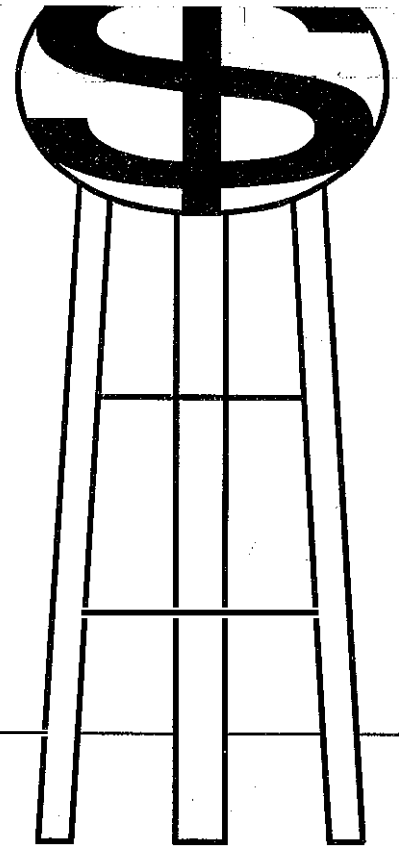


Utility Manual



Ideas and Alternatives for Water and Sewer Fund Issues

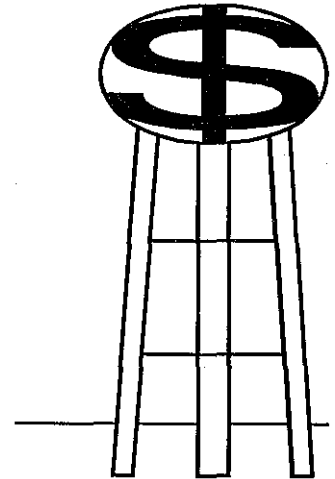
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Preface



This manual's purpose is not to provide management with ways to avoid implementing adequate cost-control measures, adequate rate structures, or other revenue measures to finance the services being provided. This manual's purpose is to provide management with ideas, options, and methods to address financial difficulties.

A major premise of an enterprise fund is that user rates should support that particular service. Enterprise revenues, costs, and services should be balanced so the fund remains financially sound. This statement is paramount in understanding how a utility should be operated.

In 1987, the state legislature passed the Wastewater Facilities Act (*Tennessee Code Annotated (T.C.A.) 68-221-1001 — 1015*). This provides a method for state intervention into the financial affairs of any financially distressed, publicly owned wastewater facility. This act established the Wastewater Finance Board (WWFB) to oversee financially distressed municipal wastewater systems. (Utility districts have a similar oversight board that covers their operations — the Utility Management Review Board (*T.C.A. 7-82-701 — 706*)). The Wastewater Facilities Act applies to municipal water systems only if the municipality has a consolidated water and sewer fund, and the retained earnings amounts are combined.

The management of a municipal wastewater operation can be required to appear before the WWFB for having a retained earnings deficit, operating three consecutive years with a net loss, or being in default on any long-term debt at any time. (Any time the retained earnings account reflects a deficit balance, this is *prima facie* evidence that the fund is considered financially unsound.)

Since 1988, more than 100 municipalities have been cited to appear before the WWFB. However, recent amendments to the law are sure to reduce the number of cities classified as financially distressed. For WWFB purposes, the amendments include:

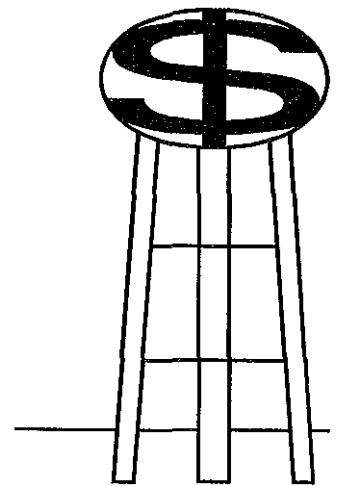
- Wastewater systems with a total equity at least four times greater than total debt don't have to consider depreciation expense in computing net income or retained earnings;
- Wastewater facilities with 900 or fewer customers don't have to consider depreciation expense on assets acquired with grant funds;
- New wastewater systems don't have to include depreciation as an expense during the first seven years of operation; and

- Amounts derived from tap fees, connection charges, or other related fees and charges that are considered contributed capital shall be considered revenue.

For those cities with financially unsound wastewater funds, city officials have probably been made aware of the situation by independent auditors and the State Comptroller's Office. Cities and utility districts with systems that are considered financially unsound are required to answer to the appropriate board.

In Tennessee, the state comptroller prescribes accounting standards and procedures. Some of the alternatives discussed in this report exceed "recommended practices and procedures." The comptroller has the final say over what's acceptable in municipal accounting practices.

Alternatives for Financially Distressed Enterprise Systems



Depreciation expense

Recognizing or recording depreciation as an operating expense can be one of the most misunderstood issues in enterprise fund accounting. People often ask, "Since no actual cash is involved, how can this be an expense?" Expenses should be thought of as depleting assets (or increasing liabilities) for operations. Think of the purchase or construction of capital assets as an exchange of one type of asset (cash) for another type of asset (capital assets). Since the asset is depleted during the normal business operations, it must be expended (depreciation expense.)

Accounting for most water and sewer systems is done through enterprise funds. Depreciation expense in an enterprise fund is recognized in much the same manner as a private business recognizes capital asset purchases for tax purposes. Tax law allows private business to expense a building, equipment, or other capital assets over varying periods of time, depending on the useful life of the asset. How or when the business pays for the asset doesn't control when the asset will be expended. So utility plant capital assets are expended over the facility's estimated useful life through recording depreciation expense.

Optional Method of Presenting Depreciation (OMPD)

In 1980, the National Council on Governmental Accounting (NCGA) presented an OMPD for closing depreciation expense on assets acquired or constructed from externally restricted grants, entitlements, and shared revenues received by state and local governments. The OMPD allows depreciation expense on assets purchased or constructed. Sources of contributed capital are applied against the contributed capital account — not the retained earnings account.

For cities with large contributed capital accounts that have the OMPD option and haven't adopted this optional method of presenting depreciation, a restatement of financial statements using the OMPD could significantly improve the enterprise fund's retained earnings balance.

On the next page is a simple explanation of the OMPD's effect and how it could help some cities address their financial difficulties.

- The OMPD has no effect on a utility's cash flow.
- Adopting the OMPD immediately improves the stated retained earnings balance. The short-term and long-term effects of this will be an "improved" stated financial condition.
- Depreciation expense will be charged as a regular operating expense, which will not affect the net income (loss) amount on the operating statement.
- By adopting the NCGA option for presenting depreciation expense on assets acquired from state or federal grants, depreciation expense will be closed proportionally to the contributed capital account rather than being closed to the retained earnings account.
- Using the OMPD can improve a city's retained earnings situation but it will not affect net income (loss) problems. Generally, these problems can only be addressed through increased revenues, reduced expenditures, or some combination of the two.

The OMPD provides limited help for cities with financial problems. In certain situations it can be a useful option, especially for cities with retained earnings deficits. Rates should be set to cover costs because there will be no "free money" to replace capital facilities when they wear out. Those receiving the benefits should pay the cost.

Recommendation

MTAS recommends that cities adopt and implement the OMPD. If audits are available, adjustments may be produced in one day or less. If the city opts to use this alternative, the city auditor should be involved since the amounts and procedures are subject to the auditor's review. For a more thorough discussion of the OMPD issue, see *Governmental Accounting, Auditing, and Financial Reporting* by the Government Finance Officers Association. Other assistance can be provided by your auditor or your MTAS finance consultant.

Consolidating water and sewer funds

Generally, it's permissible to have a consolidated water and sewer fund. The city governing body usually has the authority to combine these funds. This option would be most useful to those systems that have a positive retained earnings and/or a positive net income in the water fund and a negative retained earnings and/or a net operating loss in the sewer fund. Other advantages of consolidating funds are:

- costs can be spread over a larger base, and
- consolidation provides easier methods for addressing administrative, management, and bookkeeping problems.

A major disadvantage is that, once consolidated, both systems could be subject to WWFB review.

Recommendation

MTAS recommends consolidating water and sewer funds. This doesn't mean that MTAS recommends mixing revenue sources and functional expenditures. City accounting records should reflect revenues and expenditures of the two operations separately. There will be instances where this recommendation may not be in a city's best interest. Discuss your particular situation with your MTAS finance consultant.

Write-off of capital assets

It's permissible to write-off abandoned or nonfunctional assets. However, this could mean a reduction of future annual depreciation expense. This write-off could be charged to retained

earnings or to contributed capital, depending on the use of the OMPD and original funding sources.

Implementing this solution could place a city in a deficit retained earnings position depending on the system's financial condition, the write-off amount, and the account to which the write-off is charged. The write-off of abandoned assets will improve the net income statement in future years, and it will produce more accurate future financial statements.

Adopting appropriate depreciation life for capital assets

Over the years, many systems have set unrealistic depreciation schedules. The depreciation schedule for capital assets should equal the asset's realistic expected useful life. Reviewing/revising depreciation schedules may improve or compound a city's financial problems but depreciation expense needs to be calculated as accurately as possible.

Adopting a revised depreciation life will directly affect retained earnings and future net income.

Appropriating tax revenues for wastewater operations

In 1987, the Tennessee legislature passed a law (T.C.A. 68-13-1001 et seq.) addressing financially distressed facilities. T.C.A. 68-13-1010(a) states:

"Provided however, any local government may budget and appropriate, pursuant to the budget, available local government funds to fund expenses and operations of a wastewater facility, in whole or in part, and such wastewater facility shall not be considered by the board as a wastewater facility in a deficit position, if such budget and appropriation funds together with user fees, if any, are sufficient to fund expenses and operations of the wastewater facility."

This law appears to apply only to financially distressed systems so the question still remains about the legality of appropriating tax revenues for enterprise funds that aren't financially distressed as defined by T.C.A. 68-13-1001 et seq.

The actual appropriation and transfer of money to the enterprise fund will have a positive effect on net income and retained earnings for the current period. T.C.A. 68-13-1010 specifically permits this for financially distressed sewer systems. The Governmental Accounting Standards Board (GASB) appears to indicate that appropriations of this type should be recognized as a revenue of the receiving fund. According to the GASB, the government's stated intent appears to be the determining factor.

Enterprise funds should be self-supporting with revenues/costs adjusted to meet costs.

Capital assets purchased from tax revenue

For cities that expend tax monies on capital improvements for enterprise, it might be in the best interest of the current taxpayer/ratepayer for title to the capital assets purchased/constructed from these funds to be accounted for through the general fixed asset group of accounts. By handling assets acquired in this manner, the city would avoid having to reflect the depreciation expense on these assets as an operating expense of the enterprise fund, preventing current taxpayers and ratepayers from funding the same assets twice.

If a city has previously purchased assets of this type and passed title to the enterprise fund for accountability, it might be possible to improve the enterprise's stated financial condition by transferring title back to the general fixed asset group of accounts and adjusting the enterprise fund balance sheet to reflect the revised accountability.

Paying revenue deficiency bonds from tax revenues

For systems that have outstanding debts in revenue deficiency bonds, it may be possible to pay this debt from general tax revenues (general fund or debt service fund). Since the city pledged its general taxing power when these bonds were sold, it must be legally permissible to use tax monies to service this debt.

If it becomes necessary for a city to pay revenue deficiency bonds from the general fund, funds should be transferred to the enterprise fund and recorded as an "operating subsidy transfer." This provides a complete accounting trail and may allow these funds to be considered enterprise fund revenue. Bond covenants and grant agreements should be reviewed to assure compliance.

Equitably distributing shared costs

Some cities pay water and sewer fund expenditures from other city funds to "understate" the full cost of providing water and sewer services. This is not an acceptable accounting practice or a good business practice. It distorts cost information for all funds and produces inaccurate financial information. This practice should be discontinued.

Subsidizing water or sewer operations should be done in an open, forthright manner as a direct appropriation from the general fund. If it's the city board's intent that the funds be considered water and sewer fund revenue, then this should be recorded as an operating subsidy transfer from the fund.

Wastewater operations established as a special revenue fund

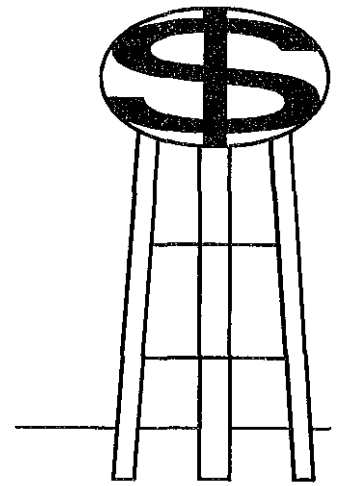
Should a city consider sewer system operation as within the general fund or as a special revenue fund? For cities initiating a new sewer system or for cities without an accompanying water system, this may be an option to consider. This eliminates the depreciating expense issue and allows the fund to be accounted like a special revenue fund.

It may be possible to move sewer system operations from an enterprise fund to a special revenue fund, and it may also be possible to initially set up a sewer system as a special revenue fund. For specific discussion on this, please contact your MTAS finance consultant, your auditor, or see the Government Finance Officers Association's latest edition of *Governmental Accounting, Auditing, and Financial Reporting*.

Refunding bonds

GASB statement 23, which was effective June 15, 1994, changed the way proprietary funds recognize gains on issuing refunding debt. Governments issuing new debt to replace existing debt (refundings) shall amortize the gain over the shorter of either the life of the refunded debt or the life of the refunding debt. The unamortized difference is netted against the refunding debt on the balance sheet. (The GASB revision on how this type of transaction is to be handled produces a significantly different operating statement in many instances.)

Revenue Sources



User charges

The most accessible and productive revenue source for an enterprise fund is a properly designed rate structure equitably applied to all services provided. Generally, water sales and sewer service (rates) charges will produce 80 to 90 percent of a system's revenue. Implementing other revenue measures discussed in this publication should be considered. They should refine the system's revenue sources.

The rate structure can be designed to encourage or discourage consumption but the structure should be designed to distribute operations costs as equitably as possible to all users. When systems begin approaching plant capacity, discount rates for high-volume users should be eliminated to extend the plant's useful life.

Revenues from user charges can be enhanced in several ways without increasing rates. Below are some ideas for refining and increasing this revenue.

Metered services

The water meter is the primary device that determines data for both water and wastewater use. **Metering for all services is essential** for cost-control, rate calculations, and water loss study information.

Metering services will improve cash flow and net income in almost all instances. For example, a city recently converted an industry from a flat rate to metered consumption. This produced an additional \$60,000 per year.

For wastewater customers who have their own source or partial source of water, it's essential to monitor the wastewater flowing into the system.

One meter, one customer

Water should be supplied to each dwelling through a separate meter. The rate schedule should not be designed to reward customers with multiple dwellings or separate family units on a

single meter. This can be accomplished by charging a minimum fee to all dwellings connected, plus a prorated volume charge.

Meter replacement policies and practices

The meter is the main source of information for making finance, operations, and management decisions, and it's the main tool for protecting the system's assets. A good meter replacement program projects the image of a well-managed system and is critical for obtaining accurate statistical data. Every city should have a scheduled meter replacement program in force.

A meter replacement policy should be determined by a preventive meter repair and testing service. There should be a monthly review of meter reading so that dead meters or nominal usage meters can be investigated and replaced immediately. An annual meter testing or replacement program for meters one inch or larger should be standard.

A good meter replacement program will improve cash flow and net income problems.

Free services

Cities frequently provide free or non-metered services to churches, schools, or other civic organizations. Because these facilities can be large consumers, it's important that all customers pay for services. Providing free services to selected customers is unacceptable. Generally, city bond covenants prohibit free service so it's probably illegal and most definitely an unsuitable business practice.

Metering all services will increase revenue and help address cash flow and net income problems.

Required hookup and monthly rate charges

An underlying assumption of most sewer use ordinances is that "the financial integrity of the improvements requires that all available customers that abuse these facilities will pay their fair and equitable share of the cost of improvements, operations, and replacement." This type of provision is usually included in the bond covenants or sewer use ordinance of most systems. These provisions are essential to assuring a proper return on investment for the utility system.

T.C.A. 7-35-201, 68-13-201 — 209, and various other T.C.A. sections give cities the authority to require sewer connections when a sewer is available and to establish a "graduated sewer users fee on each user of the sanitary sewers provided by the municipality." A "user" under T.C.A. 68-13-201(8) means:

"... the owner, tenant, or occupant of any lot or parcel of land connected to a sanitary sewer, or for which a sanitary sewer line is available if a municipality levies a sewer charge on the basis of such availability."

The authority to extend infrastructure services should include the authority to obtain just compensation for the utility within the proposed service area. Some city sewer systems have expanded into counties and developed a reserve capacity designed to serve these fringe areas without legislative authority to require hookup or contractual authority to require the water service utility to discontinue such service for nonpayment of sewer charges. Without proper

authority, it becomes difficult for a municipally owned wastewater system to require connection and consequently charge for service to areas outside the political jurisdictions.

Like all increased revenue items, levying and collecting a "graduated users charge" on all abutting property will improve the cash flow and net income problems.

New customer service

Tap fee, customer installation charge, connection fee — whatever a city calls the charge for service to a new site, that charge should bear some relation to the "average customer system value" or "book value."

Average customer system value means more than the installation's direct cost. For this discussion, it's the customer's prorated share of the system's "book value," plus installation costs. It is not unusual to see a "value" of \$400 to \$2,000 per service, plus installation costs. This may appear high but it's a fair and reasonable amount when compared to a homeowner's cost of installing a septic tank or drilling a well.

Tap fees have been kept artificially low by many utilities to encourage new customer connections. This practice should be discontinued. "Book value" is one method for establishing a tap fee for new service.

The "book value" of an average connection can be calculated by deducting total liabilities from total assets. This amount is divided by the total number of water and sewer customers. A connection's "book value" is then determined. The "book value" plus line extension costs and installation costs would be the tap fee if the city chooses this method to establish a tap fee. This method should be refined to include the increased value of meters larger than three-quarters inch.

Accounting for the excess of tap fee over installation cost is addressed by GASB. The recommended practice is that tap fee amounts in excess of the cost to physically connect new customers be reported as "contributed capital." It's also acceptable to classify these amounts as "non-operating revenues." For those utilities that have a choice, obviously the "non-operating revenue" presentation will give the utility a better-looking income statement. (Before using the alternative method, management should review its bond covenants to see if there are any legal complications connected with this option.)

Work-order system

A properly designed and maintained work-order system will help control costs and provide the financial information necessary to properly allocate costs between capital and operations. When income and expenses for tap fees and connection charges are relatively equal, the lack of a work-order accounting system may not significantly affect the utility's operating statement. Where fees are established to cover a significant part of the total system cost (not just direct installation costs), then implementing a good work-order accounting system is critical. Excess revenue over capital costs isn't considered revenue in an enterprise fund. It should be recorded as contributed capital, which is a balance sheet account.

Firefighting capacity charges

Many cities have implemented fire hydrant service charges as a revenue measure. This is an equitable revenue source that meets general and enterprise fund accounting principles. Detailed information for calculating fire protection costs isn't easily obtained, and costs may vary considerably between systems. However, water construction and operations costs associated with fire protection services are a legitimate expense of property owners. Reasonable and properly documented fire hydrant charges are justifiable expenses of the general fund. Costs associated with flushing lines shouldn't be considered part of the fire cost, and fire hydrant charges shouldn't be used to balance the enterprise operation.

The water and sewer fund must be combined for fire hydrant charges to be helpful to the wastewater system. This revenue measure will help address cash flow, net income, and retained earnings problems in the enterprise fund. It will pass the fire protection cost to the property owner and increase costs in the general fund. However, this could create problems for the general fund.

Water loss ratios and leak detection programs

Developing key indicators pertaining to water loss and infiltration is critical for knowing how the system is performing. They will be invaluable when making day-to-day decisions regarding use of financial resources.

A certain amount of water loss is unavoidable in the very best system. Every system should be able to determine gallons pumped and billed, and water loss ratios should be calculated monthly. Many factors should be considered when calculating the water loss ratio, including non-metered uses of water such as flushing lines, waterline breaks, fire hydrant testing, firefighting, street washing, filling swimming pools, consumption by non-metered city facilities, and other non-metered services. Failure to "back out" these uses will blur the real water loss ratio and produce unreliable ratios.

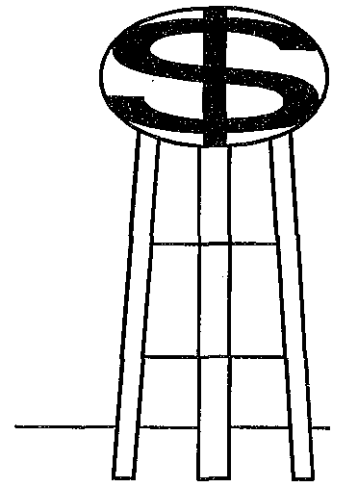
If the water loss ratio is still considered excessive after the city has "accounted" for all known water uses, officials should review meter replacement policy and practices, meter calibration practices, non-metered water consumption, the city's leak detection program, and other factors that influence the water loss ratio. A 15 percent unaccounted loss is generally acceptable.

Other revenue measures

Other revenue or income measures that a utility may wish to consider include:

- sprinkler system charges (applicable to systems with large commercial or industrial customers),
- property damage and insurance recovery controls,
- nonrefundable customer deposits,
- connection and reconnection charges,
- annual calibration of large meters, and
- requested meter check charges.

Operations and Cost-Control Measures



Customer accounting

Customer accounting consists of several different issues. A good customer accounting system will reduce bad debt loss and improve internal control, cash flow, and net income.

Accounts receivable control

Proper accounting procedures require establishing, controlling, and reconciling customer accounts receivable. Whether the city prepares utility bills manually, through an outside computer service, or with its own computer system, detail and summary controls should be established and maintained for proper accounting.

Cycle billing

Cycle billing simply means that a system will bill routes at different times during the month. Cycle billing is not for every utility. Small cities may find it convenient to bill all customers monthly. Larger systems will find it practical to divide their routes into two or more scheduled reading and billing cycles. Cycle billing is usually not feasible for cities that don't produce their own utility bills. Cycle billing can refine the work flow in meter reading and office work. This helps control costs, which improves cash flow and net income.

Alternative payment procedures

In addition to the normal procedure of customers paying directly to the utility office, many Tennessee cities have alternative customer payment procedures. In some cities, customers have direct deposit at local banks. In other instances, customers pay bills through bank drafts. Either system can make handling customer collections easier, reduce customer collections costs, and increase cash flow by two to 10 days.

This change can improve cash flow but will not significantly improve a system's net income problems.

Customer deposit

The customer deposit amount needs to be sufficient to keep the utility from losing appreciable amounts of money for nonpayment of bills. This amount can be adjusted to reflect the type of service, bill size, lag time in billing cycle, customer profile, and other factors.

Several utilities have policies that allow refunding deposits when factors such as previous payment history, property owner or renter, and other factors are considered. The city's cutoff policy and enforcement procedures for nonpayment should be considered in establishing the customer deposit amount.

An adequate customer deposit amount coupled with a sound cutoff policy will reduce bad debt expense and improve net income and cash flow.

Discontinuing services for nonpayment, fraud, or property abuse

Establishing and enforcing a cutoff policy for nonpayment of services is a major factor in how much money a utility loses in bad debt and should be considered when establishing customer deposit amounts. Once a cutoff policy is established, city management and individual council members should be especially careful about asking staff to make exceptions to the policy.

Meter tampering and breakage continues to be a problem in some systems so council should establish a policy concerning this issue. The policy should include prosecution as provided by law and civil action to recover all costs and lost revenues.

Unauthorized connection policy

Each system should have an ordinance addressing unauthorized connections. The ordinance should address water connections, sanitary sewer connections, and storm drainage connections. The penalties need to be tough. They should include more than the cost of service and provisions for criminal prosecution.

Current EPA requirements make it cost-prohibitive to treat storm drainage. It's imperative that storm drainage be eliminated from the wastewater system, whether by infiltration or unauthorized connection.

Policy for estimating current use on "bad" meters

Even the most diligent meter replacement policy won't completely eliminate dead meters. To provide consistency and equitable treatment of all customers, the city needs to establish a policy that guides staff about calculating consumption when a meter malfunctions.

Adjustment policy for customer leaks

To guide the finance department through adjusting utility bills and to ensure equal and fair adjustments for all customers, the governing body should establish a financially sound utility adjustment policy. This will provide the finance department the direction and protection it needs to handle unpleasant tasks. In those instances where it can be determined that the lost water went directly into the ground, it would be appropriate to adjust the sewer bill. Otherwise, the city shouldn't adjust bills below actual water/wastewater treatment costs.

Accounting for bad debt expense

Neither the finance department, city manager, nor the utility system manager has the authority to write-off uncollectible accounts as bad debt. This should only be done by the governing body and then only after appropriate legal steps have been taken to collect the account. Some instances aren't worth legal action but diligent effort should be made to collect debt. A list of uncollectible accounts should be presented to the governing body with a request to expense these accounts.

The customer deposit amount should be "impounded or taken." The difference between the amount received and the customer deposit would be counted as expense. Charging an account to bad debt expense doesn't relieve the customer from future payment. When a previous customer with bad debt history applies for service, the city should collect the old debt and a new, appropriate customer deposit before providing additional services.

Certified operators

Cities should hire competent, professional personnel to operate and properly maintain a water and wastewater system. The state requires licensed operators for these treatment plants and the attached collection and distribution system. If a city expects to retain experienced, competent operators, it should expect to pay employees commensurate with area wages.

Correcting permit violations can be very costly and time-consuming. It can also result in delayed economic development of the community. Failure to address water and wastewater problems in advance can have drastic consequences on a city's political and economic health.

Adequate utility plant maintenance

Correcting system problems could have a negative impact on cash flow and net income in the short term, but it can have a positive impact over a system's life. A comprehensive maintenance program is essential for systems to be sound, viable operations that are ready to meet a community's needs.

Reserve capacity

The unused portion of treatment and/or distribution facilities is a reserve capacity. On relatively short notice, good utility management practices would have statistical data available that would show the unused capacity on a percentage basis. When a water or wastewater treatment facility approaches the 80 percent utilization point, begin planning to either conserve the demand or expand production facilities. When the actual use approaches 90 percent, construction should be imminent, under way, or other sources of services should be obtained.

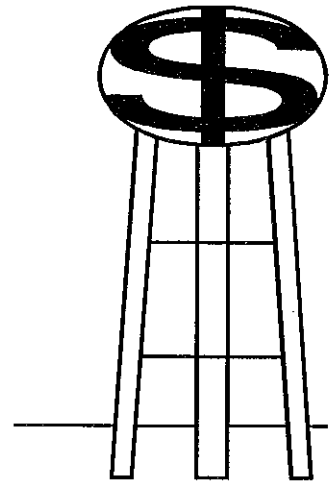
There should be a public policy that balances conserving resources with expanding production capacity. In today's urban utility systems, shifts can occur in the customer base and the economy, leaving fewer customers to pay for an overdeveloped infrastructure. This happens when systems have an imbalance between residential and industrial demands or when the community's vision for growth exceeds reality. The most glaring examples of overbuilding and underprotecting current customer base occur when cities build for one or more major customers without adequate security to ensure that these industries will remain a customer for an extended period of time and that they will be financially solvent and able to meet

contract requirements. There are many examples in Tennessee of a city building a system to serve one or two customers, only to have them move to another town or become financially insolvent and unable to meet contractual obligations.

National Pollutant Discharge Elimination System (NPDES) permit violations

NPDES permit violations may or may not be good indicators of how the sewer system is being operated and managed. However, NPDES violations are a sure indication of the system's inability to comply with the law. Systems not in compliance can expect additional costs to correct the system design and operations and/or state fines. Any permit violations should be investigated by top management and the governing body. Corrective measures should be implemented.

Management and Policy Issues



This section suggests issues that city water and wastewater managers or elected officials should consider when addressing their system's financial and economic health. This is something of an oversimplification of a complicated matter but managing a utility consists of either raising your rates or spreading your base. This implies that the system's economic vitality depends on growth within the system. However, the counterbalance to growth and its related cost is contained in the issue of "who pays." A water and wastewater manager must constantly address the issue of growth vs. maintenance. The utility manager should consider:

- the system's quality,
- the organizational structure,
- whether the rate structure is properly designed, and
- growth projections/service demands.

System quality

The system quality depends on the base of decisions and assumptions that are enacted either at the system's inception or at those watershed events that will occur with time. The opportunity for upgrading system quality is always present. Some of the ways and means to accomplish the desired improvements are listed below.

Rules, regulations, policy, and procedures manual

Adopting a rules, regulations, policy, and procedures manual is mandatory if a system expects to address long-term and day-to-day problems in an equitable manner. A well-designed manual should contain at least the following four parts:

- rules, rates regulations, and charges;
- construction standards and design criteria;
- municipal codes for connection and system use; and
- municipal codes for protecting the system's performance integrity.

The manual should be comprehensive and address all phases of system problems and operations.

Service extension policies

Adopting a balanced and financially sound water and sewer line extension policy may be one of the most important decisions made by the utility governing body. A well-designed, financially sound extension policy will provide an orderly and equitable formula for protecting the system's financial interest and will require new customers to pay their fair share of buying into the system.

Many utility systems use current operating funds to subsidize growth and development. This practice should not be adopted or continued. Expanding services should be considered when it can be demonstrated that, in time, the project will be a sound business venture. Many other factors come into play when expansion is considered. A sound pre-planned extension policy will help address these factors and help eliminate financially weak or special-interest projects.

System expansion has the potential to create or solve financial problems. Generally, short-term net income problems will increase as new projects are added to the system. If expansion projects are sound, net income problems should improve over an extended period.

Impact fees by this name aren't common in Tennessee, but they're practiced in some systems. An impact fee is when a developer pays a portion of the costs associated with receiving services. In too many instances, municipalities underprice this service. Not only do they not require the developer to pay the cost of the line extension, some even go so far as to supplement the cost of service line installations. Very few make any effort to charge for the capital cost of the existing system.

Surface water infiltration/inflow

A wastewater system is designed, sized, and operated to handle domestic and industrial discharges. It's critical that every wastewater system has a preventive inflow control program. Linked to this is the city's ability to guard the unused (reserve) capacity of both the collection and treatment facilities.

Other areas for consideration

Several other options are available to improve system quality. They are:

- fire hydrant maintenance schedules,
- water system valve maintenance schedules,
- separating customer service lines,
- flushing waterlines,
- leak detection programs, and
- tank painting/maintenance programs.

Organizational structure

Cities vary in their approaches to organizing their water and wastewater services. The various structures are:

- general government,
- utility commission,
- combination of general government and utility commission, and
- private.

There is no existing database that provides reliable information on the exact percentages of cities using each structure. Furthermore, there is no evidence to indicate that one structure is superior to another. The organizational structure selected should serve and protect the public interest and produce desired results for protecting public health and economic welfare. There is no one structure that is right for every city. As watershed events occur, the structure should be adjusted to reflect reality.

Designing rate structures

Rates can and should be designed to fairly and equitably generate revenues from those receiving services. For a detailed look at the mechanics of rate development, the MTAS publication *Basics of a Water and Sewer Rate Study* is available upon request. Given Tennessee's mandate that utility systems must be self-sufficient, the rate structure is critical to balancing customers' needs, growth demands, regulatory requirements, and financial accountability.

Many municipal systems are experiencing growth and conservation requirements simultaneously. In many of these systems, the rate structure hasn't been adjusted for these new forces. In some water systems, recent drought conditions should stimulate rate-makers to price their product in a manner that encourages conservation.

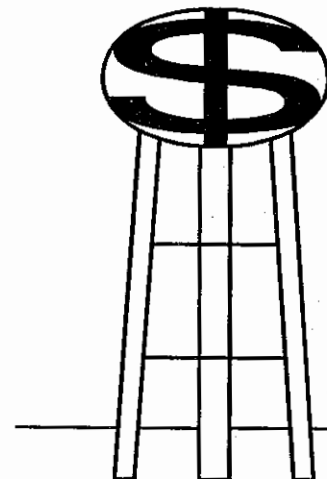
Rates should be examined and adjusted annually. This constant emphasis on rates will have a positive effect on cash flow and net income as long as they are set to cover the "full cost" of providing service.

Growth projections and service demands

Water and wastewater systems require the best projections regarding growth and related services. Traditionally, consulting engineering firms have been the major providers of this data. However, elected officials and their staff will be held accountable for the success or failure of these projections. Adopting a well-designed extension policy will provide an orderly and equitable formula for protecting the financial interests of existing customers while requiring new customers to pay their fair share of buying into the system and financing system expansion.

Subsidizing growth with cash generated from system depreciation should depend on whether there is deferred maintenance within the system. Using cash for system expansion is usually subjective and done without thought to system maintenance needs. MTAS recommends that a preventive maintenance program be enacted in all areas of water and wastewater operations, and that such programs resemble a "maintenance management system." These work-control systems are fairly common and system data can be entered into these programs.

Suggested System Manual Outline



The outline below was taken in part from a utility manual published in 1988 by the water quality control department of Maryville, Tenn. We suggest you use this as a sample to develop your own manual.

I. Rules, Regulations, Rates, and Charges

Definitions

Water

- Application to water service
- Service connection and meter-setting charges
- Customers not to supply water to others
- Deposits
- Rates
- Meters
- Meter reading and billing
- Relocation of meters
- Meter testing
- Meter turn-on/off
- Damage to water meter
- Responsibility for property of customer
- Shut-off valve
- Discontinuing service
- Private fire lines
- Swimming pools
- No guarantee of pressure and/or water supply
- Fire hydrants inside corporate limits
- Fire hydrants outside corporate limits
- Fire hydrants — private ownership prohibited
- Cross-connection
- Supply of steam boilers
- Special service
- Extension of water mains

Wastewater

- Application for sewer service
- Connection with sewer required
- Sewer service charges
- Service connections
- Customer service lines not to serve others
- Compliance with standard plumbing code
- Sewer service with utility board and water from another utility or well
- Use of existing systems
- Sewer line stoppages
- Compliance with rules and regulations
- Sewage received from septic tank haulers
- Extension of sewer mains

Water and sewer rates and charges**Schedule of fees and other charges****Water and sewer main extensions**

- Extensions within existing developed areas of the city
- Extensions within new subdivisions in the city
- Extensions outside city limits
- Exception

II. Water Distribution System Construction and Materials Standards**System design**

- Description of system layout
- Pre-design conference
- Plans and specifications approval
- Minimum distributor pipe size
- Fire protection
- Dead ends
- Gate valves
- Bends

Details of design and construction of distributor mains

- Pipe support
- Pipe bedding
- Rock excavation
- Pipe cover
- Pipe alignment
- Hydrostatic tests
- Disinfection of new distributor mains
- Disinfection when cutting into or repairing existing distributor mains
- Means of detecting PVC pipe
- Separation of water mains and sewers
- Surface water crossings
- Cross-connections
- Water services and plumbings

Products

- General
- Pipe
- Tees, crosses, and bends
- Reducers
- Caps and plugs
- Sleeves
- Valves
- Valve boxes
- Blowoff assemblies
- Fire hydrants
- Thrust blocking
- Tapping sleeves and valves
- Cut-in sleeves and valves
- Repair sleeves
- Copper tubing for service lines
- Corporation stops
- Copper service unions
- Tapped saddles (for two-inch PVC pipe)
- Service fittings
- Water meters
- Meter yokes (for five-eighths inch and one-inch meters)
- Meter boxes

Execution

- Preparation
- Installing distributor pipes
- Installing appurtenances
- Installing waterlines in street, highway, and railroad rights of way
- Waterline pressure tests
- Waterline leakage tests
- Acceptance of installation
- Cleaning and disinfecting waterlines
- Water service line connections

Standards flexibility

- Interpretations of these standards and design criteria
- Rights of appeal

III. *Public and Private Sewers*

Sewage and human excreta disposal

- Definitions
- Use of public sewers required
- Private sewage disposal
- Building sewers and connections
- Use of public sewers
- Wastes subject to surcharge
- Protection from damage
- Powers and authority of inspectors
- Municipal pretreatment program for industrial wastewater
- Violations

IV. *Cross-connections, Auxiliary Intakes, Bypasses, and Interconnections*

Definitions

Compliance with statutes, rules, and regulations

Regulated

Statement required

Inspections

Right of entry to inspect

Time for compliance

Backflow protective devices

Labeling water outlets

Violations



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