

Pennsylvania's Approach to
Integrated Wastewater Management: A New Paradigm

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I. Introduction

Integrated wastewater management utilizes centralized treatment systems to provide sewage to the more densely populated areas and utilizes cluster and onlot systems for the sparsely populated areas of a municipality. Centralized management is the result. All the sewage service falls under an integrated management system. Sewage will be available to many sparsely populated areas of Pennsylvania only through centralized management. Two municipalities that we know of in the Commonwealth are using such a system but many others would benefit if they utilized integrated wastewater management to deal with their sewage problems.

In many rural areas of Pennsylvania, houses were constructed before there were any guidelines for sewer construction. Many residents living in older rural homes had privies and installed an indoor toilet only after running water was available in the house. Wastewater was discharged to the most convenient place. As a result, many existing on-lot sewage systems are inadequate due to age, poor maintenance, poor siting or just lack of knowledge. Similarly, many small town sewer systems are inadequate, due to past neglect and utilization of poor practices such as using stormwater facilities as an outlet. Many rural municipalities have a significant sewage problem, whether they acknowledge it or not.

Municipalities have been slowly addressing these problems but often do so only after DEP issues a consent order. The high cost to construct needed improvements as traditionally defined (i.e., a centralized sewer system) is a major restraint to upgrading existing sewage facilities (other major barriers are discussed in Section III). There are, however, low cost, non-centralized, effective options that can be implemented with proper planning and innovative thinking. Integrated wastewater management (centralized management) is a way to provide sewage service to rural Pennsylvania.

Centralized sewage, or the lack thereof, has often been used as a growth management strategy. With adequate and accountable management, sewage systems and technology should stand on their own merit; what sewage law and regulation should address is quality of the water departing the owner's property. Innovations and the imagination of innovators should be encouraged; communities, property owners and developers that implement successful methods of providing solutions should be recognized for their success. Somehow we should ease the burden placed on

those who, by demonstration of responsibility, ease the load placed on the environment or on public entities through successful innovation.

Richard Otis's excellent article in Small Flows Summer 1998 Volume 12 #3 says:

“What is so appealing about central sewerage is not the technologies used or the costs: rather, it is the public management that removes responsibility for system performance from the individual user. If onsite and cluster systems are to be an accepted alternative, they must be managed in such a way as to be as invisible to the user as central sewerage.”

“If we are to succeed in convincing the public that ‘decentralized’ treatment should be seriously considered in small communities, we must elevate the perception of onsite and cluster systems to that of central sewerage... This will be achieved only through centralized management. While ‘decentralization’ of treatment is the outcome, centralization of management must be the approach. Service rather than technology needs to be our focus!”¹

This paper is based on the case study provided by the Broad Top Township—Coaldale Borough Sewage Planning effort. This multi-municipal cooperative effort was part of a broader Watershed Improvement Plan developed to address the watershed's two predominant water quality problems: acid mine drainage (AMD) and sewage effluent. A variety of water protection activities have already been implemented or are planned to address the AMD problem as well as the lesser problems of illegal waste dumping and stormwater runoff. Sewage effluent from inadequate or nonexistent sewage disposal systems remains prominent in the affected jurisdictions. High nitrate levels and/or bacteriological contamination exist in many local water supplies.

This paper documents the sewage-planning portion of the effort as a case study, and extracts a number of applications for use elsewhere. Our goal is to encourage the development and implementation of low-cost, effective sewage treatment options in rural areas through integrated management as a means of cleaning up local waters that may be contaminated by multiple non-point sources. **Changes are needed at both the local and state levels to encourage implementation of such options; these changes are outlined in Section VI.**

II. The Broad Top Township Case Study

What did the municipalities of Broad Top Township and Coaldale Borough do to deal with their sewage problem?

1. They acknowledged that they both had sewage problems that should be addressed.
2. They agreed to work as one.
3. They recognized that it was a long-term effort (planning alone took 4 years beginning in 1991).
4. They involved the public from the beginning and throughout the planning process.
 - They immediately formed an active sewage planning committee. Any resident wishing to serve on the sewage advisory committee could; any citizen showing interest in the sewer project was invited to serve on the committee.
 - The sewage planning committee made decisions by consensus. Their decisions were the basis for official municipal actions such as consultant selection.
5. They tailored the RFP to meet the sewage concerns of the municipalities, i.e. holding operation and maintenance costs to \$10 per month; serving every housing unit in the municipalities; holding public meetings and sharing information.
6. When questions and concerns were raised by DEP during the planning process they were discussed and addressed. The sewage advisory committee worked closely with the DEP regional office from the beginning.
7. They also worked closely with other government entities throughout the process. For example, the county planning commission staff worked closely with the sewage planning committee to develop the “Request for Proposal” for choosing a consultant for Act 537 planning.
8. They are in the process of implementing the plan using integrated wastewater management.

The following sections discuss the barriers and motivations that affect the way sewage problems are handled in Pennsylvania.

III. Barriers

There are a number of barriers to addressing sewage treatment needs in rural areas where clusters of houses and individual homes currently have some type of on-lot sewage system. The

¹ Small Flows Summer 1998 Volume12 #3

following is a discussion of some of these barriers categorized by the players hindered by them: municipalities, citizens, state government, and consultants.

A. Municipalities

In Pennsylvania, Act 537 requires all local governments to develop and maintain an adequate sewage facilities plan and to bring all existing sewage systems up to a minimum standard for the protection of health and safety. Each municipality hires a Sewage Enforcement Officer (SEO) who is responsible for both issuing new permits and evaluating older systems upon request. For new construction a sewer permit is required, thus most recently built homes even in rural areas have approved sewage. However, older houses often have a system that has not been maintained for years. When an older home is sold the lending agent sometimes requires proof that the sewer system is properly functioning.

Currently there is no mandate for standardized inspection procedures and protocols, and for these inspections to be meaningful, they should be standardized, just like car inspections. There are inspection protocols available for consideration such as one developed by the Pennsylvania Septage Management Association².

In addition, in 1996, real estate seller disclosure requirements (including information on water and sewage systems or service) were imposed on all property transfers. This has further helped identify problems on properties that have been bought and sold but has no impact on those that have not changed hands. In Broad Top Township, for example, the supervisors estimate that more than 75% of the existing occupied houses had malfunctioning sewage systems before they took responsibility for sewage management.

Even though SEOs are municipal employees, many municipalities elect to view sewage issues as outside of their purview, for a variety of reasons:

1. Attitudes

- Many township supervisors consider themselves as traditional “Road Supervisors.” They may already be overburdened, or may not know what to do in areas outside of this traditional role.

- There may be a history of avoidance of the issue; even if officials are aware of a problem, they have managed so far to avoid dealing with it, so why start now?
- Since avoidance is the norm for dealing with sewer problems, DEP takes punitive action against the municipality in order to resolve the problem. Once DEP is involved, there is little incentive for local officials to accept responsibility and develop this timetable for cleaning up “their own back yard.”
- There may be no history on the issue. The problem may not be obvious, and they are too busy to proactively identify coming problems.
- It may be politically expedient to wait for DEP action. Political considerations may require them to postpone the impact of increased sewer costs on their residents even though inadequate sewage has hidden costs.

2. Cost

- Most rural municipalities’ total budgets are significantly less than the capital necessary to sewer even a small part of their municipality . To undertake such a venture means doing something they have never done before and dealing with financing levels never encountered before. They must also then deal with operation and maintenance obligations never before encountered.
- Most municipal officials deal with limited sources of municipal income (local taxes and transfers received from the state) and many are unfamiliar with what financial assistance may be available for such projects. They must rely on a consultant for this information.
- Although officials may have heard about potential funding sources they have no idea how to access them. Again they are dependent on their consultant for help.

3. Technical

- There is a lack of available examples, models or other information related to lower cost, non-centralized options. This again may lead a municipality to totally defer to a consultant’s recommendation. As discussed below, there are a number of barriers that encourage consultants to pursue higher cost, centralized systems rather than allowing or encouraging consideration of more customized, lower tech, lower cost alternatives.

B. Citizens

² www.pmsa.net

Citizens also may feel that sewage concerns are outside of their area of responsibility. Many don't even know where their own system is, how it works or how to maintain it. If a malfunction isn't directly affecting them, then it isn't a problem. Even if they are aware that there is a problem, their primary concern will be with how much it will cost to fix.

1. Attitudes

- The status quo has been good enough so far, so there must not be any problem; why be concerned with something that will only cost money to repair?
- They question who will be responsible for maintaining the system, again shrugging off responsibility to someone else.
- There may be apathy, mistrust, perceived exclusion from the decision making process, or a lack of confidence that municipal officials know how to handle the situation. In many municipalities citizens are not given the opportunity to become involved in the process of developing sewage alternatives until a plan has been developed. When they finally see the completed plan they have no "ownership" and react negatively. There is no understanding of why the plan is needed and why they should have to pay for it.

2. Cost

- Questions about cost often cause citizens to delay addressing their sewage problem. How much will it cost to repair or replace the present malfunctioning on-lot system? Is my lot big enough for a replacement system? Will a holding tank be the only option?
- If a new system is needed will I have to maintain it? What will it cost? Many think that no maintenance is needed, and have never done any. Even if maintenance is being done now, over time there may be less and less; since it costs money to maintain, it is easy to put off the expenditure. Also, until a property is transferred the owner may not be aware of the need for maintenance. Education regarding system maintenance may be needed in addition to notification.

3. Technical

- Most citizens have no knowledge or understanding of the problem or of potential solutions. If they have never maintained the system and there has been no sewage problem then they assume there is no need for maintenance. If a problem arises, then they call someone to fix it. At that point the system may require expensive repairs.

C. State government

In high-density areas, standard, centralized wastewater technology is proven to work and is cost effective. However, in low-density rural areas it is a different story. The old saw of “dilution is the solution to pollution” has allowed us to ignore the problem of rural sewage treatment needs; lower densities allow problems to persist without directly affecting a neighbor, and therefore also allow us to ignore the problem because there is no complainant.

In fact, avoiding the problem has become the method many municipalities have used to deal with sewage; it becomes someone else’s problem. When the issue is elevated based on a complaint or a water quality concern, DEP issues a consent order to make the municipality address the problem. As a result, rural sewage problems have been addressed mostly through coercion and not as a result of a community’s willingness to deal with their problem. The “one size fits all” approach of many consultants has not provided rural Pennsylvanians with a cost-effective way to address their sewer problems.

1. Attitudes

- Our legal/regulatory structure on this issue actually encourages rigidity and abdication of local responsibility. As mentioned above, action to address the problem is only taken when DEP forces the issue. DEP thus becomes responsible for forcing resolution of the problem. It is the state’s legal responsibility to force the municipality to deal with their sewage problems.
- It is easier and less time consuming for DEP staff to deal with the specifications of off-the-shelf proposals for centralized systems that are known to work, than to spend time evaluating alternative systems that are site specific and that have more unknowns. Alternative systems are also riskier and more time consuming to defend to higher-ups.
- Even though alternative systems may be easier and simpler to operate, DEP may not trust that municipalities will properly manage them. There is no “training book” for these systems and many operation and maintenance procedures will be unique to the alternative system’s site. In fact a municipality may have a combination of different cluster and individual systems to oversee and each could be different. Municipal officials have historically avoided dealing with the problem and have passed it on to the Department. Won’t they do the same if and when things go wrong with the proposed system?

How can the Department have any confidence that the municipality will properly manage the system(s)?

2. Cost

- Off-the-shelf proposals are easier to justify financially because state and federal financial assistance programs give preference based on past performance evaluations and on tried-and-true systems.
- Increased staff will be needed to evaluate and approve the many different types of alternative systems as they are increasingly permitted. Training costs will also be increased.
- Alternative systems may require more initial oversight to insure proper performance, again increasing staffing needs.

3. Technical

- Alternative systems may be site specific and as such may be harder to evaluate.
- The environmental benefits may be the same as off-the shelf systems but are often viewed by the Commonwealth as riskier in terms of environmental protection since there is less data on their operation in Pennsylvania. Onsite treatment systems should be designed for performance that protects water quality.

D. Consultant

Because municipal officials lack expertise in this area, consultants have historically provided this service. In addition, the Commonwealth has historically given preference to technical expertise provided by consultants.

1. Attitude

- There is a history to the relationship with DEP that promoted consultant domination in this area. DEP traditionally defers to technical expertise over local need and sentiment. For example, the Act 537 planning process contains a public participation requirement. This is usually interpreted to mean that the consultant, working with the municipal officials, prepares the plan with a number of alternatives. An alternative is selected. A public meeting is called and the plan is presented and the public is asked for comment.

That's it! DEP is satisfied, the municipality has met the public participation requirement, the consultant has done their job and the plan is submitted. The public has not been part of the process and has not had the opportunity to buy-in. There is often a negative public reaction once the plan has been finalized, but the legal requirements for public participation have been met. That the project serves a fraction of the citizens and/or is high cost and unaffordable is "just the way it is."

- Since municipal officials are doing what the state expects and are obeying the law, they defer to the consultant's expertise even though the consultant may have little knowledge of local sentiment.

2. Cost

- Minimizing the time spent on the planning process maximizes the consultant's profits. Plans often include what has been provided for other municipalities of similar size, sometimes with only the name changed. Since DEP approval is the primary goal consultants are encouraged to design higher cost, centralized systems instead of customized, lower cost systems.
- Since the current financing system for municipal sewage projects is based in part on normalizing regional costs a consultant can get the municipality a significant grant if costs exceed the regional norm. The consultant appears to be getting significant funding and really helping the municipality. However, if they had recommended a low capital/ low O&M cost system the municipality would get no grant since their costs would not exceed the regional costs.
- The design phase can be bid but often is awarded to the same consultant that has done the planning. Payment for this phase is based solely on a percentage of construction costs, another incentive for high costs.
- Since capital costs are the basis for rewarding consulting firms there is no motivation to give significant weight to O & M costs in the evaluation. Ironically, in most cases, the lower the O & M cost, the lower the capital costs.

IV. Motivations

There are a number of potential motivators for each of the players to overcome the barriers identified above. Some of these exist now, and others need to be reinforced to effectively move local governments to address sewage concerns.

A. Municipalities

Possible enforcement action. It is not unusual for new sewer construction in rural areas to be “motivated” by a DEP enforcement action: DEP follows up on a reported sewage problem, determines that the health of the community is being threatened and issues the municipality a consent order to address the problem within a short time period. The municipality begins the process.

Municipalities would be more in control if they took the initiative and did sewage planning without DEP enforcement. The municipality should involve the public in planning to address the sewage problems throughout the municipality rather than focusing on the problems identified in the enforcement action. They would then be able to set their own time line to meet their sewage needs, not one imposed by DEP.

Economic development. Since rural communities are often depressed economically, they may not update their sewage plan until they need to provide sewage to a proposed facility. Municipalities with adequate plans already in place are presumably more attractive to businesses looking to locate in the area. This is an incentive for municipalities to initiate planning and implementation on their own.

Peer pressure. Communities who have observed the benefits to a neighboring municipality undertaking the process voluntarily may be motivated to consider following suit. Similarly, municipal officials that see other municipalities being forced to sewer may understand that it is in their interest to avoid this problem. However, it is more common for them to rationalize that by avoiding it they keep their citizens from paying for high priced sewers rather than assuming responsibility for the problem.

Reasonable costs. Many communities have lived with the odors, the pipes to the creek or malfunctioning systems and know there is a better way. If the costs were reasonable municipalities would be more likely to address the problem. Responsible municipalities should have access to low cost alternatives.

More choices. More, lower cost cluster and on-lot sewage options should be made available to those municipal officials who are willing to assume management responsibility. However, municipalities have to recognize that alternatives will often require regular inspections and O&M.

B. Citizens

Personal responsibility. Show them they are each part of the problem, and therefore have a responsibility to be part of the solution. If there is a problem with their system they should fix it. In many instances, the homeowner does not know that their sewage system is not functioning or that it is creating an environmental problem; many do not even know what type of system they have or where their system is. If they knew there was a problem many might consider addressing it.

Cost of inaction. Show them the cost of not taking action. People need to understand that inadequate sewers negatively affect property values as well as environmental and public health. A neighbor's malfunctioning sewer negatively affects surrounding property values; the community with a number of malfunctioning sewers will have lower property values as compared with the community with properly functioning sewers. Raw sewage and excess nutrients adversely affect local ecosystems. In addition children are more prone to sickness and older people have more health problems.

Benefits. The flip side is that homeowners can benefit from cleaning up their water and environment, leading to better public and environmental health, higher property values, and more community cohesion and pride.

C. State Government

State government can't solve the rural sewage problem alone. However, rural sewage problems can be solved with local involvement. By learning how to work with responsible local officials more problems can be addressed. The Commonwealth can leverage its impact by facilitating the work of responsible local officials. Local municipal officials who assume management responsibility will be given preferential treatment. Once started, a snowball effect will motivate other local municipalities to deal with their problems.

D. Consultants

Since the current contract and lending systems reward high cost options, we can't expect consultants to change the options they provide unless we change to a performance based payment system, rewarding consultants based on long-term low cost operation & maintenance performance standard. Consultants are in business to make money. If they can develop a plan and then replicate it with little additional work a large number of plans can be done with little cost. Some type of performance based payment to consultants would encourage them to design lower capital cost projects with lower O & M costs.

V. Lessons Learned

Broad Top Township and Coaldale Borough, two small, rural municipalities in the northeast corner of Bedford County, are working together to address their sewage problem. This does not entail consolidation or regionalization of their governing bodies, merely cooperation on a mutual issue. 70-80% of the 820 occupied housing units in the project area have malfunctioning or inadequate sewers. The plan developed to deal with all sewage problems is as follows: approximately 600 of the units will be served by one of 4 cluster systems (an extended septic field, a sand filter stream discharge, and 2 aerated lagoons); the remaining 220 outlying housing units will be served by on-lot sewer systems owned and maintained by Broad Top Township. Where possible, on-lot systems will serve 2 to 6 homes leading to significant cost savings over individual systems.

Significant components of the success of this project include::

1. Public support

Inclusiveness in decision-making and in coverage (100% in this case) leads to trust. The following illustrates the amount of public involvement from the date of the first public meeting in January 1991 until groundbreaking in June 1997.

- Over 100 citizens attended the 1st public meeting to discuss sewage problems and to decide whether to start the planning process. 95% asked the township and borough to proceed. The citizens were invited to serve on the Sewage Planning Committee.

- In March 1991 the Sewage Planning Committee (SPC) was formed and met to develop the request for proposal for sewage planning. The committee worked closely with the Bedford County planning commission staff in this effort.
- In February 1992 a public meeting was held to discuss whether to advertise RFP; citizens say “yes”. In June 1992 the SPC selected the consultant.
- In August 1993 a public meeting was held to discuss sewage alternatives and draft the sewage plan concept; citizens say “yes”, but insist that outlying areas be dealt with fairly.
- In December 1993 the draft 537 plan was circulated by the SPC to DER, and anyone interested.
- In December 1994 Broad Top Township and Coaldale Borough approve the 537 plan at public meetings.
- In August 1995 Broad Top Township and Coaldale Borough approved revised final 537 plan at public meetings.
- In February 1996 Broad Top Township approves by motion at a public meeting to proceed with phased construction of the project.
- In May 1996 a public meeting was held to kickoff the project.
- In June 1997 ground was broken for the 1st phase of the project.
- The sewage committee met numerous other times during this 91-97 time frame and any citizen interested in sewage became a member of the SPC

2. Meeting local needs.

The criteria for choice of the consultant and the project focused on best meeting local needs and conditions, at a set monthly cost. The Request for Proposal stated the desire to:

evaluate appropriate alternative treatment methods which can function within the geo-physical constraints of the area, and are compatible with its economy;

consider the existing pattern of land use , such as the numerous isolated and small clusters of dwelling units, which need to be included within any area wide treatment solution;

identify a set of alternative treatment methods that can function as a system to serve all of their residents, and be operated and maintained under a single management entity;

design a system that could operate at approximately \$10 per month per household;

establish and maintain a strong interactive relationship with all contractors throughout both planning and implementation;

reduce costs utilizing the municipal work force.

retain their independence in the planning process and to proceed in a timely manner to avoid being mandated by PA-DEP to conduct the planning study.

3. Direct communication and close coordination with other government entities.

Coaldale Borough, Broad Top Township, the Bedford County Planning Commission, and DEP were partners in planning and designing the Broad Top Project. There was constant and direct communication and very close coordination throughout the project's implementation.

4. Availability of funding.

In the case of the Broad Top Project, a significant amount of grant money and other public funding was obtained, allowing the cost to residents to be kept very low. We believe that a similar outcome can be achieved by other municipalities by: 1) Designing to meet local needs rather than relying on traditional approaches will reduce the cost, both capital and O&M; 2) including broad public participation and close coordination with other government entities will help to identify available funding as well as make citizens more accepting and supportive (even financially) of the final outcome.

VI. Recommended Actions

Financial Incentives

- The Commonwealth must send a very clear signal that “business as usual” has changed. The current system has no incentives to lower either capital or O & M costs, and in fact, has the opposite affect. A performance-based fee should be paid to consultants when they

- design and build low cost systems that work. Consultants must learn how to meet the needs and expectations of the involved municipalities.
- The Commonwealth should make funding available for integrated wastewater management utilizing innovative wastewater solutions. Pennsylvania has more rural population than any other state. The rural sewage problem is extensive. Rural areas of the Commonwealth are less affluent and have an older population. If the rural sewage problem is to be dealt with a significant funding effort will be needed. To keep sewage costs affordable a combination of grants and long term (40 years) low interest (1-2%) financing is necessary. Low capital cost projects should be given priority. Only low O & M sewer projects (\$10-\$15 for a HU each month; for example, Broad Top currently charges \$13 per month) with simple operation requirements should be funded. Municipalities who use the integrated wastewater management approach should be given preferential treatment. The objective is to give incentives to consultants to design low debt service and low O&M projects and to municipalities who assume responsibility.

DEP Oversight

- DEP must show more ingenuity and flexibility in dealing with the rural sewage problem. Cluster and onlot systems should be evaluated on their ability to meet water quality objectives rather than arbitrary rules. As more sewer projects are designed to meet the particular needs of a particular municipality, more attention and time from DEP employees will be required.
- DEP has not traditionally considered on-lot management as a legitimate piece of municipal sewage systems. Since cluster and on-lot management will be part of a municipality's sewage management system, the ability to monitor and maintain each will be needed. The Commonwealth should provide the monitoring and maintenance training.
- Onsite treatment systems must be driven by performance goals and not prescriptive requirements. Quoting Richard Otis's Small Flows article: "We will not solve problems if we are more concerned about setback distances, percolation rates, or number of bedrooms than we are about treatment needs." "Selection of wastewater treatment alternatives must be based on appropriateness in meeting water quality objectives cost effectively rather than arbitrary rule requirements."
- The Commonwealth will need to hold the municipalities responsible for properly managing and maintaining these non-traditional systems. Periodic inspections and

- reviews will be needed to insure that the municipalities are fulfilling their obligation to manage these systems properly. Municipalities should expect and require this. Consideration should be given to developing standardized inspection protocols.
- The role of DEP should be to encourage municipalities to stand aside and let the community define their needs and how to deal with them. The department should give information without implying that “this is the way that it should be done”. A different terminology will be needed to include municipalities who are managing all their sewer problems. These municipalities will have a sewer system but not in the usual sense of a treatment plant serving connected users; they will have an Integrated Wastewater Management System
 - Management of information. The information generated by the BT Project should be used to set monitoring protocols for the various sewage technologies utilized in the project. This information will obviously be useful not just to this project but will also be useful to other municipalities considering assuming management responsibilities. The information will provide the basis for other sewer projects and will be useful to financial institutions.

Making Alternatives Available

A good way to help rural municipalities take the initiative and do sewer management is to demonstrate how it is done. Examples of municipalities who are doing some level of management should be publicized and used by DEP and other municipalities who wish to observe a demonstration. One of the best ways to learn is through “show and tell”. A 1998 publication by the Pennsylvania State Association of Township Supervisors A Municipal Official’s Guide to Managing Onlot Sewage Disposal Systems contains examples of municipalities who are doing different types of management.³

Make information available on research into options (e.g., Rodale, Del-Val, and the cooperative DCNR State Parks demo project.). A number of experimental alternatives are being evaluated at

³ http://www.dep.state.pa.us/dep/local_gov/sewage/body.htm

Delaware Valley College. Municipalities and DEP personnel should be briefed on what is happening and on the results of the experimentation.

Availability of technology. Sewer projects like the Broad Top Project will have additional sewage technologies available to them since they are assuming management responsibilities. Those municipalities who do not want to do management will not have access to these technologies and will be required to utilize standard technologies.

DEP should encourage pilots for experimental systems. When experimental systems have been shown to work they should then be replicated in other locations as pilot systems to see if they perform up to standard and to show municipal officials how they work.

There is an experimental technology verification protocol but the process of moving new technology on-line remains very burdensome and difficult. The goal should be to encourage, not discourage, new sewage management approaches and technologies.

Aiming at no-waste systems. The liquid portion of the waste stream can be used to replenish the ground water supply or provide water for plant growth. In some places a stream discharge actually may improve the stream's water quality. The solid portion of the waste stream can be utilized on land needing organic matter and fertility, such as abandoned mine land and agricultural land.

Enhancing Public Participation

From the decision to begin the process to the end of construction there must be inclusive public participation. Without public involvement from the start of sewage planning there will be significant parts of the community who will oppose the final sewage plan. Numerous public meetings and involvement of citizens on the sewage committee are essential for successful sewage planning. Municipal officials should help facilitate the process, not dictate. Public involvement throughout the process will trigger citizen ownership of what is recommended.

Public Participation Guidelines for sewer project implementation:

- Call a public meeting at the beginning of the process. Get direction from the public. Form a sewage planning committee (SPC) including all who are interested and willing to serve.
- Call a SPC meeting to develop the first stage of the project—develop a Request for Proposal for sewage planning—include the County Planning Commission to advise the SPC. Invite other possible advisors.
- The SPC should call a public meeting to discuss the RFP and to get OK from public to proceed. Invite DEP officials. Add any other interested persons to SPC.
- The SPC select a consultant and start the planning process.
- The SPC call a public meeting to present and discuss a draft of the sewage plan. Invite DEP officials. Again add any interested persons to SPC.
- Public action on plan by municipality(ies).
- The SPC help draft policy and procedure documents for the sewage project.
- Public meeting to initiate the project and present the policy and procedures.

Communication and Coordination

Close coordination is needed with other levels of government and between municipalities too. Municipalities should be encouraged to work together to deal with their sewage problems. Coaldale Borough could not have addressed its sewage problems alone. Working with Broad Top Township both municipalities benefited. Without the involvement of the Bedford County Planning Commission the Broad Top Project would not have gotten off the ground; their planning expertise helped guide the project. Close cooperation and communication with the DEP was essential.

Municipalities

Municipal officials who see their job on traditional lines (i.e. as road supervisors) may be slow to take on additional responsibilities unless education and assistance is provided to support them in undertaking non-traditional roles such as sewage management. If they do not assume sewage management responsibilities they will have fewer alternatives than a municipality who assumes management responsibility.

Who is most qualified to define what best meets the sewage needs of their community—the municipal officials and their citizens or the consultant or “expert”? Unfortunately, many municipalities have concluded that it is the "expert". The consultant has done many plans for many municipalities. He/she has worked with DEP. However, without active community participation and ownership, “expert” recommendations often meet community opposition.

The county planning commission helps municipalities develop a request for proposal (RFP) to do 537 sewage planning. It is important that the RFP represents what the municipality wants and needs to address their sewage problems. DEP should encourage this. Usually the RFP is not tailor-made for each municipality; rather it is boilerplate, the same one used for a number of municipalities.

Consultants

Consultants can continue to “low ball” bids that meet the letter of the law but do not meet the needs of the municipality and its residents. Bid price must be secondary to bid quality in selecting a consultant.

Citizens

Citizens must be educated to realize that their sewer problem won't go away unless they do something. Also they should learn that they live downstream from someone and people live down stream from them.

As Richard Otis concluded in his Small Flows article⁴:

“Integrated wastewater management that includes conventional central sewerage as well as onsite treatment is the paradigm that we must adopt. Facility planning for unsewered communities should evaluate both conventional sewerage and onsite and cluster treatment to provide service to every property in the planning area all under central management. Integrated wastewater management is not an either/or approach, but an approach that applies the most appropriate technology in each sub-area of the planning area. In most cases, a mix of conventional sewerage and onsite/cluster treatment may be the most appropriate alternative....Until onsite treatment systems are designed for performance and managed by qualified third parties, affordable wastewater management will remain beyond reach.”

⁴ Small Flows Summer 1998 Volume12 #3

