



## Asset management: a new frontier for utilities

by Cathleen Falvey  
NESCS Contributing Writer

It's 2 a.m. on a cold, rainy fall morning. Leo, the public works director for the small rural community of Summerville, is waking up to another emergency phone call. A pump has failed at a local sewage lift station, and if he doesn't get there quickly, raw sewage could back up and pollute a nearby stream. He wonders if he'll have the parts he needs on hand to fix the problem. As he laces up his boots, Leo tries to recall just how many times over the past three years he's been forced to leave his bed for an emergency like this one. It seems to be happening more and more.

"Things have been breaking down right and left at the wastewater and water plants," he thinks to himself. "The equipment is getting old, so you'll have that. Still, it would be nice if we could predict which parts need to be replaced first so we can avoid a violation and so I can get some sleep." But Leo realizes there's only so much he can do with the time and money he has. It seems he only ever has enough of both to put out fires.

Meanwhile, down the road, in the neighboring town of Quiet Dell, Judy, the water treatment plant supervisor, is also spending a sleepless night. Judy is worried because she's slated to go before town council later in the day to request money to upgrade the treatment works and distribution system. She's certain the investment is needed now to prevent future problems and save money in the long run, but she's not sure the council will agree. Money is tight right now in Quiet Dell. The treatment plant has been running smoothly for a long time and the council even increased her budget slightly last year. Although she could go into the meeting and scare everyone with worst-case scenarios of what could go wrong and speak in generalities about how waiting could cost the town more money, she doubts she'll convince anyone. If only she had the time and the data to prepare a detailed estimate to show council members exactly how much money the town could save by making



The small town of Denton, Maryland, is working with the Maryland Center for Environmental Training (MCET) to understand and implement the asset management process at its wastewater treatment plant. Photo courtesy of Karen Brandt, MCET.

the upgrades now, she knows they would make the right decision.

Leo and Judy are not alone in their worries. Many small treatment plant supervisors across the country face similar nightmares. Whether they serve 1,000 or 100,000 people, water and wastewater utilities are expected to provide continuous, high-quality service to their customers. Anything less can have dire consequences for public health and the environment. Typically, small system managers are expected to maintain this high level of service with a lot less money than their counterparts in the city. It's no wonder they're losing sleep.

Besides money, what Leo and Judy need most is information. They need to know more about their systems to manage them effectively. Imagine for a moment that Leo had, at his fingertips, data on the age of all his pumps, their expected life cycles, how recently they've been serviced, and the parts he needs to keep in stock. Imagine that he had access to all the information he needed to plan and prioritize routine maintenance for all the pumps based upon their importance to the smooth running of the system in relation to the needs and criticality of all the other system components. If Leo were able to access data like that everyday at work—information that could

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# E-news

## NESC offers two free onsite wastewater videos

Two onsite wastewater management videos are available free from the National Environmental Services Center (NESC) until January 1, 2005. Produced by the National Onsite Demonstration Program, these educational videos can assist small communities that want to manage their onsite wastewater treatment systems more effectively.



The videos are valued at \$10 each and also include free shipping and handling. They are:

**Community Onsite Options: Wastewater Management in the New Millennium**—This video introduces the concepts, ideas, and processes of community onsite management systems (OMS), including individual onsite systems and cluster systems. Alternatives to the conventional septic system are discussed, including mounds, sand filters, and aerobic treatment units. The video highlights several

communities across the U.S. that effectively use unique OMS approaches. Emphasis is placed on system suitability, viability, maintenance, and monitoring, as well as cost-effectiveness. Please request Item #DPVTMG07.



**Approaches to Onsite Management: Community Perspectives**—This video discusses the need for implementation of onsite management systems in five communities across the nation. Ongoing maintenance, monitoring, and

management are emphasized. Wastewater professionals from each of the communities explain why their community instituted an OMS, the approaches they took, how it is administered, and its benefits. Please request Item #DPVTMG09.

To order the videos, call NESC's products distribution department at (800) 624-8301 or (304) 293-4191 or send an e-mail to [nsfc\\_orders@mail.nesc.wvu.edu](mailto:nsfc_orders@mail.nesc.wvu.edu).

## Calendar of Events

### EPA Region 3 Emergency Preparedness and Prevention Conference

December 5 – 8  
Philadelphia, PA  
(800) 364-7974  
[www.2004conference.org](http://www.2004conference.org)

### National Ground Water Association's Annual 2004 Ground Water Expo

December 12 – 15  
Las Vegas, NV  
(800) 551-7379  
[www.ngwa.org](http://www.ngwa.org)

### Water Environment Federation and American Water Works Association's 2005 Joint Management Conference

February 27 – March 2  
Atlanta, GA  
(800) 666-0206 or (703) 684-2452  
[www.wef.org/conferences](http://www.wef.org/conferences)

### National Small Flows Clearinghouse's 7th Annual Onsite State Regulators and 5th Annual Captains of Industry Conference

March 7 - 11  
New Orleans, LA  
(800) 624-8301 or (304) 293-4191, ext 5536  
[www.nsfcc.wvu.edu](http://www.nsfcc.wvu.edu)

### Journal of Solid Waste Technology & Management and Widener University's 20th International Conference on Solid Waste Technology and Management

April 3 – 6  
Philadelphia, PA  
(610) 499-4042  
[www.widener.edu/solid.waste](http://www.widener.edu/solid.waste)

### National Pollution Prevention Roundtable, Performance Track Participants' Association, and the U.S. Environmental Protection Agency's 2005 National Environmental Partnership Summit

April 11 – 14  
Chicago, IL  
(215) 428-9655  
[www.environmentalsummit.org](http://www.environmentalsummit.org)  
Please note that registration opens March 1, 2005.

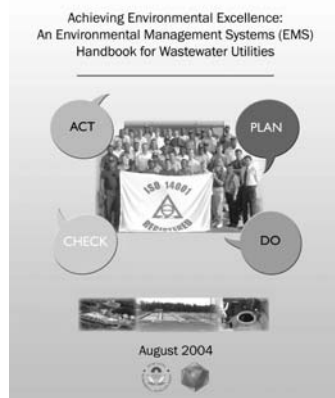
### National Environmental Training Center for Small Communities' 2005 Environmental Training Institute for Small Communities

Week of July 25 – 29  
Morgantown, WV  
(800) 624-8301 or (304) 293-4191, ext 5536  
[www.netc.wvu.edu](http://www.netc.wvu.edu)

## New EPA guide helps wastewater utilities develop EMS

The U.S. Environmental Protection Agency's Office of Water has issued an important new tool to help wastewater utilities develop environmental management systems (EMS) for their operations. *Achieving Environmental Excellence: An Environmental Management Systems (EMS) Handbook for Wastewater Utilities*, takes utilities through a step-by-step process for developing an effective EMS, using numerous examples and other tips from utilities that have successfully implemented EMSs for their own operations.

An EMS is a set of problem identification and problem-solving tools that local governments can use—organization-wide or in a



specific department—to save money and protect environmental resources by reducing waste, improving efficiency, and integrating environmental stewardship into everyday operations. An EMS provides a systems-based approach that helps utilities address their regulatory demands in a systematic and cost-effective manner. This proactive approach can help reduce the risk of non-compliance or

environmental liability and improve health and safety practices for employees and the public.

*The handbook is available on the Web through the Local Government Environmental Assistance Network. To download a copy, go to [www.lgean.org/html/whatsnew.cfm?id=802](http://www.lgean.org/html/whatsnew.cfm?id=802).*

## New ERP guidance document available from WERF

The Water Environment Research Foundation (WERF) has developed a new *Wastewater Emergency Response Plan Guidance Document* that will assist wastewater systems in preparing their emergency response plans (ERPs). The document is intended to help wastewater systems to organize their planning efforts and to provide a reference for the types of information and data that should be included in an ERP.

*The ERP guidance document is available in three portable document format (PDF) modules and can be downloaded from [www.werf.org](http://www.werf.org) or [www.epa.gov/safewater/security/](http://www.epa.gov/safewater/security/).*

## RCAP offers free eBulletin subscription service



The Rural Community Assistance Partnership (RCAP) recently established a free online publication that provides small rural water utility staff and board members with helpful management tools and regulation information. The Safe Drinking Water Trust *e-Bulletin* includes material to assist utilities with successfully running their systems.

*To subscribe to the e-Bulletin, go to [www.watertrust.org](http://www.watertrust.org).*

## NETCSC training resources catalog available online



The National Environmental Training Center for Small Communities' (NETCSC) 2004 *Environmental Training Resources Catalog* is now

available on NETCSC's Web site located at [www.netc.wvu.edu](http://www.netc.wvu.edu). The catalog provides full descriptions of all of NETCSC's products for use in all phases of training—from needs assessment to delivery and evaluation.

The catalog details free or low-cost training packages, training aids, and training-related information in the following topic areas: environmental management, security and emergency response, drinking water and wastewater, drinking water, wastewater, solid waste, and training/adult education. An order form is included.

*To place an order, call NETCSC at (800) 624-8301 or (304) 293-4191, fax (304) 293-3161, or e-mail [netc\\_orders@mail.nesc.wvu.edu](mailto:netc_orders@mail.nesc.wvu.edu).*

## 2004 Environmental Training Institute assists environmental professionals

More than 170 people attended the 2004 Environmental Training Institute for Small Communities—the fifth annual training event sponsored by the National Environmental Training Center for Small Communities (NETCSC). Held the last week of July in Morgantown, West Virginia, participants benefited from the many training opportunities available, interacted with environmental professionals from all across the country, and enjoyed the summertime atmosphere of the West Virginia mountains.

“Thanks to active participation by all those involved, the Institute was a great success,” says John Hoornbeek, Ph.D., NETCSC director. “Attendees from more than 25 states took advantage of the many opportunities available to broaden their knowledge and skills so that they will be better able to assist the small communities with whom they work.”

This year’s Institute featured 17 different training sessions taught by nationally respected faculty in four different training tracks—drinking water, wastewater, managing and protecting assets, and finance. Two field trips showcasing



*Steve Branz, P.E., technical director of Bord na Mona, describes the Puraflo Peat Biofilter during his “Tech Talk” session.*



*Sheila Frace (center), director of EPA's Municipal Support Division, was a featured speaker during the annual Institute luncheon. Joining her is Richard Phalunas, Ed.D., (left) NESC interim executive director, and John Hoornbeek, Ph.D., NETCSC director.*



*Robert Rubin, Ph.D., (left) explains how a recirculating sand filter works during the tour of alternative onsite wastewater systems.*

both alternative onsite wastewater systems and a centralized treatment system allowed attendees to learn by seeing systems at work.

A number of new courses were offered this year, including:

- New Regulations and the Technology to Meet Them
- Constructing Groundwater Wells: That’s A Deep Subject
- Out in the Open: Conducting Better Public Meetings
- Don’t Let a Fancy Pocket Protector Fool You: Selecting and Working with Engineers
- Asset Management for Water and Wastewater Systems
- GASB 34: Lessons Learned and Future Needs
- Show Me the Money: Funding Environmental Projects
- Sound Financial Management: Moving from Concept to Action

An innovative program that was well received by Institute participants was the “Small Community Needs and Solutions Forum.” This special afternoon forum featured a selection of concurrent sessions focusing on technologies, services, and resources that benefit small communities. Institute attendees selected from a number of in-depth presentations on a variety of topics and a host of shorter presentations called “Tech Talks” that featured demonstrations and information about technologies useful for small communities.

The Institute Exhibit Hall was open throughout the week and showcased products, services, and resources available to help small communities. It also provided a place for Institute attendees to socialize with instructors and fellow participants while browsing through the many vendor exhibits.


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In addition to the classroom sessions and field trips, participants also enjoyed several social events, including an “Evening with Exhibitors” reception, a cookout at Coopers Rock State Forest, and the Institute networking luncheon featuring remarks by Sheila Frace, director of the U.S. Environmental Protection Agency’s Municipal Support Division.

“I had a great experience here,” remarked one Institute participant. “I learned a lot that I can take home to our communities, and I made valuable connections. I also loved Morgantown and had fun exploring it.”

The 2005 Environmental Training Institute for Small Communities will be held during the week of July 25 in Morgantown, West Virginia. Program details will be announced in the next issue of *E-train*. 



*The Institute Exhibit Hall provided a place for vendors to showcase their products and services.*



*The Ray Hicks Band provided old-time music during the annual cookout.*



*Institute attendees enjoyed a summer sunset from the Coopers Rock overlook.*

*Photos by Julie Black and Chris Metzgar.*

## 2004 Institute Exhibitors

- Bio-Microbics, Inc.
- Bord Na Mona
- Cromaglass Corporation
- Crumpler Plastic Pipe, Inc.
- Delaware Technical and Community College
- GeoResources Institute, Mississippi State University
- Greater Morgantown Convention and Visitors Bureau
- Highland Tank
- Industrial Scientific Corporation
- Infiltrator Systems, Inc.
- Information Research Corporation
- Maryland Environmental Service
- Micrologic, Inc.
- Mid-Atlantic Aeration
- National Association of Towns and Townships
- National Environmental Services Center
- National Rural Community Assistance Partnership
- Natural Resource Analysis Center
- Preiser Scientific, Inc.
- Rickmond Engineering, Inc.
- Sauereisen, Inc.
- Service Pump and Supply, Inc.
- Southeast Rural Community Assistance Program
- U.S.D.A. Rural Utility Service
- U.S. EPA Technology Assistance Centers
- Zabel Environmental Technology
- Zoeller Company

## 2004 Institute Co-Sponsors

- Environmental Finance Center—University of Maryland, Region 3
- Environmental Finance Center—University of North Carolina, Region 4
- Missouri Department of Natural Resources, Outreach and Assistance Center
- Delaware Technical and Community College
- Pennsylvania USDA Rural Development—Rural Utilities Service (PA RUS)
- National Rural Community Assistance Program, Inc. (RCAP)
- Great Lakes Rural Community Assistance Program—WSOS Community Action Commission, Inc. (WSOS-CAC)
- National Environmental Services Center (NESC)
- National Drinking Water Clearinghouse (NDWC)
- National Small Flows Clearinghouse (NSFC)
- National Onsite Demonstration Program (NODP)
- West Virginia Technical Advisory Program (WVTAP)
- West Virginia Onsite Training Center (WVOTC)

## Asset management: a new frontier for utilities

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help him plan and use his limited time and resources as efficiently as possible—system failures may be a lot less common in Summerville. Leo could move from putting out fires to preventing them.

Likewise, if Judy had access to detailed information about all of her system's physical assets, their cost, condition, and remaining years of service, she could compare the cost of operating, maintaining, and repairing them with the cost of replacing them with newer, more efficient models. This could give her more meaningful information to present to the council and a better chance of receiving the funding she needs. Another possibility is, after analyzing all the data and prioritizing her assets, Judy may decide that extensive upgrades are not as immediately critical as she previously thought. This would allow her to budget for the upgrades and give the council advance warning about investments they will need to make in the plant over the next few years.

By gathering information about their systems' assets, and using that information to run the systems as cost-effectively and efficiently as possible, Judy and Leo are practicing asset management.

### What is asset management?

Asset management is a structured, "holistic," approach to system management, which relies on information about the condition, cost, and use of the system's physical assets. An asset is defined as a physical facility or a component of a physical facility that has value and that enables a service to be provided. Assets that communities should be concerned about managing typically have a useful life of more than a year.

Although asset management is not a new concept, its application to water and wastewater treatment facilities was pioneered in Australia and New Zealand and is relatively new in the U.S. All water and wastewater operators currently manage their assets in some way—the key is to do it well. The goal of "good" asset management (also called "advanced," "strategic," or "total" asset management) is to minimize the cost of owning and operating assets over time while continuously delivering the required and desired customer service. In layman's terms, asset management is getting the most bang for the infrastructure buck.

### Why is asset management important?

Asset management helps utilities save money both in the long and the short term. Saving money has always been especially important for small communities, but the need to manage assets wisely will be critical for all utilities in the future. Operating costs in the industry are increasing as are costs of infrastructure improvements. EPA anticipates that the gap between drinking water and wastewater infrastructure needs and infrastructure spending and funding will widen significantly in the future. (*For more information, refer to the report, The Clean Water and Drinking Water Infrastructure Gap Analysis, which can be downloaded at [www.epa.gov/safewater/gapreport.pdf](http://www.epa.gov/safewater/gapreport.pdf).)*

In addition, the federal government recognizes the importance of asset management and is beginning to encourage utilities to implement programs. A new bill, S. 2550, approved in June 2004 by the Senate Committee on Environment and Public Works ties state revolving fund (SRF) eligibility to asset management through a "priority system." The bill asks states to give more weight to applications for assistance from water and wastewater treatment works that include (1) an inventory of assets, including a description of the condition of those assets; (2) a schedule for asset replacement; and (3) a financing plan, indicating sources of revenue from rate payers, grants, bonds, and other loans and sources. Although the bill is not expected to become law this year, communities should take note. As with the Government Accounting Standards Board Statement (GASB 34) guidelines that came before it, asset management is not mandatory. However, in the future, communities may find it difficult to obtain funding or a good credit rating without good asset management practices.

Another incentive for utilities to embrace asset management is that it helps with GASB 34 compliance. GASB 34 is a method of accrual accounting and financial reporting that publicly-owned utilities are encouraged to use to report historical costs and depreciation on all infrastructure assets. Although GASB 34 financial statements also include discussion and analysis of assets and future spending, the goal of asset management is broader. Operators and facility managers can use asset management to generate schedules for routine *continued on next page*



# EPA defines asset management

In the publication, *Asset Management: A Handbook for Small Water Systems*, the U.S. Environmental Protection Agency (EPA) outlines a simple asset management program. Although asset management programs vary in complexity, EPA suggests the following five steps for implementing asset management in a small utility:

## 1. Taking Inventory

Completing an inventory of system assets includes evaluating and reporting each asset's condition, its age, its service history, and its "adjusted useful life." Inventory is often the most labor-intensive part of the asset management process for utilities. Identifying, locating, and evaluating all of a system's assets can be time-consuming, although many systems have begun or completed this process to comply with GASB 34. The expected useful life of various system components can be found by using industry lists and cost indexes. Using this information, utilities can estimate an "adjusted" useful life for each asset by taking into account its service history and current condition. For example, the expected useful life of a given pipe may be 40 years, but if the pipe is in poor condition due to lack of maintenance or other conditions, a manager may decide to adjust the useful life by 10 years. Managers then subtract the age of the pipe (10 years) to determine its remaining useful life (20 years).

## 2. Prioritizing Assets

After taking inventory, utility managers need to devise a system for prioritizing their assets. The simplest way is to base priority on the remaining useful life, assigning the highest priority to assets with the shortest remaining useful life. Other, perhaps better, factors to take into account when prioritizing include the asset's importance to delivering a high-level of service (i.e., safe drinking water). The asset's "criticality" to the rest of the system and

whether other assets in the system can do the same job (redundancy) are also considerations. Assets that are more important to the system's ability to protect public health should be given a higher priority, as should assets for which there is less redundancy.

## 3. Developing an Asset Management Plan

Now that the assets have been prioritized, utility managers need to plan for and schedule the future rehabilitation and/or replacement of each asset. In other words, they must formulate a capital improvement plan for the system. EPA suggests that utilities calculate the amount of money they will need to set aside each year in an annual reserve fund to pay for each asset.

## 4. Implementing the Plan

This step requires the utility manager to work out a detailed system budget. The manager will prepare a financial forecast by estimating the revenue the treatment plant expects for the next five years. Next the manager compares the forecast with the scheduled upgrades in the plan to determine if the utility will need to put aside additional funds in reserve, find ways to save money (such as sharing assets with a neighboring community), find additional funding, or increase customer rates. This exercise is not meant to replace traditional accounting methods.

## 5. Reviewing and Revising the Plan

The plan can be updated if priorities change and as new information becomes available. EPA suggests reviewing the plan on at least an annual basis.

*Source: Asset Management: A Handbook for Small Water Systems, U.S. Environmental Protection Agency Office of Water, September 2003, EPA 816-R-03-016. [www.epa.gov/safewater/smallsys/pdfs/guide\\_smallsystems\\_asset\\_mgmnt.pdf](http://www.epa.gov/safewater/smallsys/pdfs/guide_smallsystems_asset_mgmnt.pdf).*

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and preventative maintenance, for example. GASB 34 compliance can be seen as an important component of a utility's asset management program.

Another initiative closely related to asset management is capacity, management, operation, and maintenance or "CMOM." EPA has proposed that wastewater systems be required to submit CMOM plans to obtain National Pollutant Discharge Elimination System (NPDES) permits. CMOM is similar in many

respects to asset management. Implementing asset management programs can only simplify CMOM compliance for wastewater facilities.

One clear advantage of asset management for utilities is its usefulness as a planning tool. Small communities around the country will find it indispensable as they face population growth or decline or other changes, such as the need to increase security spending or comply with increasingly stringent environmental regulations. Asset management allows communities

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to be proactive, not reactive, to changing needs and helps them make better financial decisions.

### Asset management database will help communities

Trainers and small communities will soon have free software available to help them navigate the asset management process. Compliance assistance providers and trainers at the Maryland Center for Environmental Training (MCET) of the College of Southern Maryland and Delaware Technical and Community College (Delaware Tech) have been collaborating with small community wastewater facilities in their area to perfect the program. The database program is scheduled to be released in June 2005 and is written in Microsoft Access, part of Microsoft Office. According to MCET Director Karen Brandt, the database project is part of a three-year partnership between MCET and EPA to pilot asset management for small communities.

“We’re working with four small communities to develop the program—the towns of Denton and Easton in Maryland, and Selbyville and Seaford in Delaware,” says Brandt. “It’s been very helpful—we’re asking these guys to use this program, put it in, run it, and test it out for us, and they’ve been very specific about what they do and don’t like. So the program is being changed and simplified according to the communities’ needs.”

Brandt says that system size and simplification are important issues with asset management training. She says that there’s already lots

of help and asset management information available for large systems, and because of their layers of staffing, these larger systems can better handle the work involved in launching asset management programs. There seems to be only a handful of trainers currently focusing on asset management for small utilities.

“System size is a huge issue because of the staffing,” says Brandt. “In small systems you’re talking about a superintendent and an operator running a wastewater treatment plant. It’s a laborious process at best in the beginning when you’re getting all of your asset information together, and a lot of small systems don’t have that information. Part of the goal of our pilot program was to find out if small systems can implement asset management programs, and we’re finding the answer is yes, absolutely.”

Brandt says another goal of the pilot program is to find a cost-effective way for small communities to implement asset management, so as they developed the database program they made it small system-friendly. She says simplicity is the rule when it comes to almost everything with small systems because they just don’t have the time.

“The database program started out as a mechanism to help communities capture their assets, because the first thing you have to do with asset management is know what you’ve got,” says Brandt. “The program helps communities capture their assets and their assets’ value—the condition, evaluation, and criticality of the assets are all captured. Then the database has a preventative maintenance component.

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## Elements of Comprehensive Asset Management



Source: Government Accountability Office



## Financial subjects are major training needs

Technical assistance providers and environmental trainers should take note—in a study conducted by the National Environmental Training Center for Small Communities (NETCSC), small communities and those who assist them identified a variety of financial topics as major environmental training needs. Craig Mains, NETCSC training specialist and author of the training needs report, did not find these results surprising.

“There seems to be a fair amount of operations-type training out there already,” says Mains. “It makes sense that a need for financial training would come up because one part of our study revealed that there is not a strong network of this type of training available for small systems.”

Mains interviewed a variety of small community environmental personnel and assistance providers and asked them to rate their needs for assistance. The study targeted such groups as operators, system managers, and local decision makers, such as town administrators. He also contacted assistance providers, such as contractors

and personnel from groups that work with small communities. Mains says that financial topics were the top five to 10 training needs identified by each group.

“For example, if you look at small community officials, the top three training topics they identified were funding for upgrades, capital improvements planning (which is a part of asset management), and retaining operators,” says Mains. Mains considers retaining operators to be a financial management issue, because small communities say they are losing their trained operators to higher paying jobs.

“In addition,” says Mains, “financial viability for systems was also a highly rated training need identified by communities, as was bookkeeping.”

Mains says results were similar among assistance providers—for example, the need for training on capital improvements planning was rated highly, as was financial viability for systems.

*For more information about NETCSC's training needs study, see article on page 12.*

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Now it is also doing one thing we really wanted it to—which is to generate a prioritized list of assets.”

Brandt says the program allows operators to track exactly how much an asset costs them to maintain, because they can enter an employee and his time with an identifier and that information will be put on the asset. Although people are not considered assets in asset management, Brandt is finding that there still is a people component. For example, when a system purchases a pump, if they install it themselves, that labor becomes part of the capital cost.


“And they’ll be able to see exactly how much they’re spending for something and fixing it when it breaks down,” says Brandt. “So they’ll be able to judge, ‘oh, wait a minute, we’re putting an awful lot of money into this asset and the new one is \$12,000, but look at the trend we’ve got here.’”

“The database also runs parallel to an accounting program, meaning it uses the same language and principles of accounting in order

to help systems comply with GASB 34,” says Brandt. “This is one of the things we’ve been very careful with.”

Although operators will not be able to use the database to generate their GASB 34 financial statements, Brandt says they will be able to depreciate their equipment and do a capital improvement plan (CIP).

“The initial steps of a CIP will come out of there. They’ll have their prioritized list, and then, obviously, people need to come in and make decisions,” says Brandt. “We’re looking at everything—operations, maintenance, asset retention, replacement, rehabilitation, management, and financial. The idea behind asset management is that it enables (the utility) to be financially sound, so it can stand alone and survive. That’s the whole picture in a nutshell.”

*For more information about the Maryland Center for Environmental Training (MCET), visit [www.mcet.org](http://www.mcet.org). For information about asset management courses offered at Delaware Tech, visit [www.dtcc.edu](http://www.dtcc.edu).* 

# Environmental trainers address need for asset management training

by Cathleen Falvey  
NESCA Contributing Writer

The current push by the U.S. Environmental Protection Agency (EPA) and Congress to have water and wastewater utilities implement asset management is creating new opportunities for environmental trainers.



Jean Holloway

Jean Holloway, a NETCSC Associate and training manager for the Environmental Finance Center (EFC) at the University of Maryland, says that she has seen the demand for asset management training increase.

“Right now,” says Holloway, “I teach asset management classes at the Delaware Environmental Training Center at Delaware Technical Community College. They decided three semesters ago to add the course to the regular schedule. This year I also taught asset management classes for the Rural Water Associations in Virginia and Maryland, and I’ll be doing more in Maryland at the beginning of the year. I’ll be teaching the class all over Region 3 for anyone that asks. And I suspect that, eventually, we’ll also be sponsoring the training through the EFC.”

Holloway says that, although interest is growing, there are still many communities that don’t know anything about asset management.

“I’m trying to do more of this and get the message out, so to speak, because I don’t think many people realize what asset management means,” says Holloway. “I think they think, ‘well I already manage my assets—I take care of them,’ but there’s so much more to it than simply managing assets in the traditional sense. It’s planning, assessing risk, and defining the criticality of assets.”

Holloway says that unlike Rural Water, the EFC isn’t restricted to only training small communities, but she finds it’s the small systems that call her the most. Large systems tend to have more training resources. But she has had staff from larger cities attend her classes.

The class Holloway developed offers a middle ground between the EPA’s five-day advanced asset management training, which is based on the Australian model, and the very simple “STEP” guide, *Asset Management: A Handbook for Small Water Systems*, also offered by EPA.

“The advanced EPA training is like getting an MBA in asset management, and the STEP guide is more like elementary school,” says Holloway. “I’m trying to give them something practical and useable—like high school.”

Holloway believes the challenge for trainers is to make the information fit the system—that one size rarely fits all.

“Some of the smaller systems think that some asset management concepts are too complicated and they don’t need all that,” says Holloway. “Trainers need to bear in mind that maybe they actually don’t. Maybe small systems just need something practical to help them plan for the upgrade and replacement of their equipment without getting into the quantitative analysis level.”

“One other thing I would suggest for trainers,” says Holloway, “is to bear in mind that we’re asking people to do things differently than they’ve ever done them before. Sometimes that can be very tough.”



Carl Brown

Carl Brown, a trainer with the Missouri Department of Natural Resources (MODNR), agrees that asset management is new territory for most water and wastewater systems and the trainers who work with them, and that it’s important to keep things simple.

“Almost none of the systems really know about asset management,” says Brown. “They may have heard the term, or they may have heard it in some other context. For example, the finance community has been talking asset management for a long time. However, in water and wastewater infrastructure, asset management is a brand new concept to small communities. In fact, it’s not all that common in large systems in the U.S.”

However, Brown points out that the notion of asset management shouldn’t be foreign to anyone.

“We all use asset management to manage our personal finances, our checkbooks, and our house—all the stuff that we have. We’re really thinking in terms of asset management all the time. We think, ‘What do I need to pay to keep everything going the way I like it, and what do I need to give up to achieve this (setting priorities)?’”

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Although asset management concepts, such as planning for future repairs and upgrades, may seem obvious, Brown says trainers should be aware that community politics can complicate matters.


“Local politics usually boils down to keeping rates as low as possible for the rate payers. Community leaders and facility managers usually take that charge real seriously and keep rates as low as possible, sometimes even to the detriment of facilities.”

Brown suggests informing facilities managers how an asset management program can help them when meeting with community leaders.

“The asset management program almost becomes an entity of its own, almost like another person in the meeting. So when it comes time to decide about setting rates, whoever is responsible for maintaining the asset management program can simply ask the decision makers: ‘OK, I understand you want to reduce our water rates by 15 percent. Which 15 percent of our asset management do you want to eliminate or reduce?’ So then the manager can simply flip through the catalog, and ask whether they want to eliminate storage, or eliminate pump stations, or cut back on treatment. Most communities will realize that they can’t save real money doing that. They certainly can’t provide good, dependable service that way.”

Brown helped put on the first series of state-sponsored asset management workshops in Missouri and has taught asset management classes around the country, including at the National Environmental Training Center for Small Communities’ 2004 Environmental Training Institute. He has just received funding to present additional asset management workshops in Missouri and plans to develop a set of tools to help small communities implement asset management programs. Some of those tools are already located on his unit’s Web site ([www.dnr.mo.gov/oac/lgov.htm](http://www.dnr.mo.gov/oac/lgov.htm)) and more will be added later.

Brown advises trainers to learn as much as they can about the subject, taking advantage of the many excellent resources available to trainers. Then make it as simple as possible for the system staff and managers they train. (*See box on this page for more information about asset management resources.*)

Holloway can be reached at (410) 632-1853 or [jhollowa@umd.edu](mailto:jhollowa@umd.edu). Brown can be reached at (573) 526-6848 or [carl.brown@dnr.mo.gov](mailto:carl.brown@dnr.mo.gov). 

## Need more information about asset management?

To learn more about asset management, please refer to the following resources:

Andre C. Lerner, Ph.D. 2002. *Getting the Most Out of Your Infrastructure Assets*. American Public Works Association (APWA). PB.AGIA. [www.apwa.net](http://www.apwa.net).

Association of Metropolitan Sewerage Agencies (AMSA). 2002. *Managing Public Infrastructure Assets To Minimize Cost and Maximize Performance (Asset Management Handbook)*. AMSA Publication Code PCMMGT01. [www.amsa-cleanwater.org](http://www.amsa-cleanwater.org).

Government Accountability Office (GAO). March 2004. *Water Infrastructure: Comprehensive Asset Management Has Potential To Help Utilities Better Identify Needs and Plan Future Investments*. Committee on Environment and Public Works. U.S. Senate. GAO-04-461. [www.gao.gov/cgi-bin/getrpt?GAO-04-46](http://www.gao.gov/cgi-bin/getrpt?GAO-04-46).

Institute of Public Works Engineering Australia (IPWEA). 2002. *The International Infrastructure Management Manual*. [www.ipwea.org.au](http://www.ipwea.org.au).

U.S. Environmental Protection Agency (EPA). September 2003. *Asset Management: A Handbook for Small Water Systems. STEP Guide Series*. EPA Office of Water (4606M). EPA 816-R-03-016. [www.epa.gov/safewater/smallsys/pdfs/guide\\_smallsystems\\_asset\\_mgmnt.pdf](http://www.epa.gov/safewater/smallsys/pdfs/guide_smallsystems_asset_mgmnt.pdf).

For a series of articles on asset management, visit Brown and Caldwell’s *Water News* site at [www.bcwaternews.com/AssetMgt/](http://www.bcwaternews.com/AssetMgt/).

For information about EPA-sponsored asset management training, visit [www.epa.gov/owm/asses\\_management.htm](http://www.epa.gov/owm/asses_management.htm).

For information about EPA’s Environmental Finance Center (EFC) network and a list of EFC locations, visit [www.epa.gov/efinpage/efc.htm](http://www.epa.gov/efinpage/efc.htm).

For information about asset management training, outreach, and assistance offered by Missouri Department of Natural Resources, visit [www.dnr.state.mo.us/oac/lgov.htm](http://www.dnr.state.mo.us/oac/lgov.htm).

For more information about GASB 34, visit [www.gasb.org/repmode/](http://www.gasb.org/repmode/).

For information about a variety of wastewater operator training opportunities conducted on-site for small communities, visit EPA’s 104(g)1 Program Web site at [www.epa.gov/owm/mab/smcomm/104g/](http://www.epa.gov/owm/mab/smcomm/104g/).

# New report to document small community environmental training needs

by Jill A. Ross  
E-train Editor

A report soon to be released by the National Environmental Training Center for Small Communities (NETCSC) takes an in-depth look at the environmental training needs of small communities and offers some valuable conclusions and insights that will be useful to those who work with small communities.

The report addresses such issues as what new environmental training issues will need to be addressed in the coming years, what training is presently available for small communities, and current gaps in environmental training.

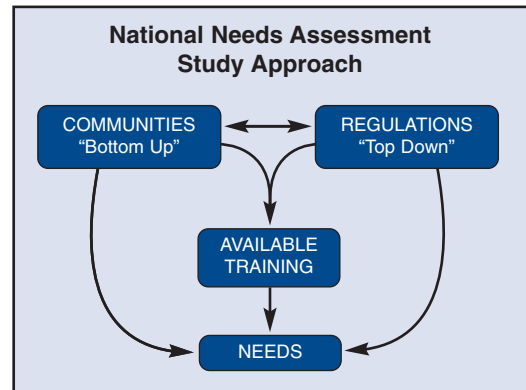
According to John Hoornbeek, Ph.D., NETCSC director, NETCSC undertook this training needs analysis to gather information that will help chart NETCSC's future direction. "We last performed a training needs assessment 10 years ago, shortly after our organization was first established," says Hoornbeek. "This effort led to the development of more than 40 NETCSC curriculum packages and a host of other products and activities to address the needs we identified. We knew it was time to look at training needs again and assess where we are and where we should go in the future."

## A comprehensive look at training availability, needs

The training needs assessment consisted of three major research efforts. An initial research project determined what environmental training was currently available for small communities in the areas of drinking water, wastewater, and solid waste. (See article on page 16 for more information about the results of this project.) The second project focused on identifying and analyzing national regulations and policies that are likely to affect small community environmental management in the years to come. (See box on page 13 for information about NETCSC's "Regulatory Update" Web site.) The final research project involved interviewing individuals who manage small community environmental systems or provide training or technical assistance in small communities.

Craig Mains, NETCSC training specialist, coordinated NETCSC's training needs assessment effort. He analyzed recent and proposed federal regulations that might potentially drive the need for future environmental training, reviewed other recent studies on small community training and infrastructure needs, and oversaw the data collection and analysis of the training needs interviews.

"We interviewed 82 people from around the country, asking them a mixture of open and closed-ended questions," says Mains. "We established a dialogue with the participants and gave them the opportunity to tell us what problems they encounter and what they see as their training needs."



Respondents were interviewed in each environmental area: drinking water, wastewater, and solid waste. Respondents included community personnel—such as local officials and operators—and those who work with local communities, such as technical assistance providers and regulators. Respondents were asked to identify the areas where they need assistance, their training preferences (e.g., how the training is presented), and what they perceive to be obstacles to training.

Mains then analyzed the responses and organized the training needs in three ways: training needs as identified by those who work in local communities, training needs as identified by those who work with communities, and training needs of both groups combined.

## Financial management a major drinking water need

Those interviewed in the drinking water field identified financial management topics as the areas where they most needed assistance. Both small community personnel and assistance providers ranked financial topics among their top three needs. Community personnel indicated "funding for upgrades," "capital improvements planning," and "retaining operators" as major needs. Assistance providers identified "capital improvements planning," "maintaining financial viability," and "retaining operators" as the major needs.

"The 'retaining operators' need was regarded as a financial need by participants because

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they felt that once their operators were sufficiently experienced, they left for better paying jobs,” says Mains. “The respondents felt that sufficiently capitalized systems would be better able to pay and retain qualified operators.”

Several other financial topics ranked high on the training needs list. Out of 19 possible topic areas, community personnel listed “maintaining financial viability” and “financial recordkeeping/bookkeeping” as high-priority needs. Likewise, assistance providers rated “financial recordkeeping/bookkeeping” and “rate setting” as important needs.

“The expressed needs in these areas correspond to what appears to be a lack of existing training opportunities,” notes Mains. “Our analysis of existing training courses provided by the main training networks showed that there were relatively few training courses offered on financial management topics.”

According to the report, another highly ranked training need for all drinking water respondents was “understanding and complying with regulations.” “That this topic would rate high is understandable because there are a series of drinking water regulations that have emerged from the most recent amendments to the Safe Drinking Water Act. A number of these regulations are technical in nature, potentially affecting treatment processes and sometimes requiring upgrading or installing new technologies,” says Mains.

### **Onsite, centralized wastewater respondents indicate needs**

People interviewed in the wastewater area were split between those who worked with centralized treatment systems and those who deal with onsite wastewater treatment systems. “This meant that the training needs for people working with different types of systems—centralized versus decentralized—differed greatly and that training was usually obtained through different providers,” notes Mains.

“While there are at least a dozen recent, current, or upcoming drinking water regulations, there are fewer regulations affecting centralized wastewater systems,” says Mains. “And while some of the drinking water rules affect almost all systems, some of the wastewater rules may affect only a small percentage of systems.” Likewise, security concerns and requirements, thus far, have affected drinking water systems more directly than wastewater systems.

The training needs expressed by respondents who deal with centralized systems were “funding for upgrades,” “maintaining collection systems,” “retaining certified operators,” “communicating with and educating the public,”

“capital improvements planning,” “troubleshooting process control,” “inflow and infiltration,” “residuals and biosolids handling,” “understanding and complying with regulations,” and “keeping the system financially viable.”

Meanwhile, respondents working in the onsite wastewater area indicated that regulatory and management issues were actually more  
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## **“Regulatory Update” Web site can help small communities**

As part of its training needs assessment effort, the National Environmental Training Center for Small Communities (NETCSC) has compiled information about drinking water and wastewater rules, regulations, and policies that affect small communities. This information has recently been updated and is available on NETCSC’s “Regulatory Update” Web site located at [www.nesc.wvu.edu/netcsc/netcsc\\_regs.htm](http://www.nesc.wvu.edu/netcsc/netcsc_regs.htm).

**Statistics: Rules Affecting Small Communities (<10,000)**

	Recent/Current	Future	Total
Water	9	6	15
Wastewater	2	9	11
Policies/Guides	5	0	5
<b>Totals</b>	<b>16</b>	<b>15</b>	<b>31</b>

The site includes a “Small Systems Compliance Chart” that provides details about each of the 31 rules, regulations, and policies that affect small communities. The site describes the regulations; the size of communities affected; specific rules for different size communities; and current, upcoming and future Safe Drinking Water Act and Clean Water Act regulatory dates. It also includes helpful contacts and sources for additional details about the regulations and a glossary of acronyms and important terms. In addition, the site has recently been revised to include links for more information about each regulation.

A hard copy of the information contained on the Web site also is available from NETCSC. *Regulatory Update Reference Materials Condensed Chart* summarizes the regulations information in a simple matrix format.

*To request a copy of this chart, please call NETCSC at (800) 624-8301 or (304) 293-4191 and request Item #TRBLRG02. The chart costs \$1.60 plus shipping and handling charges.*

## New report to document small community environmental training needs

*continued from page 13*

pressing than training needs. “Almost all of those interviewed about onsite wastewater treatment mentioned problems with regulatory structure or political will to manage onsite wastewater,” says Mains. “However, while regulatory and management issues are central, additional training also might be necessary to help regulators and others in the field to appreciate the need for broader technology options and a range of management structures.”

One training need that did appear, however, is the need for more specific training materials that cover design, installation, and operation and maintenance of various alternative onsite wastewater systems. “Because different states have approved different technologies, these would have to be customized for different states,” notes Mains.

The report also reveals that the availability of onsite wastewater training opportunities varies geographically and that at least half of states lack an onsite wastewater training center or program to provide the diversified training needed by the various audiences involved with onsite wastewater, including designers, installers, inspectors, and homeowners.

### **Financial issues, illegal dumping most pressing solid waste issue**

Those interviewed in the solid waste area cited a number of specific needs for assistance or training. “Controlling operational costs” was mentioned most frequently by those interviewed followed closely by “illegal dumping.” Respondents seemed to agree that higher tipping fees, a lack of transfer stations, and more distant, regional landfills created an incentive for illegal dumping.

“Yard waste” and “illegal burning” were reported as other top areas of need. Because many states have enacted bans on disposal of yard trimmings at landfills and many contract haulers refuse to accept yard waste, this category of waste is still an area that municipalities have to deal with.

“Electronic wastes,” “operating a recycling program during time of budget troubles or poor economy,” “emergency response planning,” “helping local governments find funding,” and “chemical contamination of compost” were other solid waste needs identified.

According to Mains, the overall results may indicate that solid waste management is perceived as a less pressing issue in small communities in recent years. This is likely a result of

regulations issued under Subtitle D of the Resource Conservation and Recovery Act, which took effect in the 1990s and revised the criteria for landfill construction and management. Thousands of landfills, many of them small community facilities, have since closed and larger, regional solid waste facilities are now the norm.

In addition, many communities contract out for the collection of solid waste, making local governments less involved in solid waste management. “All the community personnel who indicated that their communities had recently privatized collection expressed satisfaction about being out of the garbage business,” notes Mains.

### **Training obstacles, preferences also identified**

In addition to polling respondents about their specific training needs in each environmental area, those interviewed were also asked what obstacles prevented them from receiving training and what types of training they prefer.

The community personnel and assistance providers interviewed overwhelmingly agreed on the three main obstacles to training: time, money, and travel. “Respondents mentioned that most small community facilities were already operating with small staffs and having one or two people away for training created operational problems,” says Mains. “Time constraints, however, were not limited to small community representatives, but also were cited as obstacles by other groups such as regulators and assistance providers.”

Lack of funding was the second biggest obstacle to getting training. “Many respondents mentioned that budgets for training were very tight, making it important to select one or two high-priority training events to attend, unless the training was free,” notes Mains. However, even when the training is free, the travel involved in attending training is another obstacle that many respondents said they faced.

Respondents mentioned additional obstacles to training, including lack of incentives to attend training by those audiences that did not have certification requirements, a lack of good training programs, the lack of targeted content in continuing education courses, a lack of support by supervisors for training, and the need for culturally-sensitive training materials and materials for non-English speaking audiences.

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## In their own words...

The following is a sampling of what interview respondents had to say about their training needs and preferences.

### Drinking water training needs:

“Long-range planning skills are missing. The DEQ, EPA, and Rural Water have done a good job of providing training for operators, but the decision makers need to understand that if a system is 50 years old, it will need to be replaced.”

—*Idaho technical assistance provider*

“The towns really don’t do a good job with communicating with the public. We stress this in board training. In most towns, the average citizen would just have no clue what is going on with the water.”

—*South Carolina technical assistance provider*

### Wastewater training needs:

“A lot of the communities we work with may have both a treatment plant and areas that use onsite systems. Often, they just may not even know where the onsite systems are. Onsite systems are something that we’ve sort of let go.”

—*Kentucky technical assistance provider*

“It would be nice to have some sort of forum to educate funders and engineers about how and why onsite wastewater clustering could be used as a solution.”

—*Indiana technical assistance provider*

### Solid waste training needs:

“We have 100 to 150 open dumping complaints a year. Often these may just be a pick-up size load, but once one person dumps some place, other people tend to think that it’s OK to dump additional stuff on top.”

—*Illinois solid waste regulator*

“Courses on developing solid waste management programs that are designed for tribal audiences would be invaluable.”

—*Arizona tribal solid waste program coordinator*

### Obstacles to training:

“The most effective training is as local and as close to home as you can make it.”

—*Vermont city manager*

“Cost is a big issue. About the only way to provide assistance is to go to the community and deliver it at no cost.”

—*Alaska technical assistance provider*

### Training preferences:

“We’re not really too experienced with the computer stuff. I’m not too good at it myself.”

—*Connecticut drinking water operator*

“Internet training would be great because we’re so small and don’t have time or money to be sending people all over the place.”

—*Nevada improvement district manager*

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Most respondents expressed a preference for classroom training with an instructor on site versus computer-based, on-line, or video down-link training. “Respondents who preferred classroom training often mentioned the benefits of interaction with the instructor, discussions among participants, and related networking,” says Mains.

However, some respondents did say they preferred computer-based training, citing the flexibility and convenience it provides as well as eliminating the need for travel.

A smaller group of respondents—mostly operators or those who provide assistance to operators—preferred training other than classroom or electronic. “They preferred hands-on training where they were actually able to per-

form the task they were being trained to do or plant tours where they were able to observe first hand how another operator was conducting a process,” says Mains.

### **TNA results will be useful**

“The findings of our training needs analysis will help NETCSC target future training resources and services,” says NETCSC’s Hoornbeek. “We also hope that other organizations that work with small communities will benefit from this information.”

*The needs assessment report is expected to be available in early 2005. To request a copy of the report, contact Craig Mains at (800) 624-8301 or (304) 293-4191, extension 5583, or [cmains@mail.wvu.edu](mailto:cmains@mail.wvu.edu).* ❖

# Analysis identifies available training, possible training needs

What are the major training topics delivered in the areas of drinking water and wastewater management? What training is being delivered for decentralized onsite wastewater treatment? How much training is available? Who offers this training?

The National Environmental Training Center for Small Communities (NETCSC) set out to find the answers to these questions through a “National Training Analysis” that examined the drinking water and wastewater training provided by major environmental training networks in the U.S.

This analysis was a key element in NETCSC’s overall training needs assessment effort. (See article on page 12.) “One of the first steps in our training needs assessment effort was to assess the amount and type of training that was currently available,” says John Hoornbeek, Ph.D., NETCSC director.

“We hope the information from this analysis will be useful in guiding training needs assessment, curriculum development, and training delivery projects by allowing trainers to see what training is already being delivered,” he says. Hoornbeek also hopes the results of this analysis will offer a national perspective on wastewater and drinking water training, while also helping NETCSC and environmental training organizations to set their agendas for future efforts to build community capacities and improve water quality.

## Collecting training data

To begin its analysis, NETCSC searched the Web and contacted training providers across the country to gather training schedules from more than 110 training organizations representing four major drinking water and wastewater networks:

- the U.S. Environmental Protection Agency’s 104(g) operator training program,
- state Rural Water Associations,
- Rural Community Assistance Partnership affiliates,
- and onsite training centers and programs.

While these training organizations do not exhaust the available supply of training, they do provide a substantial proportion of the environmental training provided to small communities. “We recognize that other training organizations, including private sector and state agencies, also offer training,” says Hoornbeek. “But for the purposes of this analysis, we chose to focus our attention on the federally-funded networks that target their training toward

Type of Training	# Courses	% Courses
Operation & Maintenance	1,433	52%
Special Topics	470	17%
Unspecified/Small Systems	324	12%
Onsite Wastewater	202	7%
Management	195	7%
Regulations	70	3%
General	44	2%
<b>Total</b>	<b>2,738</b>	<b>100%</b>

smaller communities.”

Results of this data collection effort showed that between July 1, 2002, and December 31, 2002, these organizations delivered 2,738 courses.

“Although this data were gathered in late 2002, we believe it still provides a reasonably accurate reflection of the type of training that is available with the exception that clearly there is more security and emergency response plan training available now than there was at that time,” notes Hoornbeek.

After the data was gathered, NETCSC entered information about the courses into a database so it could be reviewed and analyzed. Donna Weems, an environmental training consultant and owner of Holly Lane Consulting, LLC, oversaw the data collection and analysis process. Weems’ first task was to categorize the courses into six major topic areas, or “Primary Keywords.” These included:

- General
- Management
- Onsite Wastewater
- Operation and Maintenance
- Regulations
- Special Topics

Next, these major areas were further categorized into subtopics, or “Secondary Keywords.” For example, the “Operation and Maintenance” topic area includes “safety,” “laboratories and sampling,” “math,” “water treatment,” “collection systems,” and “other” as subtopics.

## Major findings

Once the data had been entered and categorized, Weems was able to analyze the data and draw some conclusions.

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“It is not surprising to find that operation and maintenance training constitutes over half the drinking water and wastewater training nationwide,” says Weems. “There is a rich array of course topics, largely driven by state certification requirements.”

The analysis found a nearly equal number of drinking water and wastewater courses delivered. Weems notes that an interesting finding was the number of courses appropriate for both drinking water and wastewater treatment personnel. “Most frequently, courses dealing with management, safety, and math catered to both drinking water and wastewater personnel,” she says.

The distribution of major course topics not only reflects certification requirements, but also results from national initiatives, changes in regulatory requirements, new technologies, and special training needs, according to Weems.

“The lack of certain course topics may indicate a training need,” she says. “For example, there were surprisingly few courses for those who work with decentralized onsite wastewater systems, especially courses dealing with onsite system inspection and maintenance,” points out Weems.

While doing the analysis, Weems also noticed that training organizations are using innovative strategies to deliver training.

“Organizations are working together to deliver training,” says Weems. “And a number of training organizations are using distance-learning strategies.”

## Operation and maintenance training

The analysis revealed that more than half of all the courses offered nationwide deal with the operation and maintenance of drinking water and wastewater treatment plants. These courses cover a remarkably wide range of topics.

Many of these offerings are requirements for certification or degree programs, and many courses had continuing education credits or credit hours associated with them. “The credit hour system enables operators to fulfill certification requirements by taking courses from other sources, including distance-learning courses,” says Weems. “This is strong evidence of the importance of certification requirements in driving training attendance.”

Weems found that training organizations are working together to deliver operation and maintenance training. “Organizations accept credits from other organizations, promote other training programs, and co-sponsor training,” she says.

The range of course topics offered reflects not only the basic requirements needed to become an operator, but also the needs of operation and maintenance staff in dealing with changes such as new regulatory requirements, new technologies, and national initiatives.

“For example, about half of the security courses offered between July and December of 2002 were delivered in the northeastern states,” says Weems. “Not surprisingly, this is the area of the 9/11 attacks.” Courses categorized as “security” training included those that helped utilities prepare and respond to emergency situations, such as terrorist attacks, droughts, floods, and vandalism.

## Management and finance training

Planning and financial management have been identified by technical assistance providers as one of the biggest challenges facing small community drinking water and wastewater treatment systems. According to Weems, NETCSC’s training analysis shows that access to “management” training might indeed be an issue for small communities.

The analysis revealed that only seven percent of the offerings were “management” courses. More than one quarter of the “management” courses were specifically designed for “utility management” and covered topics such as finance, rate setting, capital improvements, state revolving funds, and planning. The analysis found “utility management” training courses in only a limited number of states (17).

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**Table 2**

*Major Topics for Operation & Maintenance Training by Four Major Training Networks*

Keyword	# Courses	% Courses
Distribution	268	19%
Safety	168	12%
General	160	11%
Instruments and Equipment	136	9%
Water Treatment	130	9%
Laboratories and Sampling	117	8%
Math	106	7%
Unspecified	105	7%
Collection Systems	71	5%
Activated Sludge	37	3%
Water Sources/ Intake/Storage	33	2%
Technologies	25	2%
Process Control/ Optimizing/Troubleshooting	22	2%
Wellhead/Watershed Protection	22	2%
Lagoons	18	1%
Nutrient Removal	12	1%
Sequencing Batch Reactors	2	0%
<b>Total Operation &amp; Maintenance Courses</b>	<b>1,433</b>	<b>100%</b>

# Analysis identifies available training, possible training needs

*continued from page 17*

## Water and wastewater training

NETCSC's training analysis found that the number of drinking water and wastewater courses delivered varied across the four networks. "The 104(g) network delivers a great deal of wastewater training, while the Rural Water Association network delivers a great deal of drinking water courses," notes Weems.

The analysis also showed that 19 percent of all courses appeared to be appropriate for both drinking water and wastewater personnel. Forty-four percent of the "math" courses serve both drinking water and wastewater personnel, with titles like "Utility Calculations," "Basic Math," and "Math for Operators." Sixty-eight percent of the "safety" courses appeared to be appropriate for both audiences, and 74 percent of the "management" courses appeared to be appropriate for both drinking water and wastewater personnel.

## Distance learning

At least 11 organizations from the four training networks were using distance-learning strategies to deliver courses, according to Weems. Delivery methods include courses offered via CD-ROM, correspondence, satellite, Internet, compressed video, and two-way television.

A few examples of distance learning courses found in the analysis include:

- Water operator training CD-ROMs (offered by the Montana Water Center)
- Web-based distance learning courses (offered by Kirkwood Community College in Cedar Rapids, Iowa)
- Wastewater Analysis Online (offered by the University of Florida's Center for Training, Research, and Education for Environmental Occupations)
- Basic Math Correspondence (offered by the Michigan Department of Environmental Quality)
- Utility Management (offered by the Office of Water Programs at California State University at Sacramento)

"Notably, some of the training organizations in our national training networks recognize a number of other distance-learning providers and accept their courses for certification credits. One private training company offers more than 65 short environmental courses online," says Weems.

## Onsite training

According to Weems, more than half of the "onsite" wastewater courses in the analysis are delivered by three training organizations. "There are relatively few programs that provide a comprehensive selection of 'onsite' courses," she says. "So unless you are near one of the few major onsite wastewater training providers, access to 'onsite' training is probably limited."

A closer look at all the "onsite" wastewater training courses showed there is fairly equal representation in four major topic areas: "design," "installation," "soils," and "maintenance."

Considering that one in four homes in the U.S. relies on a septic system, Weems found it surprising that only 16 percent of the "onsite" courses cover "maintenance" and "inspection." "In most cases, onsite wastewater systems are probably not inspected with the same frequency, and certification requirements for maintenance personnel are less uniform," notes Weems. "The results of this analysis point to a strong 'onsite' training need, particularly for inspectors and maintenance staff."

## Course information is available

Information about all of the 2,738 training courses included in this analysis is stored in a database created for this project. "This database can also help drinking water and wastewater personnel find specific courses they want or need to take," says Weems.

NETCSC's Hoornbeek points out that the information generated from this training analysis is just one part of NETCSC's larger training needs assessment process. "Combining the results of the "National Training Analysis" with NETCSC's other training assessment initiatives gives us a clearer picture of training needs nationally and hopefully will help the technical assistance community in targeting its assistance efforts in the future." (*See article on page 12 for more information about NETCSC's training needs work.*)

*For more information about NETCSC's "National Training Analysis" or training courses included in the project database, please contact Craig Mains at (800) 624-8301 or (304) 293-4191, extension 5583, or [cmains@mail.wvu.edu](mailto:cmains@mail.wvu.edu).*



*Editor's Note: NETCSC wishes to acknowledge the efforts of Donna Weems for coordinating this segment of NETCSC's training needs assessment and for her contributions to this article. She can be reached at [u1c05281@mail.wvnet.edu](mailto:u1c05281@mail.wvnet.edu).*

# trainingresources

The following resources are available from the National Environmental Training Center for Small Communities. To place an order, call (800) 624-8301 or (304) 293-4191, fax (304) 293-3161, or e-mail [netc\\_orders@mail.nesc.wvu.edu](mailto:netc_orders@mail.nesc.wvu.edu).



## A Collection of Solid Waste Resources

Developed by the U.S. Environmental Protection Agency's Office of Solid

Waste and Emergency Response

This CD-ROM contains more than 300 publications on hazardous and non-hazardous waste. The documents are searchable, listed alphabetically by topic, and many are in Spanish. The publications cover many topics, including recycling and reuse, buying recycled, hazardous waste management, composting, and used motor oil. It also includes a wide variety of educational materials for youth.

Item #TRCDPE14 (2000; CD-ROM) . . . . . \$0.00



## Making Solid (Waste) Decisions with Full Cost Accounting

Developed by the U.S. Environmental Protection Agency's Office of Solid Waste and Emergency Response

This booklet explains what full cost accounting is and how it works, along with its benefits and potential barriers. It also provides snapshot examples of how communities across the country are using full cost accounting to improve their municipal solid waste operations.

Item #TRBLMG04 (1996; 12-page booklet) . . \$0.00

## NESC Web site offers links to drinking water resources

Do you need information about technical assistance, funding, and management strategies for drinking water? Then be sure to check out the links page in the drinking water section of the National Environmental Services Center (NESC) Web site:

[www.nesc.wvu.edu/ndwc/ndwc\\_links.htm](http://www.nesc.wvu.edu/ndwc/ndwc_links.htm)

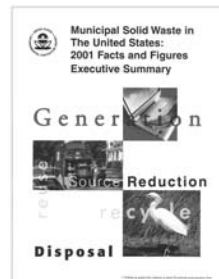


## Waste Transfer Stations: Involved Citizens Make the Difference

Developed by the U.S. Environmental Protection Agency's Office of Solid Waste and Emergency Response

This booklet explains what a waste transfer station is, what the benefits are, and what concerned citizens can do to make sure that waste transfer stations are properly developed and operated. It includes several case studies that describe individual communities' experiences with transfer stations, a list of additional resources, and a list of state solid waste contacts.

Item #TRBLPE15 (2001; 24-page booklet) . . . \$0.00



## Municipal Solid Waste in the United States: 2001 Facts and Figures Executive Summary

Developed by the U.S. Environmental

Protection Agency's Office of Solid Waste and Emergency Response

This report describes the national municipal solid waste (MSW) stream based on data collected from 1960 through 2001. This historical perspective is useful for establishing trends in types of municipal solid waste generated and the ways that it is managed. The report describes the methodology used to characterize MSW in the U.S. and provides the latest facts and figures on MSW generation, recycling, and disposal.

Item #TRBLGN27 (2002; 16-page booklet) . . . \$0.00



The National Environmental Training Center for Small Communities (NETCSC) offers the following products and resources. Please note that prices are subject to change. New products are highlighted.

To place an order, write to NETCSC, West Virginia University, P.O. Box 6064, Morgantown, WV 26506-6064; call (800) 624-8301 or (304) 293-4191; fax (304) 293-3161; or e-mail netc\_orders@mail.nesc.wvu.edu.

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TRTPCD04 Working Effectively in Small Communities on Environmental Projects.....\$79.30

TRTPCD20 Understanding Small Community Dynamics: For Regulatory Officials/Training Package ..\$96.20

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The National Environmental Services Center (NESC) is looking for qualified contractors who are interested in working with our organization to meet the increasing needs of our nation's small communities. NESC continuously uses external professionals as a means of leveraging resources to meet demands. Thus, NESC is seeking to expand its pool of potentially qualified experts willing to perform contracted, fee-for-service work in support of our missions.

NESC's programs address a broad range of environmental issues including wastewater, drinking water, solid waste, and environmental training and management. Our programs are national in scope and include such recognized names as the National Small Flows Clearinghouse, the National Drinking Water Clearinghouse, the National Environmental Training Center for Small Communities, and the National Onsite Demonstration Program. Our target audiences and customers include environmental professionals, local officials, treatment system operators, regulators, and consultants working in and with small communities.

To ensure that you are given consideration for NESC's future contract needs, you must participate in the Request for Qualification process (even if you have performed services for us in the past). We invite you to do so at this time. The process is easy. Just go to our Web site at [www.nesc.wvu.edu/nesc/nescrfq.html](http://www.nesc.wvu.edu/nesc/nescrfq.html) and follow the instructions. By investing only a few minutes, you enter our pool of qualified experts. We will maintain this information confidentially and use it to identify prospective vendors as contractual needs arise. Please act now so that we receive your information as soon as possible. 

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