

How Part 503 Regulations Have Affected Biosolids Disposal for Communities

by Natalie Eddy
NSFC Staff Writer

It has been five years since the U.S. Environmental Protection Agency (EPA) developed regulations to protect the public health and the environment from adverse effects of pollutants in sewage biosolids.

Those regulations, located under *Title 40 of the U.S. Code of Federal Regulations, Part 503*, called *Standards for the Use and Disposal of Sewage Sludge*, became effective March 22, 1993. (For the remainder of this article, these regulations will be referred to as *Part 503*.)

Part 503 basically established federal rules for the final use or disposal of sewage sludge or biosolids, including domestic septage. Biosolids are defined as the solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in a treatment works. By definition, it includes scum or solids removed in primary, secondary, or advanced wastewater treatment.

Prior to the *Part 503* regulations,

there were no comprehensive federal regulations for communities to follow regarding the disposal or reuse of biosolids. Instead, there were multiple federal regulations under various statutes.

How Part 503 Developed
According to the EPA *Part 503 Implementation Guidance* document, various environmental statutes have regulated the use and disposal of biosolids in the past. Land application and land-filling were previously regulated under the solid waste disposal regulations of *Title 40 Code of Regulations (CF) Part 257*, in conjunction with the Resource Conservation and Recovery Act and the Clean Water Act (CWA).

The Marine Protection, Research, and Sanctuaries Act (MPRSA) regulated the dumping of biosolids into the nation's waters until the Ocean Dumping Ban Act of 1988 prohibited the practice. The Clean Air Act regulated the air emissions from biosolids incinerators.

The book adds that 1977 amendments to the CWA directed the EPA to develop regulations for the

use or disposal of biosolids. In 1984, EPA's Office of Water formed a Sludge Task Force for that purpose. In 1987, Section 405(d) of the CWA was amended to require EPA to establish comprehensive standards for the use or disposal of biosolids by specified dates. *Part 503* is the response to that legislation.

Overview of Part 503
Today with *Part 503*, the gray areas and overlapping regulations are spelled out. According to another EPA publication, *A Plain English Guide to the EPA Part 503 Biosolids Rule*, it includes requirements in the following areas:

- general provisions such as purpose and applicability of the rule, exclusions, and compliance period (these apply to each of the three biosolids use or disposal practices);
- land application (the term *application* means to place biosolids on the land for nutrient value and soil conditioning);
- surface disposal (placing high volumes of biosolids on land for disposal rather than organic content);

- pathogen and vector attraction reduction (requirements for the reduction of disease-causing organisms); and
- incineration (disposal through firing in an incinerator).

For each of the disposal or use practices, *Part 503* specifies general requirements, pollutant limitations, management practices, operational standards, and requirements for the frequency of monitoring, record keeping, and reporting.

Small Community Input

Jerry Duncan, operator of the water and sewage plants at Gary, West Virginia, said the *Part 503* regulations have not had a great impact on this small community of 1,800.

Currently, the plant land applies its biosolids in an area that had previously been strip-mined. Duncan commented, "Before, we were landfilling it. Then our landfill closed in 1995. When we found some land suitable for us, we went through the process of permitting it."

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Groups Work To Improve Life in Colonias

by Mark Kemp-Rye
NSFC Contributing Writer

The 2,000-mile border shared by the U.S. and Mexico is one of the most famous in the world. Media portrayals of this area often focus on immigration issues and drug smuggling. While these are undoubtedly serious issues, the more than 400,000 people living in small communities on the U.S. side of the border called "colonias" might point to the high incidence of diarrheal diseases among their children, the constant threat of hepatitis caused by pit privies that contaminate shallow wells, and the daily difficulty of living without water as being more pressing matters.

Indeed, with massive unemployment and few opportunities, many residents of colonias worry more about day-to-day survival than international politics. "[These] are settlements typified by a lack of infrastructure that most Americans take for granted," says Stephen

Hogye, environmental protection specialist with the U.S. Environmental Protection Agency (EPA).

"Roads are often unpaved, leading to choking dust during dry weather, and impassable mud and gullies during wet weather. While many colonias have some source of drinking water," Hogye observes, "in many cases it consists of one outside hose bib to serve several houses, and in too many colonias, drinking water must be trucked in or bought in bottles."

"Wastewater sanitation has been given low priority," continues Hogye, "and where septic tanks exist, the effluent is often surfacing due to high groundwater levels, poor soils, or small lot sizes. Too often residents rely on a pit privy in the backyard or a cesspool for treatment of their wastes. For some colonias, even electricity is not available, or one service line will be extended to

serve adjacent residences with extension cords."

What, exactly, is a colonia?

The word "colonias" is, literally, Spanish for "neighborhoods." As for more specific definitions, each federal agency has slightly different criteria, although all refer to small, unincorporated communities along the U.S./Mexican border.

The U.S. Department of Housing and Urban Development (HUD) defines a colonia as "any identifiable community in the U.S.-Mexico border regions of Arizona, California, New Mexico, and Texas that is determined to be a colonia on the basis of objective criteria, including lack of a potable water supply, inadequate sewage



An outhouse in a Texas colonia is shown here. Pit privies are common bathroom facilities in these communities.

systems, and a shortage of decent, safe, and sanitary housing. The

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Small Flows



Helping America's
small communities
meet their waste-
water needs

New Technology Eliminates the Mound

by Kathy Jespersion
NSFC Staff Writer

Areas where high groundwater tables make installing a conventional septic system virtually impossible may benefit from a new technology. Derived from industrial site-remediation applications, this new technology has been patented as the NoMound™ system. It uses a below ground "barrier system" constructed around the sides and over the top of the leachfield. And because it is built below grade, it eliminates the mound.

"A mound can be four or five feet high and fill the front or backyard," said Alan Hassett, P.E. with the Oak Hill Company. "This technology gets the bump out of the yard."

Back to the Basics

"By going back to simple physics, you can get an idea of how the system works," explained Hassett. "If you turn an empty glass upside down and push it into a bowl or a bucket of water, air gets trapped and compressed under the glass. So the liquid level under the glass is much lower than that around it. The NoMound™ system works on a similar theory. It basically creates a zone of unsaturated soils so that a conventional onsite system drainfield will function properly in a high groundwater setting." (See diagram below.)

Hassett explained that after construction of a conventional septic system with a drainfield and NoMound™ enclosure, air is

pumped into the leachfield enclosure, pressurizing the void spaces in the unsaturated soil at one to two pounds per square inch (psi). As the air pressure is increased, the water table is lowered to the setpoint of the control system. Each 1.0 psi of air pressure within the enclosure offsets the static pressure of 2.3 feet of groundwater level outside the enclosure.

Satisfies Regulatory Requirements

"If, for example, three feet of unsaturated thickness below the gravel or stone in the drainfield's distribution system is the regulatory requirement (and, therefore, the basis of design), a pressure of two psi will maintain 4.6 feet of unsaturated soil below the cap level, which is the artificial liner," he said.

"This satisfies the three-foot requirement and allows one foot for the distribution system depth plus a half-foot for water level movement in response to barometric pressure changes," Hassett said. "This is fairly typical, and most NoMound™ systems will operate at two psi or less. From a biological treatment process design standpoint, the system is set up to mimic the natural soil environment of a conventional drainfield so that the conventional absorption bed's physical and biological processes are maintained."

He further explained that an adjustable control unit built into the system creates a fresh air exchange. This unit provides the oxygen transfer that normally

occurs through barometric pumping and diffusion effects between the atmospheric air and the soil gas in the unsaturated zone soils. "It's an intentional air release," said Hassett.

For systems of a typical size (500 to 1000 square feet), one to two pore volumes of fresh air per week supplies the oxygen requirements of the soil organisms, which reduce the biochemical oxygen demand (BOD) and nitrify the ammonia component of the septic tank effluent.

Differences Between Mound and NoMound™

The basic difference between a sand mound system and the NoMound™ system is that the NoMound™ is below grade and the sand mound is above grade. Further, sand mound systems require a specific gradation of sand, while the NoMound™ system uses existing soils where suitable. So, states with high groundwater tables have been especially receptive to this below-grade technology.

However, Hassett warned that the NoMound™ system is not a suitable alternative where soils, such as dense clays, and bedrock are limiting factors. But he said that some locations, such as eastern North Carolina, have a layer of clay that is about three to five feet deep sitting on top of a layer of sand, and the NoMound™ system may be an option in this situation. States considering the NoMound™ system include Florida, New Jersey, and Massachusetts.

NoMound™ Components

The components of this new technology start with a conventional leachfield absorption area and pumped dosing. To this has been added:

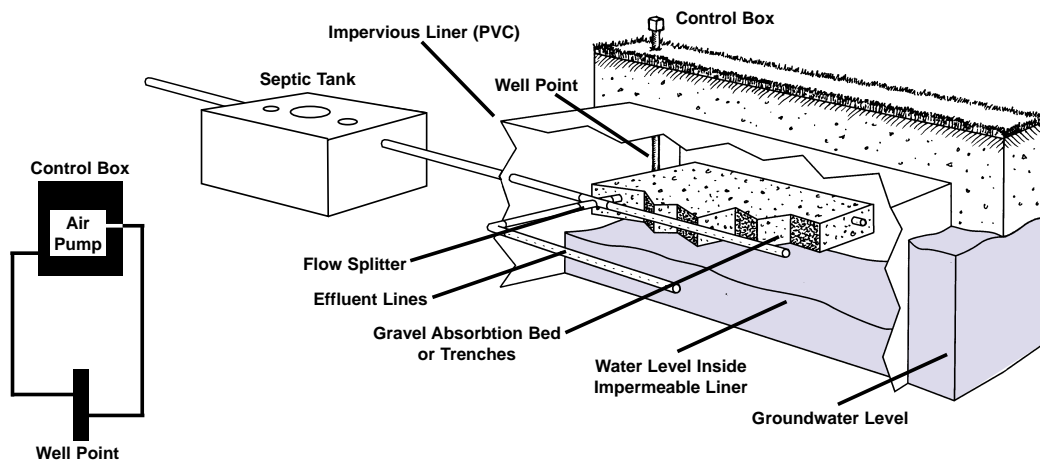
- a perimeter barrier and capping arrangement of geomembrane and/or natural materials such as bentonite-soil slurry or clay,
- a very small (17-watt) air supply pump, and
- a two-inch diameter groundwater monitoring well with conductance probe level control devices to start and stop the air pump and a high-level indicator probe.

He also said that the system's cost is comparable with that of a mound system. "The NoMound™ system can be 30 percent cheaper to build than a mound system where the specified grade of sand needed to build the system is not readily available," he said. "Where it is available, it is about the same cost. But many factors in the cost of the system are site specific."

Besides cost, high groundwater tables bring other concerns to mind, such as displaced septic tanks. "We don't have any problems with the enclosure floating because the system is designed so that there's enough weight from soil pushing down on the membrane to offset the air pressure and upward flotation or buoyancy force," Hassett said.

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Schematic of the NoMound™ Onsite Wastewater Effluent Disposal System



Attention Readers: Help Solve a Community's Problem

by Natalie Eddy
NSFC Staff Writer

Editor's Note: We are starting a new feature that we hope will encourage a more interactive relationship with our readers and also provide a service to communities. The following article outlines a community's wastewater problem. Please take a few minutes to read the article and suggest recommendations to help solve the community's problem. Submit your replies to the Small Flows editor at the National Small Flows Clearinghouse, P.O. Box 6064, Morgantown, WV 26506-6064. We plan to run responses in the next issue of Small Flows.

Yacolt, Washington, population 985, is seeking a long-term wastewater treatment plan that will allow for community expansion while saving the groundwater supply from possible nitrate contamination.

The state adopted the Growth Management Act in 1990, a bill that pushes communities to strive for higher population densities as a means of concentrating growth in urban areas and preserving open space. Yacolt, located in southwest Washington, has until November 1999 to finalize a proposed wastewater management plan to handle the projected expansion or face possible sanctions from the state.

Bob Sweeney, registered sanitarian and consultant for the town,

commented, "The city is under some threat of losing state funds if they don't come up with an acceptable plan. It has to be more than a plan on paper—it has to be achievable, with some details to it."

Currently, the community's drinking water is piped from three chlorinated wells supplied by the groundwater aquifer. Individual septic systems at each home treat wastewater.

Sweeney said that nitrates are perceived as a potential problem because as growth occurs, more septic systems, fertilized lawns, and animal waste in the town could increase the likelihood of water contamination. He cited a 1996 study that indicated that Yacolt's population should not exceed 1,400 to keep nitrate levels within the normal range. Currently, nitrate levels range between 2 to 3 parts per million, well within safe limits. There are no known problems with any other pollutants.

Sweeney estimated that currently, 50 gallons of water is used per person per day. If the population would reach 1,400, water usage would increase from approximately 50,000 gallons per day currently to 70,000 gallons per day.

There is no industry in the town. However, there was more commercial zoning under the county's recent comprehensive plan, which could lead to business development.

The town has been experiencing a nominal growth rate of five per-

cent per year, mostly due to people moving to rural areas.

There are a few restaurants, but the largest occupancy building is a regional school. Houses are located fairly close together on small lots.

According to Elise Scolnick, a planner with the Clark County Department of Community Development, lot sizes range from 6,000 to 18,000 square feet.

There are approximately 100 developable lots in the town; 94 of those are less than 18,000 square feet, which is the area Southwest Washington Health District requires for septic system installation. Land is available for a treatment scheme, but it is privately owned.

Yacolt's median household income is \$18,194, the lowest in the county. The population consists mainly of families with young children.

A resident survey conducted in October 1997 showed that most residents were satisfied with their current septic systems. There were mixed reactions about the question of growth in the community. Sweeney said, however, that most respondents viewed expansion as inevitable.

When given a choice on how much they would be willing to spend on wastewater management, the majority of respondents selected the lowest category listed, zero to \$19.

A 1996 study estimated the cost of a collection system and a traditional treatment plant at more than \$6 million, a figure that is too exorbitant for residents without grant funding. "We're looking at less costly options. Also it's generally not acceptable to dump directly treated sewage into waterways because of the potential damage to the fish habitat," Sweeney said.

He added that the city's septic systems are functioning properly thanks to a mandatory maintenance program that requires inspections every four years.

Scolnick added, "Yacolt will not be able to meet their projected population density over the next 20 years unless they get some sort of public wastewater system."

Sweeney and Scolnick said the town is investigating several options for onsite community systems. "We're looking for low-cost effective alternatives, such as constructed wetlands or innovative denitrification systems," Sweeney added.

In addition, they are investigating several funding options in hopes of receiving aid.

For more information, contact Sweeney at (503) 287-0206 or Scolnick at (360) 397-2375. ♦

assistance

New Technology Eliminates the Mound

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Regulations and Permits

Each state has its own regulations, and within the state, the counties and townships often have extensive regulations of their own. In Florida, Paul Booher, P.E. with the department of health in Tallahassee, said that what he's looking for in the NoMound™ system is assurance that the effluent and groundwater separation will be maintained.

"What we want is a guarantee that the 24-inch separation requirement will be maintained 24 hours a day, 365 days a year," he said. "What this system does is alter the groundwater level, and we have concerns that a power outage may compro-

mise the public's health. So we're looking closely at this system."

Hassett explained that contingency plans were developed for the NoMound™ system. "Much like a mound system, when the sewage pump fails in a NoMound™ system, sewage will back up into the house rather than into the drainfield," he said.

"There's a control system that contains three probes that respond to the groundwater level inside the NoMound™ enclosure. Two act to turn the air pump on and off, and the third is an alarm that goes off when the water level reaches a high point. This alerts the homeowner that something is wrong with the system," he continued.

"In the case of a power outage, and the air pump is not working, once the water level rises to a certain point, the air has no way to escape," he explained. "So the water level can only rise so far."

Expecting to install the first five NoMound™ systems in Florida, Hassett thinks that any concerns will be alleviated. "We expect to have one system installed in January 1999. And we're looking for the other four locations. We want to get them in quickly," he concluded.

For more information about the NoMound™ system, call Hassett at 1-888-466-6686. Or visit the Web site at www.nomound.com/. ♦

Earth Day Special-All NSFC Products Will Be Half Price April 22, 1999

In honor of Earth Day, the National Small Flows Clearinghouse (NSFC) is offering 50 percent off the regular price of all product orders placed by phone, fax, or e-mail on Thursday, April 22, 1999. Regular shipping charges still will apply. Phone orders must be placed between 8 a.m. and 5 p.m. Eastern Time, and orders placed by fax or e-mail will be accepted until midnight, April 22.

Readers can contact the NSFC in advance to request a free NSFC Products Guide. This catalog provides descriptions and the regular prices of the more than 250 documents and educational products the NSFC offers on small community wastewater treatment topics.

To request a free products guide (Item #WWCAT) or to place an order, contact the NSFC by calling (800) 624-8301 or (304) 293-4191 8 a.m. to 5 p.m. Eastern Time. Orders also may be faxed to (304) 293-3161 or sent via e-mail to nsfc_orders@estd.wvu.edu.

The NSFC products guide also can be downloaded from the NSFC's Web site at www.nsfv.wvu.edu.

Operator Wanted: Jack-of-All Trades Required

by Natalie Eddy
NSFC Staff Writer

They are part mechanic, part chemist, and part construction worker. In a typical day, they might take water samples, clean tanks and screens, or even dig a ditch.

If you can't imagine what type of job would require a jack-of-all-trades candidate like this, you've never worked at a wastewater treatment plant.

From Alaska to Alabama, wastewater operators do all this and more on a daily basis, and most seem to love the challenge. Recent discussions with several operators around the country revealed that many enjoy the variety in the work and the positive environmental impact they have on the nation's waterways. These were cited as the chief reasons for staying on the job.

Regardless of the size or location of the facility, the operators' comments share a common thread about the variety in their jobs and the environmental impact they make.

Small Operations Have an Impact

George Erickson, senior operator at the wastewater treatment plant in Sitka, Alaska, commented, "I always felt that I was doing a good thing for the environment and the public, making sure the water is clean and keeping the sanitary flows in the pipes, not in the streets."

His job consists of everything from inspecting old lines and manhole rehabilitation to updating records and maps, tracking inflow, and doing lab work.

"There are approximately 8,500 people in the city. In small systems like ours, an operator needs to keep involved in every aspect of the plant," he added.

Sitka, a seaside community, is located 90 miles southwest of Juneau, Alaska, and is not accessible by road. Airplanes and ferry systems provide the only access to the city.

Sitka's wastewater treatment plant was constructed 15 years ago. "Before that, there was a collection system, but it just emptied onto the beach at different loca-

tions along the shoreline. All of the city is within a half mile from the ocean floor," he said.

"We have rather large tides. It wasn't the healthiest of environments, but there was a lot of flushing action due to the large tides. It was adequate."

Erickson has been at the Sitka plant for nine years and prior to that he worked as an operator at an industrial treatment facility.

The plant, which employs seven workers, is designed to handle a flow of 1.8 million gallons per day (mgd). "During the rainy season we exceed that permit from time to time," said Erickson. "Things have improved a lot in the last seven or eight years. We used to get 8 mgd flows, but that rarely goes over 3.5 mgd today."

Erickson attributed that improvement to the replacement of clay tiles and older pipes, manhole rehabilitation, and the removal of the old storm collection system.

Erickson said working for the city, he has a lot of contact with the public. He also meets with regulators and state officials. In addition, because of the isolation of communities in Alaska, Erickson said he is involved in a state program that provides training. "It's really like an extended community," he added.

Large City Operators Face Similar Challenges

Since 1957, Stephen McElven has been employed at the Blue Plains Wastewater Treatment Plant in Washington, D.C., one of the largest advanced treatment plants in the country. He currently is the general foreman and plant manager responsible for the overall operation of the plant.

Many of McElven's comments echoed Erickson's, "When problems come up, I coordinate everything. I really enjoy my job. It's interesting. It has a little math and a little science."

The plant employs 600 people, including maintenance workers, and operates 24 hours a day with rotating shifts. There are five plant sections with a supervisor on duty in each section.

The Blue Plains operation was built in 1936. Before that, McElven joked, the Potomac

River was the "treatment" facility for the area.

"A lot of our equipment we've had in service since the 1960s, like some tanks and pumps. Everything runs 24 hours a day here. We average 370 million gallons per day," said McElven.

McElven said that during his years of experience, many funny and strange things have happened. "Well, let's put it this way—if you wrote a book about all the crazy things that have happened since I've been here, you'd have to label it fiction because people wouldn't believe it," he said.

"A lot of it has to do with what happens when we get a lot of rain in the area. Our sewer system is capable of handling 720 million gallons per day. We can maintain that for awhile, but then we have to bypass a certain percentage to the river after primary treatment, chlorination, and dechlorination before it goes out," he added.

"We are an ongoing building project here. It doesn't stop. We're better than the mail people. If it snows too much here, we just stay. It's not a nine to five job, but I like it. It's never boring," he added.

Wouldn't Change A Thing

Dennis Lamberth, plant manager of the Bay Minette, Alabama, wastewater treatment plant, described his job as "relatively simple," adding that having good people who are dedicated to their positions makes the work "fun."

"I wouldn't change anything about my job, really," said Lamberth. "The pay is good, and the hours are good. I can't think of a thing I'd change."

Bay Minette, population 10,000, is located 40 miles northeast of Mobile and 50 miles from the Gulf of Mexico.

Built in 1984, the plant is a 2.0 mgd extended aeration plant with an average flow of 1.5 mgd. The plant is capable of treating up to 9 mgd for several days during rainy periods if necessary.

"We have an infiltration problem, but we're assessing it now," he added.

In addition to Lamberth, the plant employs three other people: a lab



technician, maintenance worker, and laborer. On a typical day, Lamberth said he may find himself dabbling in maintenance, laboratory analysis, or field work.

In addition to overseeing these duties, he interacts with chemical salesmen, state regulators, and even the U.S. Environmental Protection Agency on occasion.

He also works with the county's environmental protection department headed up by the county district attorney. Lamberth said that the agency mostly deals with regulatory enforcement.

In addition, he sometimes works with the county health department and interacts with the utility board, which governs his position.

Lamberth said he visits high schools and grade schools on a regular basis to educate kids about environmental issues. The plant provides tours for schools and organizations.

In the past, training has been provided at the plant for other operators in the area. Participants have included operators from Louisiana, Texas, and Alabama. "Normally, an operator comes here totally inexperienced, but when they leave they have enough confidence to at least begin operation of their plant," he added.

And in the course of that operation, they will wear many different hats. ♦

Operator Certification Requirements Vary from State to State

by Natalie Eddy
NSFC Staff Writer

If a career in wastewater treatment plant operation sounds right for you, you might want to decide where you wish to work before looking into training programs.

Certification requirements for wastewater treatment plant operators vary from state to state, according to a survey done by *Operations Forum*, a magazine produced by the Water Environment Federation.

Certification means that a person goes through a series of training sessions and exams to achieve a certain level of knowledge. Operators work at a variety of different plants, which are classified according to population, flow, technology, and effluent limits.

A certification chart provided by the Association of Boards of Certification (ABC) in Ames, Iowa (at right), shows that mandatory certification programs date back to 1918 when New Jersey became the first state to implement such a program. Some states adopted voluntary requirements first, later changing to mandatory programs.

Other Findings Listed

According to the *Operations Forum* survey, most states require a high school or equivalent education to hold the position. However, approximately 20 percent have no education requirements at all. One state requires only an eighth grade education. Still another calls for experience with no education requirement. Another state requires only six continuing education units.

Levels of classifications also varied. Pennsylvania has the most classifications (17) for operator certification, depending on the plant capacity and the technology used.

Most states require operators to take examinations. More than 70 percent require some type of continuing education for its operators while approximately 20 percent require operators to take certification courses.

Minimum years of experience varies from none to two years. One state requires three years of experience without a high school diploma.

Certification renewal periods also vary from state to state. One state lists its renewal period from two to eight years while others list no renewal requirement at all.

A Facility Develops Certification Program

At the time the survey was published in September 1997, the Blue Plains facility in the District of Columbia was listed as the only area in the U.S. and Canada that didn't have at least a voluntary certification program.

Blue Plains is operated by the District of Columbia and handles 70 percent of the wastewater from the Washington region. In addition to the district, wastes from portions of Montgomery and Prince George's counties in Maryland and from Fairfax County and Dulles International Airport in Virginia are treated at the plant.

Since that time, however, administrators of the plant, probably the largest advanced treatment plant in the world with four treatment stages, have instituted their own program. According to Stephen McElven, general foreman and plant manager, 600 people, including maintenance workers, are employed at the plant. Certification of its operators has been required for almost a year.

To date, approximately 10 of the plant operators have been certified under the program developed through the ABC.

"I don't know why we waited so long," said McElven. "They (governing officials) never required it, but to get competent people in here you have to raise salaries and be competitive with Maryland. To do that you have to have certification."

Mandatory vs. Voluntary

The ABC chart also shows that Idaho is the only state that does not have a mandatory wastewater certification.

Urban Wessels, executive director of the Idaho Water and Wastewater Operator Certification Board, said wastewater certification in Idaho will probably become mandatory in the next Clean Water Act reauthorization, just as the 1996 Safe Drinking Water Act required drinking water plant operators to be certified.

Wessels said, "We're hoping that once the employers see there are

no dramatic increases in their budgets, the state may look at the situation and require certification without a mandate from the federal government."

He added that two bills to require certification in state government never made it out of committee. "Operators want it," he said. "Legislation is what's holding us back. Idaho has a law saying no more stringent controls are necessary if it's not required by federal law."

Mike Hunter, industrial pretreatment coordinator for the city of Boise, believes the failure to have mandatory certification may have an impact on some of the smaller systems in the state. "I suspect that some of the smaller systems may not be as sophisticated or have the knowledge to handle all of the things they might need," he said.

Hunter believes that certification is a positive step for both the environment and employers and sees certification as a "win-win proposition." He added, "It would only make sense that you would require your employees to at least have the minimum ability to maintain the various aspects of their systems. It's only good business."

For more information on operator certification, contact the National Small Flows Clearinghouse at (800) 624-8301 or (304) 293-4191. ●

Progress in Certification of Wastewater Treatment Plant Operators

State	Year of Adoption or Passage	
	Voluntary	Mandatory
Alabama	1953	1971
Alaska	1975	1976
Arizona	1958	1972
Arkansas	1952	1971
California	1936	1969,1972
Colorado	1959	1973
Connecticut	1957	1933,1969
Delaware	1959	1977
Florida	1945	1970
Georgia	1939	1969
Hawaii	1968	1978
Idaho	1962	
Illinois	1939	1951
Indiana	1957	1967
Iowa	1952	1965
Kansas	1957	1975
Kentucky	None	1966
Louisiana	1947	1972
Maine	1957	1969
Maryland	1959	1967
Massachusetts	1957	1970
Michigan	1940	1934,1972
Minnesota	1952	1971
Mississippi	1971	1986
Missouri	1953	1977
Montana	None	1967
Nebraska	1962	1987
Nevada	1968	1991
New Hampshire	1957	1967
New Jersey	None	1918
New Mexico	1958	1973
New York	None	1937
North Carolina	1952	1969
North Dakota	1940	1971
Ohio	None	1937
Oklahoma	1939	1959
Oregon	1956	1987
Pennsylvania	1954	1968
Rhode Island	1957	1978
South Carolina	1945	1969
South Dakota	1940,1954	1970
Tennessee	1959	1971
Texas	1939	1945
Utah	1965	1991
Vermont	1957	1974
Virginia	1959	1970
Washington	1949	1973
West Virginia	None	1966
Wisconsin	1956	1966
Wyoming	1972	1973
D.C.	1959	

Courtesy of ABC, from Association of Boards of Certification: The First Ten Years, by Harris Seidel

New Watershed Assistance Grants Available

The U.S. Environmental Protection Agency's (EPA) Office of Wetlands, Oceans, and Watersheds recently awarded River Network \$300,000 to distribute grants to local watershed partnerships to support organizational development.

River Network, a national organization based in Portland, Oregon, supports river and watershed advocates at the local, state, and regional levels to build effective partnerships and organizations.

The Watershed Assistance Grants program will distribute grants

ranging from \$2,000 to \$30,000 in 1999 to support watershed partnerships working to protect and restore their watersheds.

Grant applications are available. To request an application, write to River Network, Watershed Assistance Grants Program, P.O. Box 8787, Portland, OR 97207 or e-mail info@rivernetwork.org.

For additional information on funding opportunities, visit River Network's Web site at www.rivernetwork.org/nonprofi.htm. ●

LA and WV Provide TMDL Case Studies

by Margaret Caigan McKenzie
NSFC Staff Writer

The requirement to develop Total Maximum Daily Loads (TMDL) was established in 1972 under section 303(d) of the Clean Water Act (CWA). Its purpose is to restore and protect the physical, chemical, and biological integrity of the nation's waters on a watershed basis.

The bodies of waters selected for restoration under the TMDL program are those that do not currently meet state-regulated water quality standards nor will meet these standards even after secondary or best practical treatment for discharging has been applied. Each state is responsible for creating its own list of waters that do not meet these standards.

The U.S. Environmental Protection Agency (EPA) describes a TMDL as "a written, quantitative assessment of water quality problems and contributing pollutant sources. It specifies the amount a pollutant needs to be reduced to meet water quality standards, allocates pollutant load reductions among pollutant sources in a watershed, and provides the basis for taking actions needed to restore a waterbody. It can identify the need for point sources and nonpoint source controls." (See the July 28, 1998, *Final Report of the Federal Advisory Committee on the Total Maximum Daily Load [MDL] Program* at EPA's Web site www.epa.gov/OWOW/tmdl/advisory.html.)

If a state does not develop a TMDL, or if the TMDL model does not enable the body of water to meet water quality standards, then EPA is legally required under the CWA to develop the TMDL in cooperation with the state.

To meet a state's water quality standards, a TMDL must set the ceiling for the total sum of pollutant loads that a body of water can receive and still meet water quality standards. The TMDL calculation takes into account seasonal variations and critical conditions for stream flow, loading, and water quality parameters and must include the following:

- wasteload allocation for point sources,
- load allocation for nonpoint

sources and natural background, and

- a margin of safety (MOS) that provides a buffer in the TMDL calculation for any uncertainty in the collected data.

TMDLs are applicable to all geographic areas, but because they are site specific, it is impractical to have one model fit all bodies of water. Louisiana and West Virginia offer good examples of the TMDL process.

A Look at Louisiana

In 1996, Louisiana and EPA signed a memorandum of understanding to develop 323 TMDLs for 255 waterbody subsegments in 12 years.

To meet its 12-year TMDL deadline, the Office of Water Resources identified a need to establish 36 staff positions dedicated to performing the water quality work necessary to develop the TMDLs.

To fund these new positions, the Department of Environmental Quality (DEQ) requested authorization in 1997 from the Louisiana Legislature to increase discharge permit fees. The request was approved, and DEQ began to implement the necessary regulatory changes to enact the fee increase.

Disproving a Standard

In 1998, DEQ began to staff its new positions and to collect data on a watershed basis to assess compliance with long-established standards. One of these, dissolved oxygen (DO), is particularly problematic for Louisiana. DEQ believes that the DO standard may be incorrectly set for many waterbodies.

The process DEQ would need to use to change the standard is called a use attainability analysis (UAA). The UAA is an extensive, documented assessment of a body of water's physical, chemical, and biological conditions, its historical uses, and modifications.

Linda Levy, assistant secretary in the Louisiana DEQ, said of the UAA process, "Critics insist that this process is merely a lowering of the standards to accommodate pollution, when in fact the process actually documents and helps verify the appropriate standard that may have been set inappropriately

many years ago."

After Louisiana is sure that the standard is appropriately set, the field work begins to gather the information necessary to run the water quality model.

"The waterbody is studied intensively, typically during the hot summer months when flow and ambient temperatures are considered worst case," Levy said. "Site-specific information is gathered to use in a water quality model, which is a prediction or mathematical simulation of what is actually occurring in the waterbody." Levy pointed out that the "one-model-fits-all" scenario is not appropriate for Louisiana because, she says, "it does not address Louisiana's unique natural conditions."

According to Levy, the alternative to using state-specific data is to default to using textbook data collected from locations across the continental U.S. that do not even remotely resemble aquatic conditions in Louisiana.

With few exceptions, she said, streams in the majority of the U.S. flow in a positive direction toward the oceans. In Louisiana, though, streams often have no flow or they back up and move away from the Gulf due to tidal influences.

Difficulties in Dividing the Pie

Once TMDL modeling is completed, the unenviable task of assigning wasteload and load allocations begins. Barbara Romanowsky, administrator of the Watershed Support Division of the Louisiana DEQ, said that there are difficult decisions that need to be made in the allocation process, such as the identification, measurement, and control of nonpoint sources.

Romanowsky said that serious consequences can befall users of a body of water. "If a municipality discharges from its sewage treatment plant (STP) into the waterbody, and the allocation for the STP is reduced, the governing body is faced with funding more advanced treatment to meet the reduced allocation and the very real possibility of having to build and operate a new, more complicated STP, one that will have to meet the more stringent limits that will be imposed upon it through

the municipality's National Pollutant Discharge Elimination System permit (or state equivalent) as a result of the TMDL and the resultant allocation."

Serious Consequences

The consequences of an incorrectly derived or poorly implemented TMDL can cause serious economic, environmental, and health problems. "For instance," Levy said, "if the TMDL is not protective enough, environmental and human health consequences could include fish kills, reduction in wildlife populations using the stream as a water source, increases in numbers of nuisance wildlife, decreases in wildlife habitats, degraded drinking water quality, increases in waterborne diseases, and nuisance odor conditions.

"If the TMDL is overly protective, financial consequences occur which may include needlessly excessive tax burdens to pay for unnecessarily complex treatment plants, reduction in funds intended for other services such as street repair and garbage collection, loss of new jobs when incorrect allocations deny the expansion of businesses along a waterway, or increases in the cost of producing crops along a waterway that unnecessarily requires expensive and difficult to manage control practices."

Both Levy and Romanowsky are proud of their state and its abundance of water. Some of the nation's most valuable aquatic resources, they say, depend a great deal on Louisiana's unique aquatic environment.

Levy emphasized that Louisiana's commitment is to develop and implement scientifically sound TMDLs that are realistically aimed at restoring the designated uses of the state's waters.

TMDL for Blackwater River, West Virginia

The recreational area along the Blackwater River in West Virginia's Caanan Valley is widely used by skiers, hikers, fishermen, hunters, and fall foliage seekers. While it presents conditions that differ from those usually found in Louisiana, it shares similar problems concerning TMDL development.

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The major problem with this river is its DO level. To restore the water then, the selected model needed to simulate the pollutants that impacted the DO in the receiving stream. Pollutants such as carbonaceous biochemical oxygen demand (CBOD) and the nitrogen series were selected to be modeled.

Based on the physical characteristics of the water, its critical stream flow condition, and the pollutants that impacted the DO in the receiving stream, EPA selected the QUAL2E water quality model (version 3.21, February, 1995).

The constituents that were modeled for the TMDL for the Blackwater River included:

- stream temperature,
- total organic nitrogen,
- total ammonia nitrogen,
- total nitrite nitrogen,
- total nitrate nitrogen,
- DO, and
- CBOD.

Model Is Developed

The TMDL includes 18.4 miles of river and watershed, from river mile 13.6 to river mile 32.0. These 18.4 miles were represented in the water quality model by 11 reaches, enabling the hydraulic and local environmental characteristics within each reach to be uniform.

Each reach was further divided into 0.1 mile computational elements to ensure that each element shared the same hydrogeometric properties, such as stream slope, roughness, width, and depth; and ecological rate constants, such as reaeration rate, pollutant decay rate, and sediment oxygen demand rate.

A settlement agreement between EPA and several environmental groups over this TMDL compressed the time that the state originally had allocated to completing it. This meant EPA needed to rely on existing data for this body of water that had been collected by the U.S. Geological Survey (USGS). EPA did, however, factor certain river changes into the TMDL development.

For detailed information on the calibration and verification efforts, refer to the USGS report

“Water Quality and Processes Affecting Dissolved Oxygen Concentrations in the Blackwater River, Canaan Valley, West Virginia” by Marcus C. Waldron and Jeffrey B. Wiley, Water Resources Investigations Report 95-4142, 1996. (This report costs \$13.75 plus \$3.50 shipping. You can order this report by telephoning the Department of Interior at (800) 435-7627. Or write to Department of the Interior, Geological Survey, P.O. Box 25046 Federal Center, Denver, CO, 80225.)

Margin of Safety Requirements

EPA suggests two approaches to meeting the MOS requirement in TMDL development:

- implicitly incorporate the MOS by using conservative model assumptions to develop allocations, or
- allocate a portion of the allowable daily load to the MOS.

For the Blackwater River TMDL, the MOS is implicitly incorporated through three conservative assumptions in the modeling process:

- Point sources that discharge to tributaries of the river were assumed to discharge at the tributary mouths, ignoring any recovery in DO levels that might occur during travel from the discharge point to the tributary mouth. The effect is higher modeled levels of ammonia and BOD entering the mainstream of the river from the tributaries.
- The beaver dam in the second reach is assumed to be present throughout the entire reach even though these dams are commonly found mainly in the top portion of the reach. This strategy allowed channel characteristics and instream kinetics to remain constant within each reach. The effect is that the low reaeration rate in the beaver ponds is extended throughout the entire reach.
- The minimum flow for state water quality standards was used to calculate the wasteload allocations. Statistically, this flow has only a 0.1 percent chance of occurring.

Allocations Are Limited

According to Patrick Campbell, manager of the state’s Watershed Assessment Program, “A choice needed to be made between taking

away unused wasteload allocations or reducing existing discharges. What happened in this situation is that unused wasteload allocations were taken away.”

As to whether or not this choice could limit future growth in the area, Campbell said, “While it is not impossible to allow new industry into the area, the industry will need to be creative in how they plan to handle their wasteload. They could barter with someone—which philosophically is allowed—they could consider flow augmentation, or they could consider holding the waste when stream flows are at critical levels such as in the summer months.” Another alternative that could be considered is an onsite or soil dispersal system.

Too Much, Too Little

Landowners and developers see the Upper Blackwater River’s TMDL model as too restrictive. Environmental groups, on the other hand, see the model as too lax in protecting the area’s natural habitat.

Campbell says some citizens “believe Blackwater should have never been listed on the 303(d) list because most of the pollution problems in the river were from natural occurrences. This means that the establishment of the TMDL was not necessary.”

Current TMDL Status

It is Campbell’s job to defend the current TMDL model to the dischargers who want their wasteload allocations restored to the level they had prior to the TMDL’s implementation. The difficulty, Campbell said, is that no case law exists that explains where dischargers should go to seek relief from the imposed allocations. He raises the questions of where and when it is appropriate to challenge a 303(d) listing and if the responsibility for overturning these allocations should be with the state permit program or with the federal government.

Campbell said that one point is clear: “It will be hard for an environmental quality board to issue



Blackwater Falls, Canaan Valley, West Virginia. In this recreational area, the Blackwater River TMDL is seen by developers as too restrictive and by environmentalists as too lax. (Photo by Megan Carpenter-Gloyd.)

an order requiring our chief to take action which conflicts with an EPA-developed and approved TMDL. Dispute resolution would be more straightforward if the state was in charge of developing the TMDLs.”

According to EPA, the agency only intervenes when a state does not meet its responsibilities as defined in the CWA.

Mutual Commitment

EPA and the states share a mutual commitment to restore and maintain the integrity of the nation’s waters. The relationship between states and EPA continues to favor more state autonomy with EPA serving in a support role. EPA says it will strive to respect this evolving relationship concurrent to meeting all statutory and regulatory requirements as well as all court-imposed responsibilities.

The National Small Flows Clearinghouse (NSFC) offers a package of information on watershed management titled Watershed Management Technology (Item # WWBLGN57). This helpful package defines a watershed, shows how it works, provides examples of successful watershed management projects, and lists additional resources for watershed information. The cost is \$6.35, plus shipping and handling. To order, call NSFC at (800) 624-8301 or (304) 293-4191. You may also send e-mail to nsfc_orders@estd. wvu.edu. ♦

Groups Work To Improve Life in Colonias

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border region means the area within 150 miles of the U.S.—Mexico border excluding Metropolitan Statistical Areas with populations exceeding one million.”

The EPA has a similar definition except that the geographic area is confined to 62 miles of the border.

In the U.S. alone, there are more than 1,500 colonias with an estimated population of 450,000. The largest number of colonias is located in Texas with many also found in New Mexico. According to EPA figures, 21 colonias have been “recently identified” in Arizona and some “may exist” in California.

Colonias started in the border area as land developers sold small plots of land in unincorporated subdivisions to low-income families. They began springing up in the 1950s, although some sources argue that they existed for some time before that.

The small plots are typically financed with a low down payment and monthly payments. A deed of ownership is rarely given by the land developers until all payments are complete.

Tackling problems in the colonias is hampered by a lack of political or administrative structure. “Providing solutions to public health problems in the colonias is a unique situation in that they are not political subdivisions,” says Hogye. “Financial programs are normally designed to deal with an identified political entity.”

A lack of appropriate state and local legislation has, until recently, been part of the problem. For example, prior to 1989, Texas counties did not have the authority to require water and sewer in new developments—only road access and minimal drainage systems were required. In 1989, the state legislature empowered the Texas Water Development Board (TWDB) to require developers to provide water and sewage infrastructure. And, in 1995, comprehensive legislation addressing land use practices in Texas colonias was passed by the state legislature.

These laws are having positive impacts in the communities as the

residents become familiar with the provisions. “The significance of these two pieces of legislation is far reaching,” says Charlie Clements, director of Water Works, a not-for-profit organization working in the colonias.

“Until these laws were passed, correcting problems in colonias that were the result of developers’ greed or indifference was practically impossible. Nothing stopped developers from continuing to build communities with inadequate or nonexistent infrastructure.”

Programs Provide Much-Needed Support

Federal efforts to solve the water and wastewater problems found in the colonias have been in existence for many years. Three major players at the federal level are the U.S. Department of Agriculture (USDA), HUD, and EPA.

In addition to these federal agencies, Texas funds several programs aimed at colonias. And, since 1993, bi-national solutions are being sought through the North American Development Bank (NADBank)—a joint creation of the U.S. and Mexico.

Within the USDA, the Rural Utilities Service (RUS) is actively funding water supply and wastewater systems. RUS has been assisting colonias since the late 1960s and currently provides approximately \$25 million per year to colonias in the four border states.

The continued commitment to providing safe water and sewage facilities was underscored recently with the announcement of grants for water and wastewater projects in New Mexico colonias. “Since 1993, USDA has invested \$101.9 million in water and wastewater projects in the colonias region,” said Jill Long Thompson, under secretary for USDA Rural Development in an April 7, 1998, press release. “This [new] \$6.2 million investment demonstrates USDA’s continued commitment toward ensuring colonia residents have clean and safe water facilities.”

HUD also provides a wide variety of funding assistance (administered through the appropriate state agency depending on the project), ranging from planning through construction for a broad range of infrastructure projects. Through set-asides of the border states’

share of HUD funds from the Community Development Block Grant Program, approximately \$10 million has been made available annually to colonias for the last several years.

EPA has been assisting colonias to the tune of \$320 million in grants to Texas and New Mexico since 1993, reports Hogye. Until recently, funds have focused on wastewater infrastructure but the fiscal year 1998 Congressional appropriation included drinking water as an allowable cost for the colonia assistance funding.

The TWDB and the New Mexico Environment Department (NMED) provide funding for technical assistance, preparation of project proposals, overall management of infrastructure projects, and project construction management, as well as being in charge of design review and overall program management.

In Texas, 48 construction projects are underway that will benefit more than 140,000 residents at a cost of \$287 million; New Mexico has committed \$14 million to thirteen projects.

And while this expenditure is impressive, EPA’s Hogye is quick to point out that “the real benefit, of course, can be measured in the improved quality of life for community residents. Improved sanitation will reduce the occurrence of water-related illnesses, such as Hepatitis A and gastro-intestinal disorders, which are common in colonia populations, and the availability of potable water supplies will radically alter the lifestyles of those residents who have spent many hours carrying water in bottles and storing it in sub-standard containers.”

They Do Things Big in Texas

With the majority of colonias located in Texas, it isn’t surprising that Texas offers the most assistance to colonias. Three significant programs are administered by the TWDB. They are the Colonias Plumbing Loan Program (CPLP), the Economically Distressed Areas Program (EDAP), and the Colonias Wastewater Treatment Assistance Program (CWTAP). The CPLP and CWTAP are funded by EPA grants.

• The CPLP provides low-interest loans to local governments which, in turn, provide loans to

residents for basic residential plumbing and connections to sewer systems or septic tanks. Since its inception in 1991, the CPLP has made more than \$4 million available to several communities.

• EDAP is a state-funded program financed through bond issues. It is a combination grant/loan program for areas primarily in counties along the border. The funds are to be used for construction, acquisition, or improvements to water supply and wastewater collection and treatment works, including all necessary engineering work.

• The CWTAP is similar to EDAP but is funded by EPA grants. Assistance is primarily limited to wastewater facilities in border-area colonias.

In addition to these TWDB programs, another assistance program is coordinated by the Texas Natural Resource Conservation Commission. Known as Texas STEP (Small Towns Environment Program), it is a collaboration of five agencies: the Texas Department of Housing and Community Affairs, the General Land Office, the Texas Department of Health, the Texas Water Development Board, and national support from the STEP of the Rensselaerville Institute South in Austin.

These five state agencies are joined by a league of private and local partners including Water Works, the Community Resource Group, and the Texas Rural Water Association.

Texas STEP offers support to small towns, unincorporated communities, local governments, colonias and clusters of 15 or more homes trying to solve a shared public problem. Residents must demonstrate an urgent awareness of the problem and willingness to take personal responsibility to solve it.

According to Texas STEP Field Director Rob Hanna, “Texas STEP helps locals reduce their dependency on outside resources that might delay fixing problems or ill fit a community’s needs, proving that the best way to get money is to need less of it.”

Plans Proceed in New Mexico

In New Mexico, NMED oversees

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the main program to assist colonias. Funded by \$20 million in grants from EPA along with some matching funds from the state of New Mexico, the program, as in Texas, provides low interest loans and grants to local governments for sewers and wastewater treatment facilities. NMED has awarded \$14 million to 13 projects thus far.

The Colonias Development Council (CDC) was specially formed to develop leadership in New Mexico colonias. As with the Texas STEP program, the CDC joined forces with Water Works to develop self-help construction projects in the colonias.

Water Works' Clements reports that they "now have staff in four regions where there are concentrations of colonias: Las Cruces, New Mexico; and El Paso, Laredo-Eagle Pass, and McAllen, Texas. There are a total of 14 projects underway or completed. The staff in these places assist colonias with both the development of a project—assessment of needs, design, permits, management and ownership agreements, and finance.

"Some communities have experienced labor that can provide construction oversight and others lack them," he observes. "If that is the case, Water Works provides them with a skilled construction foreman. Water Works has a \$1 million loan fund that helps provide short-term

financing to communities that other agencies may consider high risk."

International Efforts

Recognizing that many of the challenges to providing safe drinking water and wastewater treatment in the border region extend across the international border, the governments of the U.S. and Mexico established the NADBank in 1993.

Each country committed \$3 billion to loans and loan guarantees over the next decade through this new financial institution. At the same time, they also established the Border Environment Cooperation Commission (BECC) to help develop projects and certify them for funding through NADBank. The primary focus of NADBank/BECC is to finance environmental infrastructure projects, particularly those related to drinking water, wastewater treatment, and municipal solid waste.

Both the U.S. and Mexico acknowledge that the burgeoning population along the border—estimated to be nearly 10 million—and the accompanying stress to the natural resources, presents an ongoing threat to both the residents and the environment. Efforts are being coordinated by NADBank and EPA to assist colonias in meeting their infrastructure needs.

Big Needs Are Likely To Get Bigger

A needs assessment survey was conducted by the TWDB in

October 1992 to determine cost estimates for water and wastewater services in the Texas colonias. The total estimated cost derived from that assessment was set at \$696 million—\$148 million for water service and \$467 million for wastewater service. The estimate also included nearly \$81 million for connection fees and indoor plumbing improvements. A similar survey conducted by NMED identified needs in that state on the order of \$23 million for wastewater and \$2 million for water. Since 1992, the overall estimate for these needs in both Texas and New Mexico has been raised by about \$100 million, according to EPA's Hogue.

The likelihood that these needs will increase is virtually inevitable. The average age of residents in colonias is under 20 years and fertility rates are twice the national average, according to U.S. Census Bureau data. The result will be an increase in population. Already, the population in colonias grew from an estimated 200,000 in the early 1990s to the 450,000 figure cited by experts today, although, it should be noted, part of this increase can be attributed to better information about colonias and the residents there.

Despite the challenges ahead, officials remain hopeful. "By providing these colonias with proper infrastructure and services, the quality of life of residents has been greatly improved," Hogue states. "A recent survey by the

state of Texas found that growth in colonia populations in recent years has been primarily due to new development of vacant lots in established colonias, not through creation of new colonias. As conditions in existing colonias are upgraded, a large amount of the demand for new housing can be met through this kind of 'infilling' in these established communities."

He goes on to say, "Another benefit of the water infrastructure program funded by EPA is that incorporated communities with modern facilities have in many cases expanded and extended their facilities to serve adjacent colonias. It is hoped that in the future, more of these communities will incorporate colonias into their political or service areas and thereby commit to providing a range of necessary services over the long term."

Clements is also optimistic. "The greatest challenges to these communities are not motivation and leadership. Colonias are populated with families that are used to hard scrabble lives and have often staked their claim on the American dream of home ownership by building their own homes." With collaborative effort between federal agencies, officials at the local level, and, of course, the residents themselves, Clements says he is confident that positive change can be affected.

For a list of assistance organizations mentioned in this article, see box below. ♦

More Information For Colonias

There are a number of programs designed to assist with projects in colonias. The following list is not meant to be exhaustive, rather, to provide interested persons with a starting point. Shown are programs and agencies mentioned in the article above.

USDA-Rural Utilities Service State Rural Development Offices

Arizona State Office
3003 N. Central Avenue, Suite 900
Phoenix, AZ 85012
Phone: (602) 280-8700

California-Nevada State Office
194 West Main Street, Suite F
Woodland, CA 95695
Phone: (530) 668-2000

New Mexico State Office
6200 Jefferson Street, NE
Room 255

Albuquerque, NM 87109
Phone: (505) 761-4976

Texas State Office
Federal Building, Suite 102
101 South Main
Temple, TX 76501
Phone: (254) 742-9710
Web: www.usda.gov/rus/home/home.htm

US EPA Region VI
1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733
Phone: (214) 665-7110
Web: www.epa.gov/owm/mexican.htm

HUD Region 6
1600 Throckmorton St.
PO Box 2905
Fort Worth, TX 76113-2905
Phone: (817) 978-9000
Web: www.hud.gov/fedcolni.html

Texas Water Development Board
PO Box 13231
Austin, TX 78711-3231
Phone: (512) 463-7847
Web: www.twdb.state.tx.us

Texas STEP
TNRCC—Water Utilities Division
MC 153
PO Box 13087
Austin, TX 78711-3087
Phone: (512) 239-6960
Web: www.tnrcc.state.tx.us

Water Works
1227 Paseo De Peralta
Santa Fe, NM 87501
Phone: (505) 988-4270

New Mexico Environment Department
Harold S. Runnels Building
1190 St. Francis Dr.
Santa Fe, NM 87505-4182

Phone: (505) 827-2855 or (800) 879-3421
Web: www.nmenv.state.nm.us/frhome.html

Colonias Development Council (NM)
1485 North Main, Suite C
Las Cruces, NM 88001
Phone: (505) 647-2744

NADBank
203 South St. Mary's, Suite 400
San Antonio, TX 78205
Phone: (210) 231-8000
Web: www.nadbank.org

Border Environment Cooperation Commission
Blvd, Tomás Fernández, No 8069
Fracc. Los Parques
Cd Juárez, Chihuahua, C.P.
32470, México
Phone: (011-52-16) 25-91-60
Web: www.cocef.org

How Part 503 Regulations Have Affected Biosolids Disposal for Communities

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"We used to have it in a drying bed and applied it to land in dry form. Now we pump it directly into the truck and put it on the land in a liquid form."

Duncan said the cost of landfilling was higher because of the additional steps of drying the sludge. He added, "When we put it on dry, it was much harder to get the lime stabilized. Now we're pumping it directly, eliminating all that labor and time."

"The regulations played no part in our decision to land apply. We had no choice because the landfill closed, but the regulations were helpful because they were there for guidance. It was just a matter of complying with the regulations."

"Before [the regulations], I think people, in general, may have been a little lax on sampling and making sure everything was done correctly."

Gary's sewage plant was designed by U.S. Steel in 1961. It was the only plant operating in McDowell County until three years ago.

Flows to the plant have changed throughout the years. In the 1960s, Duncan said there were seven or eight coal mines in the area increasing the population to 5,000. The plant was designed to handle 1.2 million gallons per day (gpd). Today, it is permitted to handle .75 million gpd. The largest industry contributing to the plant is a 120-bed nursing home.

"When there's not a whole lot of rain, we probably run an average of .40 million gpd," he added.

Duncan's impression of the regulations is basically favorable. "I think they're pretty well set up. I haven't had any problem with any enforcer. They [the state Department of Environmental Protection] always seem to want to help you and try to keep you straight," he added.

"The regulations are there for a good reason—to clean up the environment. I think we desperately need that."

Duncan's only suggestion for improvement would be to implement some type of funding option because of the additional costs of sampling on small system opera-

tors. "It does cost you money when you have to sample and send things to an outside lab," he added.

A Tale from Another City

David Cross, wastewater operations coordinator for Westminster, Colorado, said the city has had a land application biosolids program for almost 20 years.

Cross also said *Part 503* hasn't impacted their program. "My impression is that they added some additional metals we have to test for. It also lays out the frequency of testing based on the total volume of biosolids produced."

"We have always had a pretty progressive program. Prior to *Part 503*, we tested more than was required by law. We just had to add some additional parameters, and there are a few more formalities we have to go through in permitting. By and large, *Part 503* has not increased the workload or burden."

Cross added that the regulations "have been beneficial for people who weren't aware there could be issues of concern."

Wastewater flows in Westminster are split between Westminster's treatment plant and Denver's. Cross estimates that there are 50,000 to 60,000 people served by Westminster's treatment facility, which is rated at 7.5 million gpd.

Westminster City Council recently purchased 2,600 acres of land for \$1.3 million to implement its land application program. Cross explained that there has been much development in the area near the treatment plant. Most of that area was previously used for land application. "It used to be a rural area with a lot of farm activity and a lot of public acceptance of biosolids," said Cross.

"We're starting to see a shift with the suburbs extending and growing. We lost a lot of acreage and realized that we were going to need some land."

He added that with the urbanization there was a small element of decreased public acceptance with the influx of non-farm residents. However, the biggest problem was loss of land from home construction.

Other Voices Heard

S. Alan Keller of the Illinois EPA, manager of the northern municipal unit of the permits section, said he has not noticed a large impact on small systems with *Part 503* in his area. "We always had a permit program in the state

there were no pollutant limitations on sludge that is land applied. By EPA issuing limits and by communities complying with these limits, there is a certain protection from that."

Robert A. Clark, a Virginia



A belt filter press is used in Westminster, Colorado, for solids dewatering. In photo on back cover, biosolids are offloaded to an injector vehicle for land application. (Photos by Dave Cross.)

for land application of sludge. We didn't have a fecal count number, but we did have operative design standards. If they could meet that criteria, they were allowed to land apply sludge," he added.

"I think it did affect small restaurants, small subdivisions, and mobile home parks that now have to look to larger municipalities for other avenues of disposal. They found that they may not meet some of the criteria and may not want to perform all of the record-keeping tasks involved with *Part 503*. That is why they are looking to larger municipalities for sludge disposal."

Brad Gallant, Ohio EPA Division of Surface Water, also said he has not noticed any particular problems in this area, but said that some of the small communities find the regulations "somewhat confusing."

He added, "They ask questions like what records need to be maintained or how should we collect samples. They also ask a lot of compliance questions."

"Overall, I would say *Part 503* has received a favorable response just from the fact that it finally codified certain quality criteria that had to be met, which a lot of municipalities actually liked. I think they like the liability coverage they get from being under regulations. Prior to *Part 503*

Cooperative Extension agent, said there are two counties within his five-county area that represent both extremes of the biosolids spectrum.

In Clarke County, 4,000 acres of farmland was recently permitted to receive biosolids from the neighboring Washington, D.C., metropolitan area. A demonstration/monitoring project was initiated at the request of county officials to ensure that the safety factors would hold under Clarke County conditions.

Land applying locally generated biosolids in Shenandoah County, however, has been the subject of great controversy.

Despite this diversity of reactions, Clark said that safety factors in *Part 503* "have become a standard everyone strives to meet."

He added, "Odor seems to be an issue that is causing problems for many land application programs and it may need to be addressed in the future."

See the Q&A column of the Summer 1998 issue of Small Flows for information about sludge classifications. To order any of the publications discussed in this article, contact the National Small Flows Clearinghouse at (800) 624-8301. ♦

Information Wanted for Wastewater Facilities Database

If you own, operate, or manage a small wastewater treatment system (one million gallons per day or less) for any of the following:

- small community (population of 10,000 or less);
- mobile home park;
- campground or state park;
- restaurant;
- condominium;
- correctional facility; or
- any other small public, private, or commercial establishment,

the National Small Flows Clearinghouse (NSFC) would like to hear from you!

The NSFC is undertaking the task of providing a network of owners, operators, and managers of small facilities across the country. The purpose is for owners, operators, and managers to help others by providing each other with information and offering advice based on actual real-life experiences.

The Facilities Database provides contacts with small-scale facilities using conventional, innovative, or alternative wastewater treatment technologies throughout the U.S. It allows you to locate people experienced with particular technologies to discuss operational problems, troubleshoot, or to determine which technologies

may best suit your particular needs. The database contains listings for approximately 1,000 facilities. While not inclusive of all small treatment facilities in the U.S., the database does include examples of a variety of technologies being used.

In addition, the Facilities Database will house information on the innovative technology projects that were funded through the U.S. Environmental Protection Agency's Construction Grants Program, which was created by Congress through the Clean Water Act.



To find out how to submit information about your facility or to get information about other facilities similar to yours, call the NSFC at (800) 624-8301 or (304) 293-4191. ♦

The National Small Flows Clearinghouse, established by the U.S. Environmental Protection Agency under the federal Clean Water Act (CWA) in 1977 and located at West Virginia University, gathers and distributes information about small community wastewater systems. *Small Flows* is published quarterly.

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RCAP Appoints New Executive Director

The Board of Directors of the national Rural Community Assistance Program (RCAP) is proud to announce the appointment of its new Executive Director, Randolph A. Adams, Ph.D. From 1991 through 1997, Adams was the chief of programming and training for the Inter-America and Pacific (IAP) Region of the Peace Corps, overseeing rural development projects in the areas of agriculture, education, environment, health, micro and small business, water and wastewater, and youth and women in development in 32 countries, with onsite assistance to staff in 24 of those countries. Earlier, Adams worked in domestic and international development with for-profit and not-for-profit organizations.

Besides his doctorate in sociology from Catholic University of America, Adams also holds a B.S. in physics from Case Institute of Technology.

RCAP's national office is located in Leesburg, Virginia. There are six regional RCAPs with field staff in 49 states, Puerto Rico, and the Virgin Islands. The mission of the national and regional RCAPs is to improve the quality of life of rural people in the U.S. through the provision and facilitation of rural community development services. The services provided by RCAP include: potable water systems, wastewater treatment systems, solid waste management, low-cost housing, micro- and small-business development, and

environmental justice with a particular emphasis on community capacity building. The work is done in communities of 10,000 or fewer with particular focus on communities of 2,000 or fewer. In addition, while the RCAPs work with all of rural America, there is special interest in Native American, minority, and migrant communities.

Full details of RCAP's activities can be found on the Web at www.rcap.org or write to Rural Community Assistance Program, Inc., 722 East Market Street, Suite 105, Leesburg, VA 20176; call (888) 321-7227 or (703) 771-8636; fax (703) 771-8753; or e-mail Randyadams@erols.com. ♦

St. Louis University and NETCSC To Offer Wastewater Options Training

This spring, the St. Louis University School of Public Health and the National Environmental Training Center for Small Communities (NETCSC) will offer NETCSC's recently revised "train the trainer" course, "Assessing Wastewater Options for Small Communities."

This course offers valuable information for small community leaders and decision makers, as well as for trainers and assistance providers who work with small communities. The course includes training and technical information and provides participants with instruction materials to assist them in educating others. By the end of the course, participants should know and be able to help others learn how to do the following:

- explain what wastewater is and why it should be treated,

- communicate a community's wastewater responsibilities,
- assess current and future wastewater needs,
- identify factors influencing selection of wastewater technologies,
- identify and evaluate appropriate financing options, and
- promote the long-term viability of the selected wastewater option.

The course will be offered on the following dates and locations in spring 1999:

- April 6 and 7, Jefferson City, Missouri, Runge Conservation Center;
- April 19 and 20, Cedar Rapids, Iowa, Kirkwood Community College;
- May 10 and 11, Emporia, Kansas (location to be announced); and



- May 12 and 13, Hastings, Nebraska Central Community College.

The total cost for the two-day course is \$95 per person. Contact Sandy Miller at NETCSC, (800) 624-8301 or (304) 293-4191, ext. 5536, to register or for more information. Funding support for this program is being provided by a grant from the Office of Environmental Justice Programs, U. S. Environmental Protection Agency. ♦

NODP Phase II Site Serves International Role

by Timothy Suhrer
Small Flows Editor

The National Onsite Demonstration Project (NODP) Phase II site at Centerville, Pennsylvania, is being developed by the NODP as part of its mission to help spur the use of alternative wastewater treatment technologies to protect public health and the environment in small and rural communities. It is also serving as an international parallel project between the U.S. and Central Europe.

The site is part of the Central European Linkage Program (C.E.L.P.), a technical and cultural exchange initiative funded by the Pittsburgh-based Heinz Endowment. A parallel site is under development in Krivany, Slovakia. C.E.L.P. is also active in Poland, Hungary, and the Czech Republic. The project began three years ago, with representatives from Europe visiting the U.S. and U.S. wastewater experts visiting Slovakia in order to start the groundwork for the implementation of alternative wastewater treatment systems.

This past October, Jaroslav Tesliar and Robert Zvara, representatives of People and Water, a non-governmental group in Slovakia,

visited the PA site and discussed different types of alternative treatment systems with representatives of the National Small Flows Clearinghouse (NSFC), the Southern Alleghenies Conservancy, and the Pennsylvania Department of Environmental Protection.

"We hope to be able to better understand alternative technologies, such as sand filters, wetland treatment systems, and lagoon systems, and to end our visit both personally enriched with knowledge and with a concrete idea of technology that will be successful in Slovakia," Tesliar said.

According to Tesliar, Slovakia has a major problem with wastewater. "The five million people of Slovakia live mainly in small communities," he said, "and less than five percent of the 2,700 villages have sewage systems."

Ron Donlan, coordinator of the Southern Alleghenies Conservancy, said that a demonstration project is planned in Slovakia that will parallel Centerville.

"The Torysa Watershed in Eastern Slovakia drains into the Danube via the Hornad River. People and Water, representing 24 small villages in the region and seeking

alternative, low-cost, low-tech technologies, will use the village of Krivany as a model for the demonstration of an array of low-cost wastewater treatment technologies such as a contour trench, recirculating sand filters, a lagoon, and wetlands," he said.

According to Donlan, the two Slovaks received training under David Pask, P. Eng., of NSFC and Edward Corriveau, P.E., of the Pennsylvania Department of Environmental Protection. "They received a broad overview of the complete array of wastewater treatment technology used in the Mid-Atlantic region, whose soils, topography, and climate are similar to those found in Slovakia," Donlan said.

According to a project report by the Southern Alleghenies Conservancy, while this is not the primary reason it was chosen for NODP Phase II, the village of Centerville, in rural southern Bedford County, Cumberland Valley Township, "presents a situation that closely resembles conditions in rural Central Europe." There is no community wastewater treatment facility for the township, many onsite systems are failing, and a number of "wildcat" sewage lines outlet directly into ditches or streams.



Pending completion and approval of the Community Wastewater Plan (PA Act 537), components of the demonstration project may include: conversion of an existing 2,500 gallon per day treatment plant that formerly served an elementary school to a recirculating sand filter system serving clusters of homes at the northern and southern ends of Centerville with discharge to a wetland system, and the installation of a contour trench system to serve a cluster of homes in the center of the village.

In the 1990 census, Donlan pointed out, 500,000 people in Pennsylvania alone considered themselves Slovak-Americans. "Their ancestors settled in Pennsylvania because it resembled their homeland, and they worked in the mines and the steel mills. It's a fitting thing that we should be able to transfer this technology back to that homeland."

For further information about the NODP, contact the NSFC at (800) 624-8301 or (304) 293-4191 or visit the NSFC's Web site at www.nsf.wvu.edu.

NODP Phase III Project To Survey HAU's in West Virginia

by Edward Winant
NSFC Technical Assistant

A new program of the National Onsite Demonstration Project (NODP) Phase III was launched in May to inspect selected home aerobic treatment units (HAUs) in West Virginia to determine their state of operation and maintenance. HAU's have been permitted in West Virginia since 1983, and there are an estimated 5,000 units now in service in the Mountain State, with approximately 600 new units being installed yearly.

State requirements limit aerobic units to those with NSF Class I Standard certification and require a two-year maintenance and service contract. Class I units have been tested by NSF to treat effluent to a level lower than 30 milligrams per liter of BOD and suspended solids. Beyond that, the homeowner is responsible for operation and maintenance, but there is no set procedure for

monitoring their efforts. Of concern is whether the plants continue to meet NSF Class I standards after their two-year service agreement is up, and how many units may be malfunctioning.

The project was initiated in six counties with high numbers of installed HAU's. One hundred units were selected in each county, at random, for inspection. Of the hundred units, 15 to 20 in each county were sampled for laboratory analysis, and the effluent analyzed for BOD, nitrogen, suspended solids, and fecal coliforms.

Field inspection of each unit began with a visual check of the grounds for potential drainage problems. The homeowners, if available, were interviewed about their satisfaction with the unit and any problems that had occurred. Overall, most homeowners were extremely satisfied with their units. The aeration unit was then opened and an inspection of the

aerator, clarifier, and chlorinator was performed. The unit's discharge was tested for chlorine residual and turbidity. Any problems with the system were noted on an inspection report form.

For laboratory sample collection, the homeowner was asked to run water through the system, usually with a toilet flush and running a tap for a few minutes. Three samples were collected to provide multiple analyses of each unit. The sample bottle number was then noted on the inspection report. Laboratory results were made available to homeowners upon request.

The homeowners were informed that the inspection is for research purposes and not an "official" inspection. They were notified of any significant problems with their aeration unit and encouraged to contact their service provider to correct any problems. When a unit required pumping, the homeowner was encouraged to contact a

qualified pumper. The most common problem was chlorine tablet drop failure in the tablet chlorinators. When this was observed, the homeowner was apprised of the situation and advised to keep a closer watch on the chlorinator.

The field work is completed and the laboratory analysis is in progress. The project will culminate in a joint report by the West Virginia Office of Environmental Health, the six county health departments involved, the NODP, and the West Virginia University Department of Biology, Plant and Soil Science Division. The report should be available by May 1999. Based on the findings of the report, the Office of Environmental Health may implement a policy change for the maintenance and operation of HAU's in West Virginia.

For more information about the NODP, call the NSFC at (800) 624-8301 or (304) 293-4191. ♦

Buying a Home with a Septic System

by Tamara Vandivort
NSFC Technical Assistant

Editor's Note: This column is based on calls received over the National Small Flows Clearinghouse (NSFC) technical assistance hotline. If you have further questions concerning how to determine the condition of a septic system, call (800) 624-8301 or (304) 293-4191 and ask to speak with a technical assistant.

I am considering purchasing a home in a rural area. According to the owner, the wastewater from the home is going into a septic system. Is there some way to determine what condition the system is in? I would like to know before closing on the property if it needs to be repaired or replaced.

The last thing a person needs or wants to face a few weeks after buying a home is a septic system failure. If the drainfield has clogged and there is no feasible way to repair it, it may have to be replaced, provided there is room for another drainfield on the property. If space is limited, an alternative system may have to be considered, or the only option may be to hook up to a nearby sewer system. Repairs, replacements, or sewer hookups can be costly, easily adding up to a few thousand dollars.

In order to protect yourself as a home buyer, it is a good idea to know what type of wastewater treatment system serves the home and what condition it is in. Ask the sellers if they have any installation or service records on the system. There may be records of repairs or tank pumpings. The health department may have installation and design information on the system (provided a permit was issued). Buyers should make sure a permit was issued for the wastewater treatment system and that the system is legal and meets code before purchasing the home. Should the system not meet code or be in unsatisfactory condition, the buyer and seller will need to negotiate who pays to repair or replace the system. A qualified designer and installer and the local health department will need to be consulted to ensure any new or repaired system is properly installed according to code.

In addition to written documentation, it is also a good idea to have a professional locate and inspect the onsite wastewater treatment system. The inspection can provide such information as tank condition, condition of components such as baffles, the material the tank is made of, whether the tank needs to be pumped, and the condition of the drainfield. The inspector can check to see that all sinks, toilets, the washing machine, and other water-using appliances are hooked up to the system according to code and that sump pumps and roof drains are diverted away from the system. The inspector can also determine if the size of the system is adequate and if plans given to the previous homeowners are accurate.

Once the system is located, it is a good idea to make a drawing or sketch showing the system location and to record such information as tank size. Any future repairs or tank pumpings can then be recorded as they occur.

The cost of an onsite system inspection can range from \$75 to \$500 depending upon geographic location and the extensiveness of the inspection (some inspections involve depth to the water table and other detailed analyses). The cost of an inspection is minimal for the peace of mind it affords the buyer of a home with an onsite wastewater treatment system. The inspection fee is negotiable between buyer and seller and both may share the expense. Lending institutions commonly require an inspection of the wastewater treatment system before approving home loans; however, the extensiveness of the inspection required varies among lending institutions.

To locate a professional inspector, contact your local health department or state-level onsite wastewater regulator. State and local health officials can assist you in finding qualified inspectors in your area. They will know of any particular requirements for various types of onsite systems and whether the state requires any certification, licenses, or training for onsite system inspectors.

Some states, such as Pennsylvania, have cooperative training programs with industry and other organiza-

tions for inspectors and maintain lists of those who have successfully completed these programs. For information on Pennsylvania's inspection program, contact the Pennsylvania Septage Management Association at (717) 842-7440, Web site www.psm.net.

The National Association of Waste Transporters, Inc. (NAWT) has developed a training and certification program for inspectors. NAWT's curriculum is available to states and to others interested in the program. To locate a NAWT member certified to perform inspections in your state, contact NAWT headquarters in Scandia, Minnesota (800) 236-6298.

The NSFC maintains a Consultants Database that contains contact information for consultants nationwide who inspect onsite systems. To request a search of the Consultants Database, contact the NSFC at (800) 624-8301.

In addition, the National Sanitation Foundation (NSF) is initiating a national accreditation program for wastewater treatment system inspectors. This program will aid industry in standardizing onsite system inspections. For more information on the Wastewater Inspector Accreditation Program, contact the NSF at 800-NSF-MARK or (734) 769-8010, Web site www.nsf.org.

Also, as a new wastewater treatment system owner, it is important to learn how to properly operate and maintain the system. Proper operation and maintenance practices can lead to many years of quality wastewater treatment from the system. When moving to a rural area, there will be some lifestyle changes. Learning how to live with an onsite wastewater treatment system is one of those

changes, and it doesn't have to be painful or expensive. To learn more about how to live happily with onsite systems, contact the NSFC.

The NSFC has several products that can assist owners of onsite wastewater treatment systems. These include:

- Homeowner Onsite System Recordkeeping Folder (WWBLPE37) Cost: 40 cents
- Septic Systems—A Practical Alternative for Small Communities, Pipeline, Summer 1995 (SFPLNL02) Cost: 20 cents
- Managing Your Septic System—A Guide for Homeowners, Pipeline, Fall 1995 (SFPLNL03) Cost: 20 cents
- Onsite System Inspections, Pipeline, Spring 1998 (SFPLNL13) Cost: 20 cents
- Your Septic System: A Reference Guide for Homeowners (brochure) (WWBRPE17) Cost: Free
- The Care and Feeding of Your Septic System (brochure) (WWBRPE18) Cost: Free
- So . . . Now You Own a Septic System (brochure) (WWBRPE20) Cost: Free
- Groundwater Protection and Your Septic System (brochure) (WWBRPE21) Cost: Free
- Homeowner's Septic Tank Information Package (WWP-KPE28) Cost: \$2.00 (Includes WWBLPE37, SFPLNL02, SFPLNL03, SFPLNL13, WWBRPE17, WWBRPE18, WWBRPE20, WWBRPE21, and fact sheets from Oklahoma State and Penn State Universities on system maintenance, preventing system failures, and alternative household cleaning solutions.)
- State Onsite Wastewater Regulatory Contacts (WWBLRG34) Cost: Free ♦

Program Coordinator Sought for NODP Phase IV

Wanted: Program Coordinator of a three-year, grant-supported National Onsite Demonstration Project.

Masters degree in Public or Business Administration, or related discipline; professional licensure or significant related experience may be substituted for the Master's degree. Two to five years of related experience required. Prefer experience in wastewater management programs for rural communi-

ties, contracts and grants administration, strategic visioning, organizational communication strategies, and the diffusion of innovations.

Position currently available; search will continue until a suitable candidate is identified. Salary competitive. Letter of application, curriculum vitae, and three letters of reference, including phone numbers to: Dr. R. Phalunas, West Virginia University, NRCCE, ESTD P.O. Box 6064 Morgantown, WV 26506.

advice

West Virginia University is an Equal Opportunity and Affirmative action Employer: Minorities and Women are encouraged to apply

1999 Calendar of Events

If your organization is sponsoring an event that you would like to have promoted in this calendar, please send information to the Small Flows editor.

FEBRUARY

Event: 7th Annual Texas OnSite Wastewater Treatment Research Council Conference
By: OSWTRC
Date: February 15-17
Place: Waco, Texas
Phone: (512) 239-6323
E-mail: pcallawa@tnrcc.state.tx.us

Event: International Pumper and Cleaner Environmental Expo
By: Cole Publishing
Date: February 24-27
Place: Opryland Hotel, Nashville, Tennessee
Phone: (800) 257-7222

Event: Pacific Northwest Focus Conference
By: National Groundwater Association
Date: February 17-18
Place: Portland, Oregon
Phone: (800) 551-7379

Event: Conference on Storm-water & Urban Water Systems Modeling,
By: Computational Hydraulics, Int.
Date: February 18-19
Place: Toronto, Ontario
Phone: (519) 767-0197
Fax: (519) 767-2770
E-mail: info@chi.on.ca

Event: Southwest Regional Training Institute
By: Rural Community Assistance Corp.
Date: February 22-23
Place: Tucson, Arizona
Phone: (520) 746-1161

MARCH

Event: GIS Expo 99
By: GeoSolutions
Date: March 1-4
Place: Vancouver, Canada
Phone: (203) 445-9265

Event: Water Quality Technology Conference
By: American Water Works Association
Date: March 14-17
Place: Orlando, Florida
Phone: (303) 347-6209

Event: Water Quality Assoc. Conv. & Expo
By: Water Purification & Purification
Date: March 16-21
Place: Fort Worth, Texas
Phone: (520) 323-6144

Event: 1999 Oregon Onsite Source Water Protection Association
By: American Water Works Association
Date: March 25-26
Place: Denver, Colorado
Phone: (303) 347-6204
E-mail: www.awwa.org

Event: Wastewater Association Annual Conference Oregon Onsite Wastewater Assoc.
By: Oregon Onsite Wastewater Assoc.
Date: March 26-27
Place: Roseburg, Oregon
Phone: (541) 440-4683

Event: Particle Measurement & Characterization in Drinking Water
By: American Water Works Association
Date: March 28-30
Place: Nashville, TN
Phone: (303) 347-6209

NSFC Seeking Information on Onsite Systems for Second Edition of Health Department Report

The National Small Flows Clearinghouse (NSFC) is undertaking the task of contacting people at health departments and local permitting agencies for information about onsite systems across the U.S.

This effort is a follow up to a project that began in 1994, when the NSFC sought information about the status of onsite systems across the country by contacting those in local and state public health agencies who work with these systems every day. Approximately 3,500 agencies were sent a questionnaire about onsite systems. The project objectives included determining the following for each state for the year 1993:

- which local agencies work with onsite systems,
- the number of new onsite systems permitted,
- reasons for permit denial,
- permit costs,
- types of onsite technologies permitted/allowed,
- number of onsite systems reported to have failed,
- reasons for system failure,
- new onsite system construction/installation cost,
- how often onsite system inspections were performed, and

- who has responsibility for onsite system maintenance.

The results of the returned questionnaires were compiled into the report, *National Onsite Wastewater Treatment: A National Small Flows Clearinghouse Summary of Onsite Systems in the United States, 1993*, which provides information about alternative and conventional onsite systems across the country.

In an effort to expand on the findings of the 1993 report, the NSFC is currently contacting local health departments to find information about permits, types of systems allowed, repairs, licensing/certification, system costs, inspections, and maintenance. The NSFC will then create a report based on the new information collected from local health departments across the nation about the status of onsite systems within their jurisdictions. The report also will incorporate the information from 1993.

The questionnaire that was used to create the 1993 report was recently sent to people in the wastewater industry to get feedback on what information would be of use to the industry and what questions to keep or modify. A revised questionnaire was then

developed from the feedback received from consultants/engineers, regulators, manufacturers, installers, educators, testing facilities, U.S. Environmental Protection Agency, planners/administrators, and local and state officials. From this group, five people with varying backgrounds in the wastewater industry were chosen to serve as an expert panel to review the revised questionnaire, assist with developing the report, and provide guidance on the project.

Panel members include Bill Cagle from Orenco Systems, Inc., in Sutherlin, Oregon; Patricia Miller from the Virginia Department of Conservation and Recreation in Richmond, Virginia; Frank Aguirre from Frank Aguirre and Associates, Inc., in San Antonio, Texas; Chuck Luther from the Volusia County Health Department in DeLand, Florida; and David Dow from the Onsite Wastewater Training Center in Kingston, Rhode Island.

The questionnaire will be finalized and mailed in February. In the coming year, the NSFC will contact all of the local agencies to gather data and assess survey results. Information obtained from local health departments across the country will be summarized in

a report to show differences and similarities in the onsite wastewater arena within individual states and in relation to the entire country. This data also will be compared with the information from 1993 to look at trends, and changes.

To assist the NSFC with the survey process, Ronald Althouse, Ph.D., from the West Virginia University Survey Research Center will be providing guidance on phrasing questions and the layout of the questionnaire and the final report. The goal is to create a report that everyone in the wastewater industry can use—a report that will be helpful not only to health and environmental departments, but also to local, state, and federal agencies, researchers, educators, installers, consultants, and others in demonstrating situations that occur across the country.

Please watch for the questionnaire in the mail and take some time to complete and return it to the NSFC as soon as possible.

To find out more about this second phase of the health department report on onsite systems, call the NSFC at (800) 624-8301 or (304) 293-4191. ♦

Internet Offers Wastewater Information

Editor's Note: There is an ample supply of wastewater-related sites on the World Wide Web. The following sites are only a sample of the information that is available. At the time of publication, these sites were current, but due to the dynamic nature of the Web, they may have changed, moved, or disappeared.

Local Government Environmental Assistance Network (LGEAN)

www.lgean.org/
Managed and operated by the International City/County Management Association, LGEAN's goal is to facilitate communications among state and local officials, inspectors, and regulators and to promote local government participation in the federal rulemaking process. This clearinghouse provides access to regularly updated state and federal regulatory information, a Web resources database, grants and financing information, and in-depth information on such topics as Brownfields, underground storage tanks, wastewater treatment, drinking water systems, and small communities. They also offer an "Ask LGEAN" research service designed to help local government officials resolve difficult questions related to environmental issues.

Universities Water Information Network (UWIN)

www.uwin.siu.edu/index.html
The Universities Water Information Network disseminates information of interest to the water resources community and

all concerned with our water resources. UWIN is housed at the headquarters of the Universities Council on Water Resources at Southern Illinois University in Carbondale, Illinois. A highlight of this site is the Water Resources Scientific Information Center (WRSIC) Research Abstracts Bibliographic Database. This database is a collection of international water research compiled by the WRSIC of the USGS. The research abstracted in this database covers a wide variety of topics that span the time period from 1967 to October, 1993. This database contains more than 265,000 abstracts and citations.

National Library for the Environment (NLE)

www.cnie.org/nle/index.shtml
The NLE is sponsored by the National Institute for the Environment (NIE), an organization designed to improve the scientific basis for making environmental decisions. As a nonregulatory science institute for the environment associated with the National Science Foundation, the NIE will provide the knowledge we need to anticipate, prevent, and respond to our complex environmental problems. This site compiles a variety of resources for quick, one-stop access. Links are available to Congressional Research Service Reports, more than 40 categories of Environmental Virtual Libraries, population and environment databases, news, and conference announcements. See the link "Summaries and descriptions of

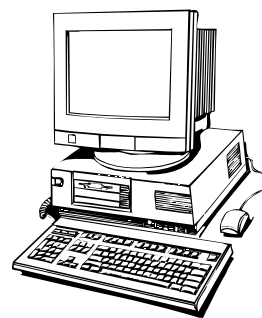
NLE projects" at www.cnie.org/nle/nlehomesum.htm for more in-depth descriptions of the resources available on this site.

Environment, Safety, and Health Technical Information Services

www.tis.eh.doe.gov/
The Technical Information Services (TIS) is the gateway to the Department of Energy's environment, safety, and health (ES&H) information resources. TIS is a comprehensive collection of information services designed to help ES&H professionals in their research. See the ES&H Digital Library for numerous tools for finding, using, and analyzing information. The Document Collection contains current EH reports, regulations, and other news publications organized in electronic "shelves" for browsing or searching, while the Digital Card Catalog allows searching across the Digital Library by subject.

Drinking Water & Wastewater Treatment System Operator Information Center

www.dep.state.pa.us/dep/dep-utawaterops
This Web site of the Pennsylvania Department of Protection is designed to help drinking water and wastewater treatment plants operate more effectively. It provides access to on-line technical assistance and information on new technologies and training opportunities, including on-line video training. This is made available in six sections: Water/Wastewater Operator Training and



Certification, Drinking Water Operator Information, Wastewater Operator Information, Local Government, Environmental Videos, and Classified Ads. Brochures, technical assistance, and e-mail updates are provided on-line.

Air & Waste Management Association (AWMA)

www.awma.org
The Air & Waste Management Association is a nonprofit, nonpartisan professional organization that provides training, information, and networking opportunities to 14,000 environmental professionals in 65 countries. Their extensive site provides daily environmental news, conference and workshop announcements, education and employment opportunities, buyers guides and product information, and contacts to governmental and professional organizations. The full text is available for their periodicals, *EM: Air & Waste Management Association's Magazine for Environmental Managers* and the *Journal of the Air & Waste Management Association*. ♦

New Book Available on Aerated Lagoon Systems

Designers and operators of aerated lagoon systems may want to consider including *High Performance Aerated Lagoon Systems*, a new book published by the American Academy of Environmental Engineers (AAEE), to their reference libraries. The author is Linlv G. Rich, Ph.D., P.E., DEE, a noted authority in the field and alumni professor emeritus at Clemson University.

The book provides methods for the rational design of a wide variety of high-performance aerated lagoon systems. Such systems range from those that can be

depended upon to meet secondary treatment standards alone to those that, with the inclusion of intermittent sand filters or elements of sequenced batch reactor (SBR) technology, can also provide for nitrification and nutrient removal. Considerable emphasis is placed on the use of appropriate performance parameters, and an entire chapter is devoted to diagnosing performance failures.

Although some of the technology (intermittent sand filters) discussed in the book is not new, much of it (aerated lagoons with short retention times) was considered innovative as recently as a decade ago. In addition, the book

offers the reader examples of the next generation of technology—lagoon systems that can provide reliable nitrification, as well as nitrogen and phosphorous removal. Although individual features of these systems have been proven in practice, their combination within the construct of the system discussed is unique and nonproprietary. Such systems, identified as "innovative," have not yet attained the validation that only a performance record can provide.

Chapters include Principles of Microbiological Processes, Control of Algae, Benthic Stabilization, Design for CBOD

Removal, Design for Nitrification and Denitrification in Suspended-Growth Systems, Design for Nitrification in Attached-Growth Systems, Phosphorous Removal, and Diagnosing Performance.

This 220-page, hardcover monograph contains 53 figures and 21 tables and is currently listed at \$99.95. Anyone interested in more information on the book, including how to order it, may call Sally Franklin at AAEE at (410) 266-3311. ♦

Small Flows

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Photo by Dave Cross



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