Sue K. Snaman

What Are We Gonna Do With Those Package Plants?

Construction of two major water impoundments in the Triangle area has placed local governments in the hot seat. The Falls of the Neuse and the Jordan Reservoirs were built for water supply, recreation, and flood control. Due to the scenic and recreational qualities, they have also inspired a tremendous increase in residential development.

County Health Departments have an important role in protecting water supplies at a time when regulatory responsibilities of state agencies are in transition, with new regulations effective January 1984. As more and more developers elect to construct private wastewater treatment facilities, the control of public health problems has county health departments worried.

Issues of public management of private wastewater systems concern conventional on-site disposal systems serving individual homes or several homes, as well as on or off-site community systems such as treatment works, spray irrigation, or land application of treated wastewater. Package treatment plants have recently received the most attention. The term "package plant" is often used to describe any small discharging wastewater system serving a group of homes. More accurately, package treatment plants are smaller versions of conventional sewer system which have been transported to the site in modules. Package treatment plants are available in various treatment capacities as well as treatment levels.

Ongoing problems with malfunctioning private systems and package treatment plants go beyond public health concerns and hit the municipalities squarely in the pocket. Who pays for necessary repairs or replacement when the private wastewater system fails and the public sector must step in to operate and manage?

Why Manage?

Public management of private wastewater systems, as one element of a watershed protection program, has several purposes. Protection of drinking water supply is of prime importance. So is the lowered costs to downstream jurisdictions of treating relatively pure water over treating polluted water. There is also the benefit of recreational uses around the reservoir. Recreation and supporting services can mean economic gain to the community.

The public agency has reason to be wary. Pollution from failing wastewater treatment works can dump increasing levels of nutrients into a lake until the water chokes with algae. Potential benefits from recreation -- not to mention use as a water supply may all go down the drain at that point. The same situation can occur where a concentration of septic systems fail. In general, community wastewater systems pose more acute problems.

When a private wastewater system performs according to expectation, regulatory concerns are often perceived as irrelevant or overly burdensome. Yet if and when problems arise, the responsible public agency needs to be assured of methods to protect this large public investment in addition to meeting public health concerns. Also regulation requires a supply of money to assure that repairs are made.

Who Manages?

Experience has shown that homeowners are typically unknowledgeable of maintenance and operation of any system which is not connected to a municipal sewer. The county health department has traditionally approved operation of conventional and alternative septic systems according to specifications set by state agencies. Regulation of size, design, and operation of these systems has been shared by the North Carolina Department of Human Services and the Division of Environmental Management within the Department of Natural Resources and Community Development.

EXPERIENCE HAS SHOWN THAT HOMEOWNERS ARE TYPICALLY UNKNOWLEDGEABLE OF MAINTENANCE AND OPERATION OF ANY SYSTEM WHICH IS NOT CONNECTED TO A MUNICIPAL SEWER

Management Options

Because local health departments are obliged to protect public health and water resources from adverse natural and man-made or irreparable malfunctions of wastewater systems,

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the public agency may be required to take over operation. The density of the service area, failure rate, and the vulnerability of the water body will determine the level of management needed.

Local communities may involve themselves in wastewater management in any of the following ways:

- regulation of individual on-site disposal systems only
- regulation of community systems which discharge only
- design and construction of wastewater systems
- operation and maintenance of wastewater systems

Regulation only supports the status quo whereby regulatory standards governing the type and sizing of approved wastewater systems are set by the state. Local health departments are then delegated responsibility for inspection and monitoring of ongoing operation. Within this option, the chief actors may include the county health department and the executive commissions of two separate state agencies. Other agencies such as the Coastal Resources Commission or certain city/county arrangements may also be involved.

At a more intensive level of public involvement, the city or county may assume additional responsibilities such as increased inspection; septage disposal; maintenance and repair of equipment; financing through fees, taxes, or special assessments; and administration of the community system.

This higher level of involvement by the city or county necessarily incurs a greater cost to the local treasury. Many counties have a slight edge over cities in this regard due to a generally larger tax base. In the case of county administration, authority could be vested in the county health department, environmental health section, or utilities department.

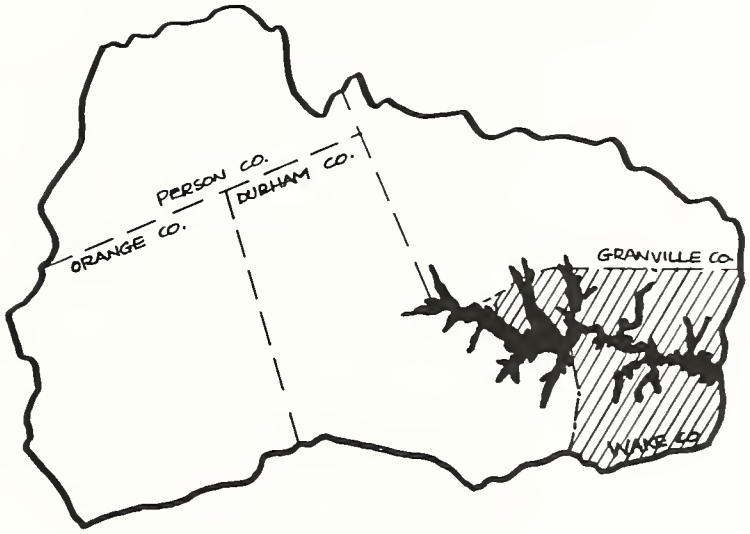
Public and Private Concerns

A full system of management options need not be fully administered by the public sector with all work performed directly by government personnel. Private firms under contract to the government can provide much of the operation and maintenance directed by the county. Growing numbers of engineering firms or manufacturers of wastewater treatment facilities now offer these services. Again issues of system performance and liability remain a priority interest of public agencies.

A developer approaches the wastewater treatment needs of a proposed development or subdivision with different considerations. His strongest concern is the regulatory requirement for either on-site or community wastewater treatment. The developer also attempts to minimize both upfront costs and ongoing maintenance responsibilities once the development is complete. It is in the developer's interest to seek options which are easily and quickly implemented, thus reducing delay.

The following institutional arrangements are available for operation and maintenance:

- establishment of a homeowners association
- designation of a third party trustee
- incorporation as a public utility
- delegation of responsibility to a private contractor
- establishment of performance bonding requirements by escrow account or other such insurance



The Wake County portion of the Falls of the Neuse Watershed appears in the hatched marks.

	Agency Concerns	Developer Concerns
HOMEOWNERS ASSOCIATION	1. assurance that Homeowner Association has adequate expertise, resource to operate complex wastewater system 2. absence of market to dispose of assets held in common by homeowner association in the event of malfunction 3. Covenants should guarantee automatic membership of individual owners in homeowner association, and guarantee the association, as well as individual owners, power of covenant enforcement*	1. simple, inexpensive transfer of treatment system when development complete(however, operating permit not transferable) 2. up-front costs if articles of incorporation require reserve account
THIRD PARTY TRUSTEE	1. agency may designate acceptable trustee 2. provides immediate recourse in event of malfunction. Cost recovery between trustee and original owner	1. once trustee agrees, simple and inexpensive 2. few up-front costs except when trustee requires some form of security
PUBLIC UTILITY	1. new state regulations grant local governmental units the authority to use this option 2. possible "gap" in ownership since Utility Commission will not approve until development completed. 3. permitting through state agency removes local authority and control	1. extensive legal, administrative requirements 2. reserve fund required by Utility Commission 3. staffing , administrative costs for operation
PRIVATE CONTRACTOR	1. agency still ultimately liable 2. supervision of contractor 3. availability, certification of qualified contractors	1. delay in securing, certifying contractors 2. few up-front administrative costs
BONDING, ESCROW ACCOUNT	1. assurance that agency designee will receive account in event of developer bankruptcy 2. difficulty in setting amount sufficient to make necessary repairs but not overly burdensome to developer	1. up-front cost/premium paid to insurer 2. inability to assure proper homeowner operation yet developer is still liable

*O'Mara, W. Paul. 1978. Residential Development Handbook. Washington, D.C.: ULI-The Urban Land Institute. pp. 275-281.

Choice of these arrangements depends on existing county policies and regulations (or lack of guidance in these matters). Developers will favor institutional arrangements that are expedient and uncomplicated.

An association of homeowners in a development can register as a non-profit organization in order to operate, manage, and maintain properties held in common. Open space, recreation, and wastewater treatment facilities are often held by the homeowners association.

In the third party trustee arrangement, the developer deeds over ownership of the treatment facilities in the event of a malfunction or failure. The trustee serves as a "co-signor with a deep pocket" to provide continued proper operation of the wastewater system. The county is assured of a party legally responsible for proper operation. Furthermore, this option allows the trustee, often a bank or trust company, to make necessary repairs and seek reimbursement from the original owner. In some areas (like Mecklenburg County, N.C.), the third party trustee has been a savings and loan or other financial institution.

If a public utility is created, the incorporated unit (and its assets) is listed with the Secretary of State and the North Carolina Utilities Commission. The Utilities Commission oversees rate-making and reserve account requirements. The public utility then legally assumes the functions of operation, maintenance, billing, repairs, and setting of service fees and area.

When a city or county contracts for operation and maintenance responsibilities with a private contractor, the city or county remains ultimately liable for the contractor's performance. This option has become more attractive to the public sector as more and more firms offer these services.

The final option for the developer is to provide a performance bond or escrow account on behalf of the governmental unit to ensure adequate funds for the operation and maintenance of the wastewater facility over a specified period of time. The escrow account must be sufficient to fund future repairs which may be necessary and to assure compliance in the interim. One drawback to this option is that the local government may not have access to the escrow account if the developer declares bankruptcy. An escrow account or performance bond may not be protected from other claims in the event of bankruptcy. When a performance insurance bond is set, an initial premium paid by the developer assures release of the amount to the designated party in the event of a treatment facility malfunction.

Changing State Regulations

The 1983 session of the North Carolina General Assembly substantially rewrote public health laws contained in Chapter 130A of the General Statutes. Three major changes, effective January 1, 1984, affect the local health department role concerning wastewater treatment:

1. Local health department responsibilities are expanded and clarified
2. An operating permit is required in addition to the improvements permit now issued upon inspection by the health department
3. Administrative fines and remedies are set

To understand responsibilities of the local health department, relationships between state agencies must first be sorted out.

The new regulations assign regulatory authority for all treatment systems which discharge to the land surface or water to the Division of Environmental Management within the Department of Natural Resources and Community Development. Examples of systems under this authority include spray irrigation, overland flow, land application, and small discharging systems (so called "package plants"). All publicly owned systems, including those operated as pubic utilities, also fall under jurisdiction of the Division of Environmental Management regardless of the type of treatment.

Rules adopted by the Commission for Health Services in the Department of Human Resources govern any treatment system which discharges below the ground, including conventional or alternative septic systems.

The new rules also extend additional authority to local health departments. Local rules may be more stringent than applicable state regulations where necessary.

One of the many new subdivision homes in the Falls Lake Watershed.

Upon determining that the ground absorption system is properly installed and appears to meet the condition of the improvements permit, the local health department may issue an operation permit. This additional oversight now allows local health departments to monitor the ongoing operation of the system. This operations permit can be legally conditioned on operation and maintenance requirements of the site. The local permitting agency can invoke legal remedies if the conditions of the operations permit are violated.

The Dam at Falls of the Neuse Reservoir.

New Penalties

Administrative penalties which give greater strength and immediacy to health department actions in the case of malfunctioning wastewater systems are spelled out in the new laws. If the local agency determines a public health nuisance exists, an order of abatement may be issued. If the conditions stated are not remedied, local authorities may intercede to make necessary repairs. Expenses can be recovered through a high priority lien against the property. In the case of bankruptcy, this lien is payable immediately after tax debt.

More serious problems are addressed through the imminent hazard clause. Certain actions may be taken if a situation is likely to cause an immediate threat to life or serious risk of irreparable damage to the environment: fines of up to $50 per day for an individual system or $300 per day for a community system may be imposed by the local health department.

Wake County Example

Recently Wake County has adopted local regulations that exceed state requirements. Wake County is the site of the new 12,500 acre Falls of the Neuse Reservoir, a Corps of Engineers project expected to yield up to 10 million gallons per day as water supply to the city of Raleigh and surrounding jurisdictions.

Responding to increased residential development activity in the Falls watershed, the Wake County Board of Health adopted more stringent standards for surface-discharge treatment plants. The rules and regulations were adopted in September 1983, effective October 1, 1983. The Wake County considerations were developed concurrent with revisions to the state health laws. Actions by the Wake County Board of Health were initiated when evidence suggested that manpower and oversight responsibilities by the N.C. Department of Natural Resources and Community Development did not provide sufficient protection to the drinking water supply of the Falls of the Neuse impoundment.

The Board of Health set effluent standards that specified a phosphorus limit of one part per million. In addition to a valid permit from the N.C. Division of Environmental Management, a package treatment plant operating in Wake County's portion of the watershed must secure an operating permit from the county health department. The operating permit also specifies design standards, operator certification, and a 24-hour capacity for emergency storage of untreated wastewater. Duration of the permit runs concurrent with the Division of Environmental Management permit and is renewable every five years. Existing plants in the water supply watershed must also meet the same requirements. When publicly-owned sewer lines become available, use of package plants must be discontinued, except in certain circumstances.

Conclusions

Public health and other officials are just beginning to examine local management options for private wastewater systems. Conflicts between developer concerns for expediency and governmental assurances of adequate performance over time have yet to sort themselves out.

The following agencies and individuals have developed some expertise in this issue and can serve as resources to jurisdictions facing similar problems:

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Research Triangle Park, NC 27709
(919) 549-0551

Wake County Board of Health
Wake County Courthouse
Raleigh, NC
(919) 755-6107

Ed Holland, of Triangle J Council of Governments, contributed to the development of ideas contained in this article.

PERFORMANCE, continued from page 21

a possible 200 points were determined to be the level that provides the minimum acceptable stormwater management. The performance zone requirement applies to all subdivision, business and office development proposed for the part of the watershed in the jurisdiction of High Point and to all single lot development within 2,000 feet of the two lakes and Deep River which connects the lakes.

The performance zone and rating system were chosen over other land use strategies including large lot zoning, low density zoning, and planned unit development districts for several reasons. First, the rating system directly assesses the impact of the stormwater on the quality of the water supply. Second, it gives a developer flexibility in designing a project since if a proposal rates poorly on one factor, it can atone for it by scoring higher on another factor. Third, it does not arbitrarily treat each case the same such as with a blanket density restriction, but instead treats each situation based on its unique set of circumstances.

DEVELOPERS AND LOCAL OFFICIALS HAVE OVERWHELMINGLY PREFERRED THE RATING SYSTEM TO A DENSITY LIMITATION

Fourth, since the rating system requirement is in addition to the zoning regulations, it does not mix environmental concerns with rezoning issues involving the appropriate land use, density and building style. These advantages are the reason developers and local officials have overwhelmingly preferred the rating system to a density limitation or other inflexible zoning regulation. For example, after studying other solutions, Guilford County (in which most of High Point and its water supply watersheds are located) is seriously considering adoption of an adapted version of the rating system for the water supply watersheds that comprise over half of its jurisdiction.

Conclusion

Recognizing the importance of a good water supply, High Point adopted a watershed performance zone with a rating system to protect its two water supply lakes. Although the rating system is not based on scientifically proven relationships between types of development and water quality, it is an attempt to make the best judgement based on the most complete and reliable knowledge available at the present. When weighed against the alternative of taking no action until the exact effects of development on the quality of water supplies can be accurately predicted, the rating system is a useful tool to protect water supply resources before they become deteriorated or perhaps unusable.