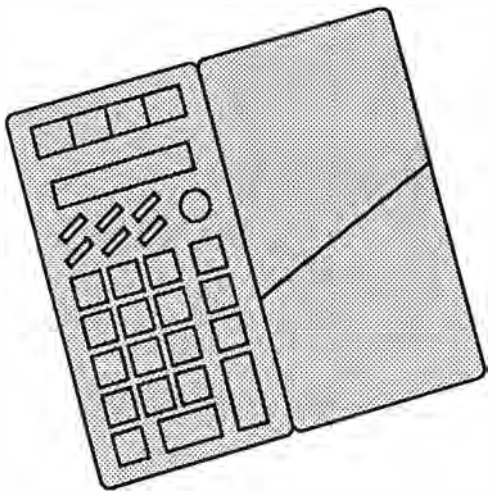


FIGURE 34

NEW USER
SERVICE CHARGE RATE

$$\frac{\$1.02}{1{,}000\ \text{gals.}} \times \frac{700{,}000{,}000\ \text{gals.}}{500{,}000{,}000\ \text{gals.}} =$$

$$\frac{\$1.43}{1{,}000\ \text{gals}}$$

(WORKSHEET 11, LINE 33a)

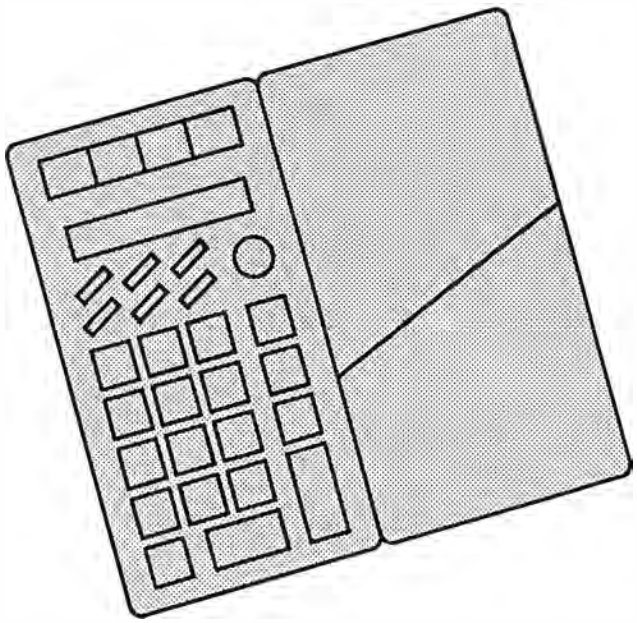


FIGURE 35

Actual Industrial
Surcharge Rate/1,000 gals. =

Net expenses × portion attributable to excess BOD or SS

÷

1,000s of gallons treated industrial wastewater

$$\frac{\$1{,}365{,}000 \times .479}{150{,}000 \text{ gallons}} = \$4.36/1{,}000 \text{ gallons}$$

(WORKSHEET 11, LINE 34)

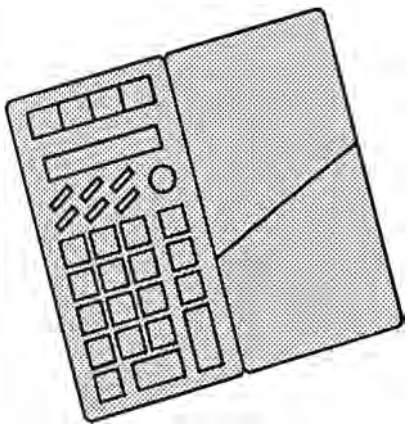


FIGURE 36

NEW INDUSTRIAL WASTEWATER SURCHARGE RATE

$$\frac{\$4.36}{1{,}000\ \text{gals.}} \times \frac{700{,}000{,}000\ \text{gals.}}{500{,}000{,}000\ \text{gals.}} =$$

$$\frac{\$6.10}{1{,}000\ \text{gals}}$$ (WORKSHEET 11, LINE 34a)

TOTAL INDUSTRIAL USER SERVICE CHARGE RATE:

$1.43/1,000 gals.
\+ $6.10/1,000 gals.

$7.53/1,000 gals.

(WORKSHEET 11, LINE 34b)

FIGURE 37

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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?

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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

    An Important Component of Good Financial Management Is Adequate User Service Charges

* Increasing User Service Charges Can Equate to Political Suicide

    Just Ask West Carolina Regional Sewer Authority in Greenville, S.C.

* Or Local Government Officials Can Raise Rates and Live to Tell About It

    Kokomo Knows ----- How to Do It

* The Difference Between Suicide and Success Is PUBLIC EDUCATION!

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

* Plan Ahead

  Think Through What You've Been Doing and Why

  Decide on Other Steps to Take

  Get Ready to Meet the Public

* Budget for the Public Education Program

  Staff

  Materials and Services

  Overhead

* Shape the Message

  What Do You Want To Say?

  What Methods Will be Used?

* Choose Spokesperson(s)

  Who are
  - Organized
  - Enthusiastic
  - Great Communicators
  - Natural Leaders
  - Familiar with the Subject

****

****

* **Get the Message Out**

  Target Audiences

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

* **Evaluate and Document**

****

****

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**

****

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