



Interstate Water Report

THE NEWSLETTER OF NEIWPC - THE NEW ENGLAND INTERSTATE WATER POLLUTION CONTROL COMMISSION

EVIDENCE FOR ACTION

U.S., Canadian Scientists Reveal Troubling Truths About Mercury in the Northeast

by Susy King, NEIWPC

A collaborative effort to paint a clear and complete picture of the extent to which mercury has become a problem in northeastern North America has produced some unexpected and disturbing findings. It turns out that atmospheric deposition of mercury, a long-recognized problem, is even greater in some parts of the region than previously thought. And while we've long known about mercury accumulating in the tissue of fish, it's also been found in the bodies of birds known to serenade hikers in Vermont. The new research isn't answering all the questions about mercury in the region, but it is providing much-needed information—and even more incentive to seek solutions.

The effort began several years ago when a group of U.S. and Canadian scientists set out to better characterize mercury pollution in the northeastern United States and eastern Canada. This led to the first extensive attempt at compiling comprehensive mercury data from across the region, an effort that since 2001 has been coordinated by two organizations—the BioDiversity Research Institute (BRI), a small Maine-based nonprofit organization dedicated to progressive environmental research and education, and Environment Canada, the federal coordinating agency for all of Canada's environmental issues.

The result of this massive data collection project was impressive; the scientists generated a database of more than 30,000 measurements, primarily from fresh-water environments. But the true significance of the data was the conclusions drawn from it. The data provided the basis for a series of 21 influential papers published in a special issue of the journal *Ecotoxicology*, an issue sum-



marized by BRI's Dr. David Evers in a paper intended for policymakers and the public.

In his paper, entitled "Mercury Connections: The extent and effect of mercury pollution in northeastern North America," Evers discusses four key findings from

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the compilation of research. On the surface, the first finding is no big surprise. A comprehensive analysis of air, water, and fish data showed that mercury levels are high and pervasive in northeastern North America. But new model estimates of total mercury deposited on the landscape predict even higher mercury loading to some areas of the region than previously projected. The highest mercury concentrations in water were found in Nova Scotia, Newfoundland, and New York State's Adirondack Mountains. Many of these high-mercury waters are located far from direct point sources and urbanized land use, which suggests that airborne mercury is the likely source.

Additionally, scientists analyzed mercury measurements in fish from 1980 to the present, representing more than 15,000 fish of 64 different species. This analysis is considered the first published work to use such an

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NEW PUSH FOR WATER RESEARCH

NEIWPC Moving Ahead With Regional Initiative

by Marianna Vulli, NEIWPC

Research is the backbone of human progress. Without it we would lack the necessary understanding of the world around us and could not attempt to develop successful solutions to complex social, environmental, and public health problems. With this in mind, the New England Interstate Water Pollution Control Commission is working to develop a strategic approach to water resources research at the regional level here in the Northeast.

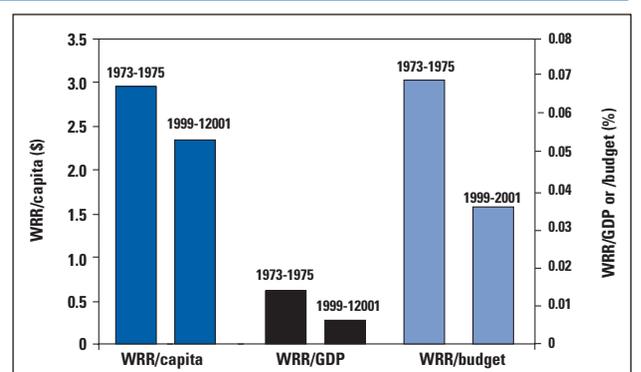
The mission of the newly minted NEIWPC Regional Research Initiative is to enhance and further our member states' understanding of water resource issues; advance research that will have a broad, beneficial impact on the protection, management, and preservation of our member states' water resources and public health; and to promote coordination and cooperation between our member states' water resource and public health agencies and research stakeholders (government, non-profits, academia, etc.).

The Regional Research Initiative is moving ahead with the understanding that carefully developed research projects can drive decision-making and inform policy debate in the increasingly challenging realm of water resources management. The National Research Council of

the National Academy of Sciences has worked to shed light on the state of water research in the nation through two recently published reports, *Envisioning the Agenda for Water Resources Research in the Twenty-First Century* and *Confronting the Nation's Water Problems: The Role of Research*. Not only did these reports highlight the topical areas where research is needed, but they also identified the lack of adequate funding and proper coordination between stakeholders as the major hurdles in meeting the need for increased research in this field.

TOO FEW FUNDS, TOO LITTLE COORDINATION

Historical water research funding data can tell us a great deal about the status of water research funding today. In *Confronting the Nation's Water Problems: The Role of Research*, the NRC presents an analysis of data collected between 1973-1975 and 1999-2001, which shows that the federal investment in water resources research has not grown from the early 1970s. When holding this lack of growth against trends in economic and demographic parameters, the NRC found that per capita spending on water resources research fell from \$3.33 in 1973 to \$2.40 in 2001.



Bar graph showing how funding for water resources research (WRR) has decreased between 1973-1975 and 1999-2001. Three parameters are shown: water resources research funding per capita, water resources research as a percentage of GDP, and water resources research as a percentage of the total budget outlay. All dollar values in constant FY2000 dollars. Note the different y-axes.

SOURCE: POPULATION DATA FROM THE U.S. CENSUS, GDP DATA FROM THE BUREAU OF ECONOMIC ANALYSIS, FEDERAL BUDGET OUTLAYS FROM THE U.S. GOVERNMENT PRINTING OFFICE (2003).

So how has research funding fared in the most recent federal budget battles? Although research and development funding has hit an all-time high in fiscal year 2005, an analysis conducted by the American Association for the Advancement of Science (AAAS) showed that approximately 80 percent of the increase is going to defense-related research. Of the top federal agencies that fund water research, three received cuts to

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**Executive Director**

Ronald Poltak

Deputy Director

Susan Sullivan

Established by an Act of Congress in 1947, the New England Interstate Water Pollution Control Commission is a not-for-profit interstate agency that utilizes a variety of strategies to meet the water-related needs of its member states—Connecticut, Maine, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont. NEIWPCC coordinates activities and forums that encourage cooperation among the states, educates the public about key water issues, supports scientific research projects, trains environmental professionals, and provides overall leadership in water management and protection. While NEIWPCC's initial emphasis was on surface water protection, the Commission now also devotes substantial attention and resources to such matters as wetlands restoration, nonpoint source pollution, water allocation, and underground storage tanks.

New England Interstate Water Pollution Control Commission

116 John Street
Lowell, MA 01852-1124
Tel: 978/323-7929
Fax: 978/323-7919

mail@neiwppc.org
www.neiwppc.org

**Interstate Water Report****Editor**

Stephen Hochbrunn, NEIWPCC

Designer

Ricki Pappo, Enosis –
The Environmental Outreach Group

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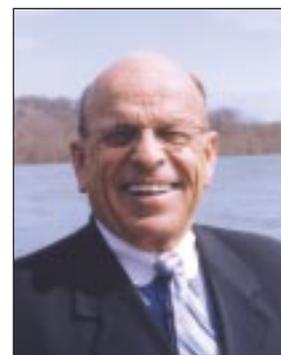
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FROM THE EXECUTIVE DIRECTOR**FOR STATES' SAKE,
TIME FOR A NEW APPROACH**

The member states of NEIWPCC have been making a slow recovery from the budget difficulties of the past several years, but we still are far from reaching the budgetary health enjoyed in the early to late 1990s. And unfortunately, any increases in state revenues have been offset for the most part by cuts in federal aid.

Budget struggles have a very serious impact on state environmental agencies, because states implement most of the nation's environmental programs. In a recent *Environmental Council of the States* publication, it was reported that:

- All the major environmental programs have been delegated to the states.
- State environmental officials undertake 90 percent or more of all environmental enforcement actions.
- States collect 94 percent of the national data monitoring the quality of the environment.
- At least two-thirds of the \$15 billion states spend each year on the environment comes from non-federal sources.
- States conduct 97 percent of all environmental inspections.
- States issue most environmental permits.

In light of all this responsibility, it's clear that any decline in the capacity of states and interstates to protect the environment is not good for public health. But that's a message that some in Washington are choosing to ignore, despite repeated warnings. Over the past year, leaders of state environmental agencies in our region and from across the country did all they could to alert Congress to the dangerous impact that the Bush administration's proposed cuts to EPA's 2006 budget would have on state and interstate environmental protection efforts.

Nevertheless, EPA's 2006 budget took a \$6.9 million negative hit in the State Technical Assistance Grants account, marking the second consecutive year that STAG funding has decreased and the first time there have been back-to-back fiscal year cuts. Additionally, the State Revolving Loan Fund (SRF) suffered a loss of \$191 million in spite of a well-defined increase in need among municipalities for the low interest rate loans.

Clearly, we have a serious problem. Most, if not all, of the cuts in EPA's budget occurred in programs that support programs delegated to states, interstates, communities or tribes. As a result, costs will have to be passed on to taxpayers, industry and others if the programs are to be maintained. This is not a tenable long-term solution, and it leaves the future of these essential programs in doubt.

The 2007 EPA budget cannot afford to be treated in the same way. We must all make Congress aware of the errors in its actions over the past two years. We must expand our efforts and expend more energy on this vital issue. No longer can we accept delegation responsibility without the federal government recognizing that its obligation, at a minimum, is to maintain the resources of states, interstates and others at a level sufficient to support a clean and healthy environment.

Sincerely,

Ronald Poltak, NEIWPCC Executive Director

NEW FROM NEIWPCC
Guide to Optimizing SBR Design and Operation

by Michael Jennings, NEIWPCC

NEIWPCC has developed a guidance document that includes the key elements to consider when designing sequencing batch reactors—or SBRs—which are becoming popular wastewater treatment options in New England and across the country. The guide explains specific configurations and processes that will optimize SBR performance.

The Massachusetts Department of Environmental Protection asked NEIWPCC to develop the guide in light of the growing interest in SBRs—and their complexity. SBRs differ from activated sludge plants because they combine all of the treatment steps and processes into a single basin, or tank, whereas conventional facilities rely on multiple basins for aeration, sedimentation, and clarification. SBRs are appealing because of their ability to treat varying flow rates and allow control flexibility. They also have a small footprint and are potentially less expensive to construct and operate.

But wastewater treatment with an SBR is generally more complex than a conventional activated sludge process, and SBR facilities can be more complicated to design and operate. These issues of complexity can

become more problematic for smaller facilities. The purpose of the NEIWPCC SBR guide is to address these issues, to increase dialogue about them, and to highlight enhancements to the design and operation of SBRs that will lead to more effective wastewater treatment. It can be used by municipalities when considering options for existing and new treatment facilities, by regulators who review SBR plans, by engineers who design these facilities, and by any other interested parties who use, design, or are considering implementing an SBR wastewater treatment system.

Once published this fall, the SBR guide will be an integral component of NEIWPCC's series of wastewater collection and treatment guidance documents. It will be available in hard copy as well as in an electronic version that can be downloaded from NEIWPCC's Web site (www.neiwppc.org). The SBR guide should go a long way towards enhancing communication and optimizing wastewater treatment for communities considering this viable wastewater treatment option.

Michael Jennings (mjennings@neiwppc.org) is a NEIWPCC Environmental Analyst. He coordinated the development of the SBR guidance document.

FROM WASTE TO WONDER PRODUCT

Maine Pumper Helps Fight SSOs by Turning Grease and Septage Into Garden-Ready Compost

by Stephen Hochbrunn, NEIWPCC

After “cooking” for three days at a high, steady temperature, the material that poured out of one of Pat Jackson Inc./Tri-City Septic Tank Service’s composting containers smelled strangely sweet. As steam rose from the pile, company president Gene Dube didn’t hesitate to grab a handful with his bare hands and take a deep whiff.

“It smells kinda pickly, that’s all,” he said. Pickly perhaps describes it, but one thing for certain: The material smelled nothing like the foul substance that had entered the container three days before. That was a mix of pine shavings, oils and grease, and dewatered septage, the noxious material pumped from residential and commercial septic tanks.

“It’s amazing how much it transforms,” Dube said. To many observers, it’s not just the material that Dube’s holding that’s amazing, but his entire operation. Built on farmland near the town of Belgrade, Maine, the PJI/Tri-City facility is taking in an ever-growing amount of septage and grease and turning much of it into compost that can be used on everything from hay fields to home gardens. It’s an innovative means of dealing with the increasingly vexing problem of what to do with all the septage pumped from septic tanks. It’s also an effective solution to another troubling environmental challenge—how to cope with the copious amounts of fats, oil, and grease generated by America’s restaurants.

Solutions to both problems are needed. If fats, oil, and grease—or FOG, to use the industry acronym—are simply poured down drains, some of the material invariably sticks to the sides of pipes in a collection system. Over time, a build-up occurs, a narrowing of the system’s artery. Enough narrowing and you get a blockage, resulting in a sanitary sewer spill or overflow (SSO) and a dangerous discharge of raw sewage. With the number of food service establishments in America growing, the threat posed by FOG is very real, enough so that in many states,

regulations require that it be kept out of collection systems. Restaurants often use grease traps to capture the waste—but then where does it go? Most wastewater treatment plants won’t take it, and even those that do, such as the plant in South Berwick, Maine, often face resistance to the idea from their community. Many plants are also reluctant to accept septage, creating a disposal problem in predominantly rural states such as Maine and New Hampshire where septic systems are common.

That’s where PJI/Tri-City comes in. Each day, the company takes in septage pumped from as many as 100 septic tanks, most pumped by the company’s own

down a dirt road to a composting area about a quarter-mile away. The sludge is mixed with pine shavings, which helps aerate the solids and provides the microbes in the material with an additional food source. This blend is put into one of the company’s four Green Mountain composting containers, where the microbes get down to business, eating away at harmful bacteria such as *E-coli*. The microbes are particularly fond of the FOG.

“When you add grease to septage, it’s like feeding candy to the microbes,” Dube said.

But conditions must be right. The activity of the microbes inside an enclosed container generates a lot of heat, and it can quickly get so hot that the microbes actually kill each other off. Dube has invested in an elaborate computerized system that keeps the temperature inside each container in the desired range of 140-150 degrees Fahrenheit by intermittently activating fans that blow in fresh air. After three days at that temperature, the microbes will have consumed much of the dangerous matter, and according to regulations, the material can be removed for additional “curing” outside the box.



At the Pat Jackson Inc./Tri-City Septic Tank Service facility in Belgrade, Maine, a truck prepares to haul a dewatering container—and the dewatered septage that’s inside—to the company’s composting area.



After three days of “cooking,” a mixture of septage, grease, and pine shavings emerges hot, steaming, and sweet-smelling from one of PJI/Tri-City’s composting containers.

employees but some by other companies, which pay a fee to dispose of their septage at the PJI/Tri-City facility. Dube and his workers also collect FOG from grease traps at restaurants across Maine, including those installed at every Wal-Mart in the state.

At the facility near Belgrade, the grease and septage are combined in giant Green Mountain Technologies dewatering containers, at a ratio of approximately 20 percent grease to 80 percent septage. In the containers, the solids in this mix settle to the bottom, while the liquid stays above. Once the settling is complete, the liquid is removed and partially treated in a series of aeration tanks. It’s then trucked to Manchester, where PJI/Tri-City’s drivers connect to a hook-up that sends the liquid into the sewer system.

“If I tried to give a treatment plant straight septage, many wouldn’t take it,” Dube said. “But if I strip out the solids and add oxygen to the liquids, they’re glad to take the wastewater.” PJI/Tri-City pays a fee for each 1,000 gallons of liquid sent through the sewer line connection. “Nobody seems to like this industry, but they like the income,” Dube said.

And the solids? That’s where the process gets really interesting. After the liquid has been removed from a dewatering container, a truck hauls the container



PJI/Tri-City president Gene Dube admires a handful of material that just emerged from a composting container. After additional “curing” outside, the material will be ready to serve as a safe, effective compost.

Composting sludge can be done more simply and cheaply (each of PJI/Tri-City’s composting containers cost \$35,000), but Dube insists that an enclosed method is best. “If you do it all outside, and everything cooks just right, there are no odors,” he said, “But if it doesn’t cook right, you can smell it two miles away.”

Avoiding smells that drift downwind to homeowners potentially uneasy about having such an operation near their pastoral weekend retreat only makes good business sense. It also reflects Dube’s sensitivity to being a good neighbor with a good reputation. For years, he didn’t compost at all, and instead applied sludge directly onto farmland, an effective, legal practice for which he was properly licensed. But he felt he wasn’t about to win a popularity contest.

“When you land-apply, everyone thinks you’re a sludge baron and a bad person,” Dube said. “But when you compost the right way, it doesn’t smell. It can be used in gardens, as topsoil, anywhere.”

But before the material that emerges from the containers is ready to spread around your struggling tomato plants, several critical steps remain. PJI/Tri-City workers run the material through screens to remove

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Mercury in the Northeast *continued from page 1*

extensive database to describe fish tissue mercury concentrations at the sub-continental scale. The results show that 15 percent of waterbodies sampled for brook trout and 42 percent of waterbodies sampled for yellow perch have average fish mercury concentrations (in fillets) above the EPA methylmercury criterion of 0.3 parts per million. (Once mercury enters a waterway, it is converted to methylmercury, the element's most toxic form.)

Species that tended to have high mercury levels were bass, pike, lake trout, white perch, and walleye. But how much methylmercury is in a fish isn't determined solely by its species. Factors such as fish length and habitat were found to be good predictors of mercury levels, and individual waterbody characteristics also affected mercury concentrations. In fact, watershed characteristics may be as important as atmospheric deposition patterns in predicting mercury levels in fish. This finding points to the flaw in any strategy that focuses mercury reduction efforts on specific locations, based solely on deposition patterns. An approach where reductions occur at all mercury-emitting facilities would be far more effective.

The second finding summarized by Evers is one that has provoked much discussion in recent months. The new research shows that many animals, not just fish, have elevated mercury concentrations, including aquatic species such as crayfish, salamanders, loons, mink, and river otter. But here's the most surprising discovery: It's also present in non-aquatic songbirds. Mercury measurements taken in four songbird species at sites on Mt. Mansfield in Vermont showed that songbirds in mountain forests are accumulating mercury. Concentrations were highest in the Bicknell's thrush, a strictly terrestrial, insect-eating songbird. This species is the most highly ranked migrant songbird for conservation priority due to its small global population, limited breeding range, and dwindling winter habitat. The pathway by which the Bicknell's thrush consumes mercury is not fully understood, but methylmercury has recently been found in forest tree leaves and leaf detritus, which would make methylmercury available to the terrestrial food web. This finding demonstrates that mercury can no longer be viewed solely as an aquatic pollutant, and it should give scientists and policymakers a new perspective on mercury pollution in the region.

In the third finding, the researchers identified and mapped for the first time the locations in northeastern North America that they consider to be "biological hotspots." These are areas where mercury concentrations are elevated in fish and wildlife, and they can form in watersheds with high mercury deposition or within highly sensitive ecosystems. A preliminary map of nine biological hotspots in freshwater ecosystems was developed based on data from mercury in fish, common loons, bald eagles, mink, and river otter (see map on page 1).

What causes a hotspot? Certainly, the long distance atmospheric transport of mercury emissions is a factor, but they may also be caused by hydrological impacts on reservoirs, local emissions sources, and lakes with chemical conditions conducive to methylmercury production. One of the hotspots is in Nova Scotia's Kejimikujik National Park, where atmospheric deposition of mercury is thought to be relatively low in comparison to the rest of the region. The acidic water at this site, however, creates the ideal conditions for conversion of mercury to methylmercury, which facilitates the uptake and accumulation of mercury in the food chain. The presence of this hotspot demonstrates the importance of achieving significant mercury deposition reductions across the entire landscape, as well as the need to reduce acidity in surface waters to allow for biological recovery.

The final key finding was that environmental

monitoring programs must be expanded in order to fully document the extent and impact of mercury pollution in North America. A team of scientists, led by Dr. Robert Mason of the University of Maryland, has developed a strategy for mercury monitoring in North America. This program was published in the journal *Environmental Science & Technology* and consists of a network of 200 new long-term monitoring sites across different ecosystems, as well as ten sites for intensive investigation. The long-term network sites would measure six indicators: atmospheric wet deposition (weekly); surface soil sampling for elemental mercury and methylmercury (twice a year); surface water measurements of elemental and methylmercury (twice a year); yearling fish mercury concentrations (twice a year); piscivorous/commercial fish mercury levels (annually); and wildlife mercury levels (annually). Monitoring at the intensive study sites would involve additional detailed atmospheric, watershed, aquatic, and biota sampling.

More information about the mercury monitoring strategy can be found in the *Environmental Science & Technology* article, which can be downloaded from the home page of the BioDiversity Research Institute Web site (www.briloon.org).

It should be noted that many of the papers summarized in Evers's "Mercury Connections" paper were written by authors from organizations with which NEIWPCC works closely. Staff from EPA New England, Massachusetts Department of Environmental Protection, Vermont Department of Environmental Conservation, and local USGS offices were among the contributing authors. The "Mercury Connections" paper and the special issue of *Ecotoxicology* that it was based upon can also be downloaded from the BioDiversity Research Institute Web site. ♪

Susy King (sking@neiwpcc.org) is a NEIWPCC Environmental Analyst and the coordinator of our Mercury-Fish Workgroup.

MAINE EVENT

Conference Puts Focus on Mercury and One Clever Dog

by Leeann Hanson, NEIWPCC/JETCC

More than 165 state, federal and municipal regulators, educators and enforcement personnel from 34 states and eight countries took part in the "Achieving Mercury Reductions in Products and Waste" conference in Portland, Maine, on May 23–25. EPA New England funded the conference, which was sponsored by Maine's Department of Environmental Protection and the Northeast Waste Management Officials Association (NEWMOA). NEIWPCC and the Maine Joint Environmental Training Coordinating Committee (JETCC), which NEIWPCC manages, were among the partners assisting with the coordination of the event.

The conference featured technical sessions and information exchanges on the removal, phase-out, and recycling of mercury in lamps, batteries, auto switches, dental clinics, medical facilities, schools, and laboratories. Among those on hand was U.S. Representative Tom Allen of Maine, who drew praise for the knowledge and enthusiasm he displayed during his speech at the opening session.

Another popular guest didn't speak a word, but still made a powerful impression. Clancy the Mercury Sniffing Dog traveled to the conference from Minnesota with his handler Carol Hubbard from the Minnesota Pollution Control Agency. Carol and Clancy work as team, serving the state of Minnesota by identifying mercury in school laboratories. Clancy is the only dog in the nation trained for this task.

Other highlights included the presentation of silver ribbon pins to approximately 50 "Mercury Pioneers." The pins recognized them for their efforts on behalf of mercury reduction.

A CD containing speaker presentations, roundtable summaries, and all the proceedings of the conference will be mailed to all participants. The proceedings will also appear on NEWMOA's Web page (www.newmoa.org/prevention/mercury/conferences/). ♪

Leeann Hanson is the coordinator of JETCC, which NEIWPCC manages under a contract from Maine DEP.



During the mercury conference in Maine, Clancy listens as handler Carol Hubbard tells him to "find quick." (Quicksilver is another name for mercury.) Clancy is the only dog in the United States trained to locate mercury, and one of only three such dogs in the world.



EPA's regions were well represented at the conference. The agency's attendees included (left to right) Chuck French, North Carolina; Lisa McLain-Vanderpool, San Francisco; and Martin Dieu, Washington, D.C.



At the close of the event, the planners wear smiles of success. Left to right: Leeann Hanson, Maine JETCC; Carole Cifrino, Maine DEP; Terri Goldberg, NEWMOA; Jeri Weis, EPA New England.

Research Initiative *continued from page 1*

their research and development budgets. R&D funding for the National Science Foundation, which supports fundamental research in a broad range of science fields, received a 0.3 percent cut to \$4.1 billion; the U.S. Environmental Protection Agency received \$598 million for R&D, representing a 2.8 percent cut from the previous year; and the R&D budget of the U.S. Geological Survey, a leading sponsor of water research, dropped 0.3 percent to \$545 million.

The outlook for water research funding in fiscal 2006 looks no better. An AAAS analysis of President Bush's proposed budget shows that R&D funding for environmental programs would decline across the board, including cuts to R&D in the U.S. Geological Survey (down 4.8 percent to \$515 million), the National Oceanic and Atmospheric Administration (down 11.2 percent to \$565 million), and EPA (down 0.7 percent to \$568 million).

Although adequate funding is a major obstacle for water research, it is not the only impediment; the lack of communication and coordination between the various agencies responsible for research is also a critical issue that needs to be addressed. The NRC found that at the national level there are between 10 and 20 agencies responsible for water research. Further complicating matters, the report found that all of these agencies have different budgeting processes and that no agency resources are directed towards research coordination. It also found that the agencies can be protective of their specific research niche.

WORKING TOGETHER WORKS

In an effort to advance water resources research in the Northeast, NEIWPC is working to address the lack of coordination between the various research stakeholders, and the difficulty in identifying and securing research funding. Due to tremendous programmatic responsibilities and limited budgets, states find it difficult, if not impossible, to develop comprehensive research initiatives. Furthermore, there is no formal mechanism or opportunity for all of the various research stakeholders in the region, from state agencies to academia, to coordinate with each other. By working together as a region to identify shared research needs and to secure resources, we can use our collective leverage to pursue priority water research in the region with greater success.

Working closely with our member states, NEIWPC is formalizing our research efforts and compiling a water research priorities agenda that reflects the Northeast states' individual and shared research needs. To date, we have uncovered a shared regional interest in a number of research areas, including:

- Stormwater.
- Nutrients.
- Mercury contamination.
- Biological monitoring, criteria development and assessment protocols.
- Drinking water and wastewater treatment.
- Emerging contaminants (such as pharmaceuticals and personal care products).
- Water allocation and sustainable use.

In the coming months, equipped with the regional research agenda, NEIWPC will work closely with a Steering Committee of state agency staff and non-agency NEIWPC Commissioners to identify funding and partnership opportunities to move high-priority research needs forward, as well as to ensure the distribution of reliable and responsible results to the appropriate audience. ♪

Marianna Vulli is NEIWPC's Regional Research Initiative Coordinator. Please contact her at mvulli@neiwpc.org or visit our Research Initiative Web page (www.neiwpc.org/research) for more information about NEIWPC's efforts to advance water research in the Northeast.

Waste to Wonder Product *continued from page 3*

non-biodegradable items. Each batch is then set in its own pile, with a sign showing the date when it emerged from a composting container. The bacteria-eating microbes remain busy in the piles, and regulations require that the batches cure for an additional 28 days before they can be used. Dube plays it safe by aging his batches for an entire year. The result is a versatile product that's in demand.

"There's a doctor who buys it to put around his trees," Dube said. "He says it's like adding Miracle-Gro. Every time there's rain, it adds nutrients."

PJI/Tri-City is producing roughly 3,000 cubic yards of compost a year, but could be doing more. There's more septage arriving every year, and already the company has more sludge than it can possibly compost in the four containers. (Dube has retained a license to land-apply non-composted sludge as fertilizer to the fields around his facility and at two other sites; monitoring has shown no negative impact on groundwater supplies.) Still, Dube's not currently planning to expand, even though his composting area is set up to handle an additional four containers. He said he doesn't like going into debt, and he's probably smart to proceed cautiously, given that concerns about the origins of his compost, while easily refutable, still linger in the minds of many.

But if the past is any indication, more growth is inevitable. Dube's father started Tri-City Septic in 1958,

and Dube, 56, started helping with the company when he was ten years old. In 1976, he officially joined the pumping business when he bought Pat Jackson Inc., a rival pumping company, for \$13,500, and merged the business with his father's. In 1977, their gross annual income was \$28,000. It's now \$2.5 million. While his father often worked alone, driving a jeep with two old drums in the back, Dube oversees 20 employees, including several secretaries who wear headsets as they book a steady stream of appointments while working in the farmhouse he recently renovated.

By providing a relatively low-cost way to deal with problematic materials, PJI/Tri-City is doing great business—and earning plenty of attention. The company has hosted visitors from across the U.S. and the world who want to see first-hand how its operation works. Dube has also made presentations on his composting process at NEIWPC workshops, and will do so again this fall. The company's practices are even proving popular with some of the untamed residents of the area. The piles of compost, with the microbes working away inside, emit warmth, a desirable thing to a wild turkey on a cold day.

"In the winter, I've come out and found 50 of them roosting on the piles," Dube said. "The snow melts off right away."

It seems Dube's created a product even a wild turkey can love. ♪

FROM FRYER TO FUEL

by Stephen Hochbrunn, NEIWPC

Compost is not all that's being created at the PJI/Tri-City facility. In the bay that houses the company's dewatering containers sits a 5,000-gallon tank filled with oil that was once used to fry food. But the oil has a new destiny. After being heated in the tank, it travels upstairs to a laboratory where, through a sophisticated process, it's turned into the alternative, environmentally-friendly fuel known as biodiesel. What was once a waste product—and like all oils, a potentially damaging one to collection systems—is being turned into a fuel that helps power PJI/Tri-City's trucks.

The biodiesel operation is run by a separate company, Bean's Commercial Grease, or simply BCG. For a modest fee, the company provides fast-food restaurants in the area with modified home heating oil tanks, which the restaurants use to dispose of their fryer oil. When a restaurant's tank is full, BCG will pick up the oil for free in exchange for getting a new source of raw material for its biodiesel. Fryer oil is ideal for the biodiesel process because it's considered "clean grease" as opposed to the "dirty grease" obtained from grease traps, which can contain anything tossed down a drain.

For now, BCG's biodiesel is used strictly as an additive in PJI/Tri-City's trucks. But Randy Bean, who runs the start-up company with Gene Dube's nephew Mike Dube, has bigger plans. He envisions selling BCG's biodiesel via a self-service operation to the many truckers who travel the region's roads. But in the meantime, he'll keep picking up what fast food places are only happy to have taken off their hands. "We've saved the food industry so much money by picking up grease that they used to have to pay to dispose of," Bean said.

He also expressed gratitude for the critical financial and other support provided by Gene Dube. "Without him, there'd be no BCG," Bean said. Dube is not only a successful businessman. He's a generous one too. ♪



Randy Bean of Bean's Commercial Grease examines a sample of the biodiesel he creates from the waste oil generated by restaurant deep-frying machines.

STEPHEN HOCHBRUNN/NEIWPC

GROWING TREND

NEIWPC Commissioner Among Rising Number Installing "Green Roofs"

by Kathryn Riley

The corporate office of TFMoran, a firm that specializes in land planning and development, is located just behind a stand of trees in Bedford, New Hampshire. It is a simple, nondescript building, and there is no evidence that the office is at all different from the others that surround it.

That is, until you look at the roof—specifically the section that's covered with dirt and grass. In October 2004, TFM installed a 250-square-foot "green roof" in lieu of a traditional roof, and nobody is complaining. "I certainly like looking at it better than the old stone roof," said Anne Cruess, TFM's Senior Vice President.

The concept of green roofs may seem bizarre to the average American, but probably not for long. They've been popular in Europe, especially Germany, for the past 25 years, and are slowly starting to gain appeal in the United States. It's not hard to determine why. Not only are green roofs an aesthetically pleasing alternative to traditional roofs, they also have important environmental benefits, including the ability to reduce stormwater flows that can cause a wastewater collection system to become overwhelmed, resulting in dangerous releases of raw sewage. While green roofs can't solve this problem, they can be part of the solution, helping to absorb excess water and reducing pressure on treatment plants.

Green roofs also help reduce air pollution and protect the underlying roof from the damaging effects of nature. And they can help insulate a building by reducing the "heat island effect," in which the amounts of blacktop can cause an urban area to be significantly warmer than the suburbs. Even in a suburban area, green roofs can keep a building cooler in the summer and warmer in the winter.

Robert Cruess, TFM's President and a NEIWPC Commission (and Anne's husband), has found that his roof isn't quite large enough to insulate the office in the winter. But he said, "It does lower our cooling bill in the summer." It has also been able to retain excess water flows.

TFM's roof is actually different from a traditional green roof, which is created by planting vegetation over a waterproof membrane. TFM installed a "green grid" roof, which consists of numerous trays, each about four inches deep and containing sedums, grasses, and flowers. The trays interlock over a waterproof tarp to create the roof. While traditional green roofs can take a long time to install and weigh more than a traditional roof, a grid system is set up relatively quickly and is significantly lighter. "It weighs less than the stone ballasts we originally had," said Anne Cruess, adding that the roof has been free of the load issues that can plague traditional green roofs.

Since its installation, the company has kept a log detailing the roof's progress. So far, it's been a success, and if it continues to do well, there are plans to expand the roof to the rest of the building, increasing its size to 1,500 square feet.

"We're seeing how it survives the summer," said Robert Cruess. "It survived a bad winter...and it exploded with growth in the spring."

TFM has used its green roof as a demonstration of alternatives to traditional roofs. "We encourage others to try it," said Anne Cruess, noting that many people have come to examine the structure, including "a lot of

hard-core developers" and curious TFM clients, representing everything from small subdivisions to Home Depot. While many are intrigued, the Cruesses say the hardest to convert are those who simply don't want the upfront installation cost. The stone ballasts that originally covered the roof cost just 10 percent of the completed green roof's cost, which is estimated to be around \$2,000. To Robert and Anne Cruess, the extra expense is worth it.



TFM President and NEIWPC Commissioner Robert Cruess poses beside his green roof. The company is considering expanding the roof and installing a "grass pave" in the near future.

TFMoran workers installing the green roof at TFM's Bedford, N.H., offices on October 12, 2004.



"We are in an industrial subdivision with acres of roofs that give off reflective heat," said Anne Cruess. "We're doing our part."

The couple says they're pleased that everything has gone so well, and another environmentally friendly project is currently in the planning stages. The Cruesses hope to install a "grass pave" in the next few months. An alternative to pavement, grass paves are created by laying sod over two-inch cylinders, creating strong, permeable parking lots and reducing reflective heat and stormwater runoff. Robert Cruess believes that it would be the first grass pave in northern New England.

With the planned expansion of the green roof and the planned installation of the grass pave, the Bedford office of TFMoran may not look so nondescript in the years to come. And it will certainly look a whole lot greener. ♪

Kathryn Riley, a student at Wheaton College in Norton, Mass., researched and wrote this article during her summer internship at NEIWPC's Lowell headquarters.

For more information on green roofs, visit EPA's green roofs Web page (www.epa.gov/heatisland/strategies/greenroofs.html).

HELP WANTED?

NEIWPC Conducting WWTF Labor Market Survey to Support Development of Workforce Recruiting Program

by Marianna Vulli, NEIWPC

Much has been said recently in IWR and elsewhere about the potential for a labor shortage in the water quality field, especially in wastewater treatment. We are hearing the same thing over and over again from facility managers—that they are finding it hard to recruit qualified candidates, often having to resort to poaching employees away from other facilities. Not only is the industry facing retirements of older workers, which is leading to a drain of institutional knowledge from facilities, but it is also dealing with a lack of awareness among the public of the good employment opportunities available within the field.

In our latest effort to help our member states deal with this problem, NEIWPC is exploring the possibility of developing a wastewater training pilot program with Job Corps to help recruit younger workers into this rewarding and important profession. Job Corps provides eligible young people (ages 16-24) with career planning and preparation by offering them the opportunity to earn their high school diploma or GED while receiving career counseling, vocational training, and job placement assistance.

Before moving ahead with this pilot training program, it is crucial to first establish a very clear understanding of what the wastewater labor market looks like in the Northeast. If young workers are to be trained to enter the wastewater field, there must be jobs for them to fill. Therefore, NEIWPC has undertaken a project to gather real-world data on employment trends in the Northeast wastewater industry. Working through our member states' wastewater associations, we have sent a short questionnaire to all municipal wastewater treatment facilities, asking them for information regarding their current employee base and future employment needs.

The results will be compiled and if appropriate, the information will be used to support the development of the Job Corps wastewater training pilot program. The results of the survey will also be published in a future issue of IWR. ♪

Marianna Vulli (mvulli@neiwpc.org) is the coordinator of NEIWPC's Regional Research Initiative and is coordinating the WWTF survey. Please contact her for more information about the survey or the results.

A recent special edition of IWR examined the growing difficulties faced by states as they try to maintain a well-trained, high-caliber wastewater workforce. The issue can be downloaded at our Web site (www.neiwpc.org/iwr.htm).

NEIWPC has also developed a Web page that provides information and resources related to water quality careers (www.neiwpc.org/careerinformation.htm).

TWO DECADES, AND COUNTING

20 Years After First Issue, LUSTLine Publishes Its 50th

by Ellen Frye, LUSTLine Editor

August 2005 marked the 20th anniversary of *LUSTLine*! That we even arrived at this milestone smacks of momentous. You see, *LUSTLine* came into this world in 1985 to help jumpstart the new Resource Conservation and Recovery Act Subtitle I requirements, which mandated U.S. EPA to promulgate regulations to prevent, detect, and correct the widespread problem of leaking underground storage tanks—LUSTs. The states and EPA were going to have to tool up to implement rules and procedures for notification, interim prohibition, technical standards, financial responsibility, inspection and enforcement, and corrective action—big words, big job.

EPA awarded NEIWPC a grant to develop, publish, and distribute five issues of a bulletin that would help inform and update state and federal regulatory agencies across the country on issues concerning the requirements. NEIWPC member states had been meeting to discuss underground storage tank issues even before Subtitle I became law.

So, what would we call this bulletin? As it was my job to get this thing off the ground, I picked the brains of my coworkers at NEIWPC for ideas for a name. I couldn't start without a name! As we blurted out suggestions, then Deputy Director Fred Schauffler quietly uttered two syllables—*LUSTLine*. Hey, not bad...catchy, sexy...we knew we had a name.

"I can supply nothing but kudos to LUSTLine and what the editorial staff has accomplished over the last 20 years. I have been an avid reader of each bulletin for just over half of that time-span. Thanks to my predecessor, I have nearly a complete set, which I still reference from time to time. Thank you."

WALTER NAGEL
PA DEP, UST PROGRAM

TRIPPING THE LEAK TANK-TASTICK

We started out by taking baby steps, because the magical world of UST and LUST regulation was as new to us as it was to many regulators. In our first issue we described EPA's initial game plan, explained requirements for owners/operators to notify states of their tank ownership, and shared examples of state UST efforts already underway. In no time, EPA's newly created Office of Underground Storage Tanks (OUST) promulgated rules for UST notification, and put the pedal to the metal to tackle corrective action, new tank standards, leak detection, tank closure, and financial responsibility.

State and federal regulators embarked on fact-finding missions. How did UST systems work? How did available leak detection and corrosion protection technologies work...to begin with? Is secondary containment an option? How will states fund their UST programs...permit fees? registration fees? How does petroleum behave when it leaks into the environment? What cleanup technologies work best? Oh, and who's in charge? Oy!

"I learned very early that this new program would be different from the others," said Bill Torrey, EPA-New

England UST/LUST Regional Program Manager. "Our founder [first OUST Director], Ron Brand, had a vision that states should run this program and the EPA region's job was to help make the state programs successful. Franchising and Total Quality Management were our mantras. The rest is history...and it worked!"

Tanks programs and *LUSTLine* were truly off and running. And for the past 20 years, staying on top, if not a few steps ahead, of tank-related issues is what we've tried to do. Early *LUSTLines* were scant compared with current issues, which are no longer at an introductory level as we try to meet the technical background of the majority of our readers. The people who know those subjects best have written most of the articles on the many subjects we have covered. *LUSTLine* would not be what it is were it not for its contributors!

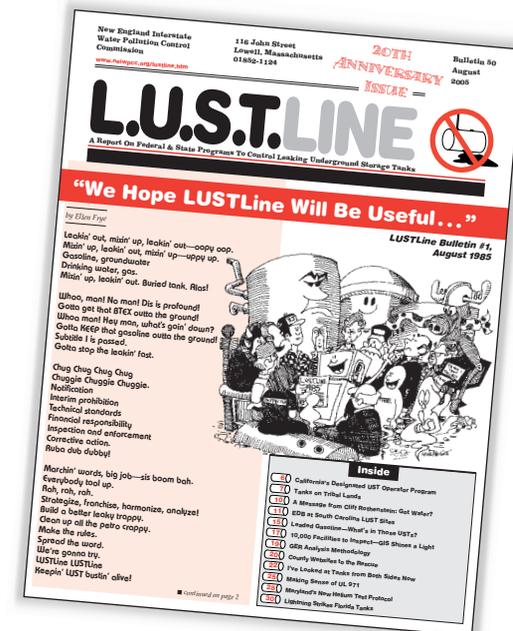
TO THINE OWN TANK BE TRUE

At the risk of subjecting readers to a huge "Duh" moment, the only way we can prevent a petroleum release from an UST system is by ensuring that all aspects of that system, including product delivery and dispensing operations, are designed, installed, operated, and maintained such that a release cannot occur. *LUSTLine* has covered the gamut of technical issues associated with petroleum storage, including installer certification, product delivery, facility inspection and enforcement, and the 1998 deadline for upgrading, replacing, or removing tank systems.

We've also covered related issues such as abandoned tanks, health and safety, heating oil and other tanks not regulated under the federal program, the future of "mom and pop" facilities, UST facility siting, product compatibility with system components, owner/operator training and certification, and most recently, vapor releases from UST systems.

TAKING AIM AT SITE CLEANUP

As OUST Director Cliff Rothenstein reminded us in *LUSTLine* #49: "Our bottom-line job, day after day, is to protect the environment and human health from



"Congratulations to LUSTLine on its 20th anniversary and on this milestone 50th issue! EPA appreciates the integral role LUSTLine has played in reaching out to underground storage tank partners over the history of the national tank program. LUSTLine has provided timely, accurate, and useful information about tank systems to many stakeholders. EPA is proud to be a supporter of LUSTLine over these many years, and we look forward to our continued partnership as a forum to share information about tank issues."

CLIFF ROTHENSTEIN, DIRECTOR,
OFFICE OF UNDERGROUND STORAGE TANKS, U.S. EPA

underground storage tank releases and keep America's land and water clean and safe for all citizens and future generations."

Looking back at early *LUSTLine* articles, it's easy to see that our comfort zone with cleaning up LUST sites was quite narrow. One of my early articles referred to contaminated soil as the "new kid on the block of national environmental concerns." But we've come a

long way. We've learned that without adequate site characterization, cleanup strategies are essentially hit or miss. That seems obvious to many of us now, but it wasn't so clear a couple of decades ago. In time, cleanup technologies went from classic muck-and-truck and pump-and-treat to in situ approaches, such as air sparging, air stripping, soil vapor extraction, and even monitored natural attenuation.

In January 1994, I wrote a cover article called "Stop the World...It's Time to Step Off and Regroup," which was our first serious look at the concept of risk-based corrective action

continued on page 8



In the early days of the UST program, when tanks were being yanked at unprecedented rates, the dangers associated with tank removal and disposal were a big concern. While health and safety will always be a concern, there has been much improvement, and the days of finding tanks laying on the side of the road are mostly in the past. However, you might find a bear or three calling a recycled tank "home," as LUSTLine editor Ellen Frye did during a visit to an animal farm on the Olympic Peninsula in Washington State.

LUSTLine continued from page 7

(RBCA). Despite our growing understanding of the nature of the corrective action beast, there was a growing backlog of LUST sites and a lack of a commensurate number of LUST site closures. Conditions were ripe for RBCA.

The issues that required coverage just kept coming. Just when it seemed like we were getting the hang of cleaning up the basic contaminants of concern in gasoline, we started seeing the gasoline oxygenate methyl tertiary butyl ether (MtBE) at LUST sites, and new challenges emerged. MtBE behaved differently from the other contaminants—it's more soluble and mobile, seemingly less degradable and treatable, and has no maximum contaminant level (MCL). We are now recognizing that if we don't want to be finding fuel-contaminant surprises in our drinking water, we need to be looking a bit more closely at a wider selection of gasoline components, such as TBA, ethanol, TAME, DIPE, and EDB.

Another challenge that *LUSTLine* covered extensively was EPA's requirement that regulated gasoline facilities have financial responsibility for cleanups. This set the stage for the birth of state funds, as tank owners were unable to secure private insurance or find other means of financial assurance. By 1997, 48 states had cleanup funds.

"For the 48 state-fund managers, funds presented unprecedented challenges," says Chuck Schwer, Vermont Department of Environmental Conservation. "But with the help of *LUSTLine*, states worked together to develop tools and strategies to take on those challenges. One of the first challenges we all faced was the reality that the cost of cleaning up all the contamination caused by leaking USTs was far greater than the funds available. To respond to this challenge, states developed strong, enforceable cost-control measures. Site cleanups were prioritized, which is where RBCA came in. And then

there are those legislative raids on the funds that, despite our best efforts to put strong language into our rules to prevent such action, still present an ongoing challenge."

THE UST FIELDS RENAISSANCE

It seemed perfectly obvious to me waaay back in graduate school, when I was writing papers on reusing abandoned mill buildings, that reusing an existing property made a heap more sense than taking a backhoe to a verdant copse. Likewise, ignoring abandoned or idle petroleum-contaminated sites because it's too much trouble to deal with the issues smacks of hubris—the telltale mark of a throwaway society.

Many state LUST programs and communities are seeing the benefits of reusing these properties by uniting economic development with site cleanup efforts. *LUSTLine* first covered the subject of LUST sites in brownfields in 1997, when the federal Brownfields program did not include petroleum contamination, and state LUST programs were more concerned with having to deal with additional hurdles to cleanup these sites. But times they are a changin'. And *LUSTLine* has played a part in the evolution, helping to demonstrate that our efforts to protect human health and the environment from petroleum releases also have socioeconomic benefits.

THE LUSTLINE TEAM

The *LUSTLine* team is all of those who work with us to get appropriate and timely information into each issue. Our core team includes Ricki Pappo; Hank Aho; our NEIWPCC reviewer, Kara Sergeant; and our EPA OUST project manager, Lynn DePont.



LUSTLine Production Team: Ellen Frye, Hank Aho, and Ricki Pappo

Ricki designs and lays out each issue, and always, always goes the extra mile. She tries to keep the bulletin looking light, often in the face of pages of weighty and lengthy written material. Our cartoonist, Hank Aho, is Maine DEP's Uncontrolled Hazardous Substance Sites Unit Supervisor and an artist. It was truly a miracle to meet up with a cartoonist who actually understood the quirky world of regulators and petroleum storage systems. *LUSTLine* is indeed a wonderful partnership among many people. ♪

Ellen Frye (ellenenosis@earthlink.net) has been editing *LUSTLine* since its debut 20 years ago. She developed the publication while working for NEIWPCC, where she was a staff member for many years. She now works on an independent basis, writing and editing *LUSTLine* and other projects for NEIWPCC and other organizations.

The current issue of *LUSTLine*, which features a longer, more detailed version of the above article, can be downloaded free-of-charge from NEIWPCC's *LUSTLine* Web page (www.neiwpcc.org/lustline.htm), where you can also access our archive of past issues and obtain information on how to subscribe.

THE BOTTOM LINE**Research Project to Reveal What Clean and Safe Water Costs Households**

by Sarah Reich

Numerous studies point to the growing need in the United States to invest billions of dollars over the next 20 years to improve drinking water and wastewater infrastructure. Just how such a massive investment will be felt at the household level in communities across New England is the focus of *The Cost of Clean and Safe Water*, a joint research project of NEIWPCC, EPA New England, and the New England states.

If the project sounds familiar, that's because a similar effort was first conducted a decade ago. It was initiated by Robert Varney, who was Commissioner of the New Hampshire Department of Environmental Services at the time and is now EPA New England's Regional Administrator. In his introduction to the 1995 report, Varney wrote that it represented "a significant step forward in raising the quality of the discussion on the cost of environmental requirements by providing actual data." The new effort promises to continue the discussion in this spirit. And the goal will be the same—to produce a report that identifies what it costs communities—and ultimately homeowners and other residents—to ensure that drinking water and wastewater systems are maintained to adequately protect public health and provide dependable service.

The need for the new report is obvious in light of the changes in the environmental regulatory landscape in the past ten years. Many new standards and rules have been issued, necessitating an updated picture of the infrastructure costs facing a diverse set of communities throughout New England. Approximately 200 communities have been selected from all six New England states and New York to participate in the project, and these cities, towns, and villages are providing the basic information needed to complete the community-based household cost analysis.

In total, more than 100 wastewater systems and over 100 drinking water systems will be included in the new report, representing a wide range of system complexity and level of service. Achieving this diversity was an important priority in the selection of communities, considering the myriad characteristics of communities throughout New England. The data gathered from these drinking water and wastewater systems will be analyzed and synthesized in the report, which will include visual representations of the maximum household cost reached over a 20-year time span for each community's drinking water and/or wastewater system. The data will also be aggregated by state, and for the entire region. For those communities that provide data for both

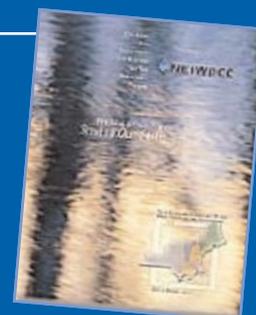
wastewater and drinking water systems, costs will be presented both separately and together to show the combined projected charge to households for both utilities.

The Cost of Clean and Safe Water report will be released in the fall, and it should prove to be helpful to a broad audience. In offering an updated understanding of the actual costs of providing drinking water and wastewater services in New England, it will be an invaluable resource for community leaders, administrators, and interested citizens to call on when facing difficult, critical decisions about infrastructure improvements. ♪

Sarah Reich is a student in Tufts University's graduate program in Urban and Environmental Policy and Planning, and a NEIWPCC intern. She is working closely with Denise Springborg, NEIWPCC's Director of Drinking Water Programs, on the development of "The Cost of Clean and Safe Water" report.

Want a comprehensive look at what NEIWPCC does, and specifically what we did in fiscal year 2004? Download a copy of our latest annual report from our Web site

(www.neiwpcc.org/annualreport.htm) or call 978-323-7929 to receive a free printed copy.



BACK TO SCHOOL

Water Quality Standards Explained and Examined During Four-Day "Academy"

by Stephen Hochbrunn, NEIWPCC

On June 21, every seat was filled in a large conference room at EPA New England's Regional Laboratory in North Chelmsford, Mass. It was day one of EPA's Water Quality Standards Academy, and the prospect of spending four days learning about one of the most important programs in the nation's fight for clean water had attracted well over 30 people from across New England and New York State. Some had no knowledge of the standards program; others needed a review or a little help with the details. "There are a few gaps in my understanding," said Susan Davies, a water quality standards coordinator with Maine's Department of Environmental Protection.

The need among those in the states for a comprehensive understanding of the potentially bewildering water quality standards program inspired EPA to develop the academy, which it typically conducts twice a year in different locations across the country. To bring the academy to New England, NEIWPCC enthusiastically embraced the opportunity to cosponsor the session in Chelmsford. Its popularity didn't surprise the lead instructor, Tom Gardner of EPA's Office of Water in Washington.

"We typically have three applicants for every seat," he said. Why such strong demand? "It could be due to turnover at the state and regional level," Gardner said. "But also, there's more pressure on standards because of TMDLs. People say, 'Wait a minute. If we're going to do a TMDL on this, we'd better make sure the standards are right.'"



During a break in the action, Susan Davies of Maine DEP (right) speaks with EPA New England's Jennie Bridge.

As the attendees introduced themselves, it became clear many worked on TMDLs in their states. (For a basic explanation of TMDLs, see "LegalLines" on page 10.) But others worked on one of the many other Clean Water Act programs influenced by water quality standards, such as water quality monitoring, National Pollutant Discharge Elimination System (NPDES) permits, nonpoint source pollution programs, oceans and wetlands programs, and source water protection.

With four days to work with, Gardner didn't rush into the heavy material. After introductory comments from Beth Card, NEIWPCC's Director of Water Quality Programs, Gardner showed off prizes to be given out for correct answers to review questions. "We even have

some water posters, which are appropriate for a third grade class... or upper management," he joked.

Then it was down to business, as Gardner provided an overview of the standards program. Section 303(c) of the 1972 Clean Water Act Amendments established the statutory basis for the current program, which requires standards for all surface waters of the United States. Under the regulatory requirements (published at 40 CFR 131), states and tribes must establish standards that define the water quality goals of a waterbody by 1) designating the use (or uses) to be made of the water, 2) setting criteria necessary to protect the uses, and 3) preventing degradation of water quality through anti-degradation provisions. The bulk of the responsibility, therefore, lies with the states, with EPA headquarters in Washington providing guidance and advisories, and EPA's regional offices providing assistance. Once a standard has been developed, it must be submitted to EPA for review and approval. If EPA disapproves, the state has 90 days to make changes or EPA will promulgate its own standard.

During day one of the academy, presenters explained each of the three parts of a standard in detail. The first part—designating a waterbody's use or uses—is critical. "If you don't get it right," Gardner said, "nothing else you do is going to make sense." Examples of uses are public water supply; fishing, swimming, and boating; and agricultural and industrial water supply. Uses may exist currently, or may be goals that could be reached with improved water quality.

The second part—setting criteria that protect and support a use—can be done in either of two ways. As Heidi Bell, an aquatic toxicologist with EPA's Office of Water, explained, one way is to express the criteria as a numeric concentration limit on a particular chemical. For example, Connecticut's criteria for dissolved oxygen in Class AA waters includes the statement that dissolved oxygen shall not be less than 5 milligrams per liter at any time. In cases where numeric limits don't apply, the criteria can be expressed as a narrative description of a condition of a waterbody that protects and supports a use. New York's criteria for color in Class AA waters, for example, states that color should not be present in any amounts that will adversely affect the taste, color, or odor thereof, or impair the waters for their best usages. (NEIWPCC has developed a matrix that clearly displays the water quality standards recommended by EPA and those adopted by the New England states and New York State. It is available at www.neiwpcc.org/PDF_Docs/i_wqs_matrix04.pdf)

Bill Beckwith, the invariably insightful water quality standards coordinator for EPA New England, explained the intricacies of antidegradation policy. The regulations set out a three-tiered approach. A state's Tier 1 procedures protect existing uses of a waterbody and the water quality necessary to protect those uses. A good example would be new-construction permits that require measures be taken to limit runoff. Tier 2 protects the water quality in waters whose quality is better than that necessary to support "fishable/swimmable"



U.S. EPA's Tom Gardner leads a discussion on day one of the Water Quality Standards Academy in Chelmsford, Mass.

uses. These are "High Quality Waters," and their water quality can only be lowered if a state or tribe finds, after full input from all stakeholders including the public, that lowering of the water quality is necessary to accommodate important economic and social development in the area of the water.

Beckwith emphasized the importance of exploring *all* options before approving a project that would yield economic or social benefits but hurt water quality. To make his point, he shared a fairy tale of his own design: Imagine a city, he said, on the verge of approving the building of a factory that would provide much-needed employment but at a cost—the location of the new facility would result in degradation of the water quality of the river running through town. Before approving the permit for construction, city officials decide to openly discuss the project with city residents, business leaders, economic development agencies, and other interested parties. By seeking input, the city learns of an alternative site—an abandoned manufacturing facility that could be renovated to work perfectly for the new factory's needs. In the end, the factory goes in the renovated building, the city builds a park where the factory had been going to go, and the river's water quality is unharmed. Fantasy? Probably, said Beckwith, but not necessarily. "Always keep in mind you don't have to degrade waters to have projects that support economic or social development," he said.

Tier 3 antidegradation methods, as Beckwith explained, protect outstanding national resource waters. ONRWs generally include the highest quality waters of the United States, such as waters of national and state parks and wildlife refuges. The water quality of these waters must be maintained and protected, which means no new or increased discharges, except those of short term or temporary nature.

As the course continued, the presenters delved deeper into each aspect of the standards program. Although the academy's agenda was dominated by speakers from EPA headquarters, organizers were careful to include regional voices that could speak directly to the issues encountered by the attendees. Day two, which was devoted entirely to criteria, featured a presentation by Al Basile, a biologist with EPA New England's office in Boston and the region's nutrient criteria coordinator. "When we take the academy on the

continued on page 10

Water Quality Standards *continued from page 9*

road," Gardner said, "we try to get the regions involved as much as possible."

On the fourth and final day of the academy, Paul Hogan of the Massachusetts Department of Environmental Protection led a lengthy discussion on implementation. Hogan examined how standards influence a state's monitoring programs, TMDLs, and NPDES permits, using telling examples from his own experience. An avuncular storyteller, Hogan described the challenge posed by the Assabet River, which suffered for more than 30 years from excessive loadings of nitrogen and phosphorus emanating from wastewater treatment plants and non-point sources. The eutrophication posed a threat to fish and other aquatic organisms, and led to excessive growth of nuisance aquatic vegetation. Hogan described one site on the river where a dog stunned residents by walking across the water, so thick was it with duckweeds. "When you see that, you don't need a whole lot of data to tell you you've got a problem," he said.

That problem was clear: The river's water quality criteria weren't being met, hence its designated uses weren't being protected. The state responded with a nutrient TMDL project to accurately assess the Assabet's water quality conditions, analyze the acceptable nutrient loading capacity, and ultimately implement measures to support an improvement in conditions. Extensive surveys were conducted, data collected, and desperately needed financial support for the project received when MA DEP provided \$3.5 million in State Revolving Fund planning loans.

It was a complex, taxing process, but the work got done. New NPDES permits have now been issued for the wastewater treatment plants whose effluent was determined to be the main contributor to the river's problems. The permits require substantial reductions in the phosphorous in the effluent—a process requiring costly upgrades—and are likely to be appealed. But progress is being made, and Hogan offered some simple advice to newcomers working to improve water quality: "It's not easy, but you can do it."

As the academy came to a close, Susan Davies, the water quality standards coordinator with Maine DEP, said there were no longer any gaps in her understanding of the standards program. "This was very helpful in putting all the pieces of the puzzle together," she said.

Joe Camara, who writes permits for Rhode Island's Department of Environmental Management, also raved about the event. "My expectations were met, definitely," he said. "I learned so much about water quality standards and regulations that I deal with on a daily basis."

Even the organizers benefited from the experience. "It's so nice to get out of headquarters and be with the people who actually protect the environment," EPA's Tom Gardner said. As he helped pack up boxes and shook hands with the participants, Gardner seemed drained from the four days of leading such an intensive educational experience. But he had plenty of time to recover. The next Water Quality Standards Academy wasn't being held until September 12-16 in Polson, Montana. His audience there would be tribal staff who are developing, or will soon be developing, water quality standards. If what happened in Chelmsford was any indication, it was bound to be a learning experience the participants won't soon forget. 

For more information on water quality standards, please visit NEIWPC's water quality standards Web page (www.neiwpc.org/wqstandards.htm). More information and resources are also available at U.S. EPA's page (www.epa.gov/waterscience/standards/).

LEGAL LINES **Face-Off in Minnesota Court Holds Lesson for Developers of TMDLs**

by Beth Card, NEIWPC

Minnesota Center for Advocacy v. U.S. EPA

The United States District Court, District of Minnesota recently issued a Memorandum Opinion and Order in a case involving a TMDL for Fecal Coliform Bacteria. TMDLs, or Total Maximum Daily Loads to use the full name, are required water quality planning tools that are familiar to many IWR readers. For those of you who are new to the scene, a TMDL simply stated is a calculation used to determine the amount of a pollutant that a waterbody can receive (through point or nonpoint sources) and still meet water quality standards. The TMDL is developed through a formula that includes a load allocation, waste load allocation and a margin of safety. TMDLs are developed by state environmental agencies and are approved by the U. S. Environmental Protection Agency. Because EPA is the approving agency, it is often on the receiving end of lawsuits brought by those who disagree with the allocation. In this case, the "disagree-er" is the Minnesota Center for Environmental Advocacy (MCEA).

Minnesota's Section 303(d) list in 1998 identified 20 water segments in the lower Mississippi River Basin that were impaired because they did not meet water quality standards for fecal coliform bacteria. The Minnesota Pollution Control Agency (MPCA) determined that a 65 percent reduction of fecal coliform bacteria pollution was necessary to ensure standards would be met. Where the trouble began, and where issues could come up for other states in the future, is that MPCA proposed, and EPA approved, a phased implementation approach in order to address uncertainty and to meet water quality standards in a manageable way through segments. The proposal called for three phases:

Phase 1: Composed of three parts that include a 65 percent source reduction applied basinwide, supplemental efforts in four of the identified watersheds, and intensive monitoring at all impaired reaches in 2006 and 2007 (in order to evaluate progress).

Phase 2: A TMDL implementation plan will be developed for watersheds where insufficient progress (as determined during the intensive monitoring in 2006 and 2007) is being made. Phase 2 will also include watershed-specific source-reduction targets chosen to achieve water quality standards. It also includes a monitoring plan.

Phase 3 and Beyond: Will be developed as needed until all reaches meet the standard.

Concerns about the TMDL were first expressed by MCEA in August 2002, through written comments and a request for a hearing with MPCA. MCEA also expressed objections to the proposal during an MPCA Citizens Board Meeting. But the actions had little effect. In late October 2002, MPCA denied MCEA's request for a contested case hearing and issued its Findings of Fact, Conclusions of Law and Order. MPCA proceeded to submit the TMDL to EPA for review, and EPA promptly approved the TMDL on November 13, 2002.

But MCEA wasn't done. It filed a Complaint less than a year after EPA approved the TMDL, asserting that EPA's approval of the TMDL was "legally in error in that the TMDL fails to meet the requirements of the

Clean Water Act, EPA regulations, and EPA guidance documents that require that TMDLs for each impaired water must return the waterbody to meeting water quality standards."

More procedural matters followed. MCEA filed a Motion for Summary Judgment on February 10, 2005, stating that no material facts are in dispute and thus they are entitled to prevail as a matter of law. In that motion the Plaintiffs requested an order reversing EPA's approval of the TMDL and remanding the TMDL to EPA for recalculation of the TMDL for each impaired stream reach and with an adequate margin of safety.

The District Court agreed with MCEA on some points and with EPA on others, but one issue may be of particular interest to TMDL managers. The Court agreed with MCEA that a "phased calculation that is not designed to return impaired segments to water quality standards is not in accordance with law...MCEA is correct in asserting that EPA and MPCA cannot classify its action as an interim or phased approach in order to get around the fact that the current calculations included in the TMDL are insufficient to return the impaired waterways to meet water quality standards." In essence what the Court stated is that interim or phased TMDLs do not meet the Clean Water Act requirements for TMDLs, which must be "at a level necessary to implement applicable water quality standards."

The Court also agreed that a margin of safety is required, and provided an interesting twist that requires septic systems to be included in the waste load allocation. It's important to note, however, that while other states have developed hundreds of TMDLs, this was the first developed in Minnesota. Therefore, while all of this is very important to Minnesotans, only some of the specifics are relevant to TMDL programs in the Northeast.

The idea of using phased implementation in a TMDL, for example, is one that has been considered and used in many other instances. It is a way for agencies to employ an adaptive management approach to water quality and watershed plan implementation. By having the flexibility to monitor progress and make changes accordingly, states and EPA can do the best they can to ensure that water quality standards are met. But what we learn from the U.S. District Court, District of Minnesota is that if a phased calculation is used, it must be done with a clear timeline, water quality standard, and plan that are all designed to return the impaired segment(s) to water quality standards.

The end result of this Minnesota story is that MPCA had until Sept. 14, 2005, to submit a revised TMDL to EPA for approval. If it is found that the revised version is not in compliance with the order of the Court and the Clean Water Act, EPA is then responsible for preparing an appropriate plan. In the meantime, TMDL managers can learn a lot from this case about the level of detail and assurance that is needed when using a phased implementation approach. 

Beth Card (bcard@neiwpc.org) is NEIWPC's Director of Water Quality Programs. She is also a licensed attorney in Massachusetts.

TIME CAPSULE

Al Peloquin Looks Back on 16 Years at NEIWPCC's Helm

by Kathryn Riley

Nearly four decades ago, in 1967, the world was a different place. A Democrat, Lyndon Johnson, was in the White House; major race riots broke out in Newark, N.J., and Detroit; "The Graduate" introduced moviegoers to the seductive Mrs. Robinson; the Red Sox failed (again) to win the World Series; and NEIWPCC was a small organization getting by on a \$40,000 budget. It was also the year that Al Peloquin joined NEIWPCC as Executive Secretary, a position now referred to as Executive Director.

Peloquin arrived at NEIWPCC after a four-year stint with the Federal Waste Pollution Control Commission. As he began what became a 16-year tenure with NEIWPCC, Peloquin had one goal—to make NEIWPCC the "pipeline of information" for water pollution issues. In an effort to raise public awareness, Peloquin established what he believes was NEIWPCC's first newsletter, *Aqua News*. "I wanted to publicize the need for pollution control and get information out," said Peloquin, who spoke with us from his home in Arizona.

Reaching his goal required Peloquin's testimony at numerous congressional hearings. "I've sat in the witness stand many times," said Peloquin, "and today when I watch congressional hearings, I can relate, because I've been in that position so many times."

Peloquin said such hearings are still incredibly important. "I think that the most important thing an organization can do is to keep Congress advised of what is happening. I think [my testimony] probably did help a lot and gave Congress a better understanding of water pollution."

Under Peloquin's leadership, NEIWPCC evolved significantly. "I think we began to provide an incredible amount of information to the public," he said. "NEIWPCC was also able to correlate activities between the states." NEIWPCC worked to alleviate tensions between the states and the federal government on matters relating to water pollution. "I think there was a lot of resentment on the part of the states to the federal involvement," said Peloquin. Occasionally he considered the bureaucracy frustrating. "But since I worked both sides of the fence," he said, "I was able to understand both sides."

For a time, according to Peloquin, EPA seemed to believe that the states were divided on the issues, and EPA felt it could "do just about anything it wanted," he said. In 1972, EPA established advisory committees to help develop rules and regulations for implementing the Clean Water Act. As a representative of the EPA Region 1 (New England) Advisory Committee, called "The Committee of Ten," Peloquin worked to unite the states.

Although the unified states were able to fight for changes in the rules and regulations, Peloquin said the process set the stage for frequent confrontations between the states and the federal government. This led to the eventual dissolution of the committee. Peloquin said he feels "partly responsible" and that the committee prevented EPA "from doing what it needed to do."

Still, great progress was made. When Peloquin started at NEIWPCC, the region's waters looked a lot different than they do today. "All the waterways of New England were grossly polluted," Peloquin said. He cited the Nashua River as the most infamous example, saying he would often refer to it as "the river with the paper

bottom" since it contained so much waste from a nearby paper factory. The construction of wastewater treatment facilities ended this problem. "I think that the water's good for the most part now," he said.

Peloquin pointed out, however, that the construction of the wastewater plants led to another pressing issue. "We realized that the facilities were being built, and a lot of federal money was being spent," he said, "but there weren't enough people trained to operate them." Peloquin urged that a school to train wastewater operators be established. "I suggested to the member states [of NEIWPCC] that they make a contribution of their federal operating money towards the establishment of the school. And they all did."

The school, called the New England Regional Wastewater Institute (NERWI), was established in South Portland, Maine, on the campus of the Southern Maine Vocational and Technical Institute. Peloquin called the success of NERWI one of his proudest achievements. While NERWI closed as an official entity in 1998, its programs were folded into those run by NEIWPCC's Environmental Training Center, an active and growing entity to this day.

Peloquin remained at NEIWPCC until 1983, when he moved on to a position in the Region 1 offices of EPA. He eventually returned to NEIWPCC as Treasurer, a position he held from 1993 to 1995. Now 82, Peloquin said he has nothing but good memories from his time at NEIWPCC. When asked for a favorite memory, he couldn't settle on just one. "It was a very pleasant experience overall," he said, "and I keep in touch with former employees. I always enjoyed the Commission."

He is glad to be free of Massachusetts winters. "I don't miss the cold, I don't miss the snow, and I don't miss the ice, I can tell you that," he said, laughing.

Peloquin said that he has no regrets about his time at NEIWPCC. "I'm proud of the opportunity for public service. I feel that I initiated a number of things that have continued, such as the training, and I see the results today. It's very satisfying to know that I was a part of it." ♣

Kathryn Riley, a student at Wheaton College in Norton, Mass., interviewed Al Peloquin and wrote this article during her summer internship at NEIWPCC's Lowell headquarters.



EPA PROVIDES GUIDANCE ON STRATEGY AIMED AT CURBING SSOs

The Compliance Assistance and Sector Programs Division of U.S. EPA's Office of Compliance has prepared a Capacity, Management, Operations and Maintenance (CMOM) Guide to encourage EPA regions, states, and others to use a CMOM approach for implementing the performance-based strategy for the sanitary sewer overflow national priority. Sanitary sewer overflows, or SSOs, are releases of raw sewage that occur when the capacity of a collection system is exceeded, normally during heavy rain.

The guide is intended for use by federal and state inspectors as well as the regulated community, i.e., owners or operators of sewer systems collecting domestic sewage. It's also for use by consultants or third-party evaluators or compliance assistance providers.

The guide identifies, for the regulated community, some of the criteria used by EPA inspectors to evaluate a collection system's management, operation and maintenance program activities. Owners/operators can review their own systems against a checklist to reduce the occurrence of sewer overflows and improve or maintain compliance. Additionally, having key board members (policymakers) read the guide will allow them to better understand the benefits of investing in a good CMOM program.

The CMOM Guidance is available at www.epa.gov/npdes/ss0 (click on the "Featured Case Studies, Fact Sheets..." line, and go to the end of the listing, under "Other Information") and www.epa.gov/clearinghouse. A limited number of paper copies are being made available through the National Service Center for Environmental Publications at 800-490-9198 and the Office of Water Resource Center at 202-566-1729. If you have any questions about the guide, contact EPA's Sharie Centilla at 202-564-0697. ♣

OTHER VOICES

From "Dismal Swamp" to Respectable Wetland

by Dave Kellam, Project Coordinator, New Hampshire Estuaries Project (www.nhep.unh.edu)

This article first appeared in *The Portsmouth (N.H.) Herald* as part of a series of educational columns initiated by the New Hampshire Estuaries Project about coastal watershed issues. It is reprinted with the permission of the NHEP.

If you had to define the following terms, which one would you attempt: fen, morass, or wetland?

You might choose wetland and guess that it is earth that squishes beneath your feet. You would be right about that; however, the other two are also types of wetlands.

In general, "wetland" is a term that describes many specific types of watery habitats, such as marshes, bogs, and swamps. The legal definition from the U.S. Environmental Protection Agency is "areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions." Or, in plain English – wet land.

Surprisingly, the word "wetland" has not been with us for very long. It was coined in the early part of the 20th century. The first official governmental use of "wetland" appeared in a U.S. Fish and Wildlife Service report in 1956. Before the term "wetland," people used any name for damp real estate, such as marshland, mire, muskeg, quagmire, slough, or swampland.

Ironically, when English settlers arrived in North America, they did not have a word for the forested wetlands they encountered, because those types of habitats had long been destroyed in their native England. Since they had no experience with these ecologically important habitats, the settlers simply referred to them as swamps or sometimes "dismal swamps." Proof of this historic name is evidenced by the Great Dismal Swamp National Wildlife Refuge in southeastern Virginia.

Attitudes toward wetlands remained dismal until Henry David Thoreau fell in love with swamps in the mid-1800s. On June 15, 1840, after spending many hours up to his nose in a Concord, Mass., swamp "soaking up the juices of a marsh," Thoreau wrote down his thoughts on wetlands: "When I would recreate myself, I seek the darkest wood, the thickest and most interminable, and to the citizen, most dismal swamp. I enter the swamp as a sacred place—a sanctum sanctorum. There, is the strength, the marrow of nature." Respect for wetlands has increased ever since.

Today we know that wetlands have many benefits and offer great recreational opportunities including hiking, kayaking and wildlife viewing. They are an important part of the hydrologic cycle, positively affecting water quality and water supply.

Wetlands provide valuable flood storage, sedimentation control, and natural water filtration. And wet-

lands are vital wildlife habitats, home to some of the most endangered animals in New Hampshire, including the sedge wren, the marbled salamander and the ringed bog haunter dragonfly.

Across the United States, 53 percent of the wetlands have been lost in the last 200 years. But not all states are the same in terms of wetland loss.

New Hampshire has lost the least amount in the lower 48, just 9 percent or about 20,000 acres. We are much better off than California, which has lost 91 percent of its historic wetlands. However, with its 20,000-acre loss, New Hampshire has experienced decreases in water quality and some wildlife populations, especially in the southeastern portion of the state.

To curb these downward trends, in 1969 New Hampshire enacted law RSA 482:A, which states "no person shall excavate, remove, fill, dredge or construct a structure in surface water, bank or a wetland without a permit from the Department of Environmental Services." Passage of this law was significant because it showed that people understood that a wetland has great public value, even if it exists entirely on private land.

Given that we now better understand the services wetlands provide to wildlife, the environment, and humanity, it seems they may be due for another name change. Perhaps it would be more appropriate to rename them "lifelands." Something to consider. ♣

ONSITE INSIGHTS

Second Short Course Features Experts and Exhibitors, Draws 350+ Attendees

by John Murphy, NEIWPC

For those involved with onsite wastewater treatment systems—or septic systems, as they're commonly called—the place to be for three days this spring was the Mystic Marriott Hotel and Spa in Groton, Connecticut. That was the site of the Second Northeast Onsite Wastewater Treatment Short Course and Equipment Exhibition, cosponsored by NEIWPC and a diverse group of New England agencies and companies. Held on March 29-31, the event was an over-

whelming success, attracting more than 350 attendees, many of whom were local officials who normally don't have the opportunity to attend such programs.

The conference carried the theme "Onsite Systems: A Permanent Wastewater Solution," and featured the latest in onsite/decentralized research and technology as well as wastewater management solutions. Through the short course concept, attendees received comprehensive instruction in basic fundamentals/soil properties, pollutant removal, management, and technologies. They heard from national and regional onsite experts such as Dr. James Converse of the University of Wisconsin-Madison, who delivered the keynote address on challenges facing the industry. Notable moments included a presentation by Bill Stuth of Aquatest on a restaurant repair project in a sensitive shellfish area in Washington state and a talk by Dr. Steve Jones of the University of New Hampshire on an innovative procedure for tracking bacterial sources using *E.coli* ribotyping.

Throughout the conference, the exhibit area drew crowds eager to see and learn about the latest in onsite technology from the 45 exhibitors. Also popular were



The sessions were packed at the Second Northeast Onsite Wastewater Treatment Short Course as national experts presented the latest information and research on onsite science, management, and technologies.



The exhibit area provided the opportunity to learn about new onsite technologies and to chat with friends. Left: Dr. James Converse of the University of Wisconsin-Madison, the event's keynote speaker. Center: Jerry Stonebridge of Stonebridge Construction, a Washington State-based designer and installer of onsite systems.

the three optional field trips. Attendees had a choice of visiting the University of Rhode Island Onsite Wastewater Training Center, seeing demonstrations at two sites in Connecticut of the newest tools for inspecting onsite systems, or touring advanced commercial systems in Connecticut.

The proceedings from the conference are being put on CD and will soon be available through NEIWPC. Information on ordering is available on the conference Web page (www.neiwpc.org/onsiteshortcourse05), which also features additional photos of the event.

Planning has already begun for the Third Northeast Onsite Short Course, which will be held in March 2008. Mark your calendars! ♣

John Murphy (jmurphy@neiwpc.org) is a NEIWPC Environmental Engineer.



STATE UPDATES

A Brief Look at Water-Related Stories Making News in NEIWPC's Member States

by Stephen Hochbrunn and Kathryn Riley

CONNECTICUT

Fish Warning Bill Dies

After being approved in the state Senate, a bill that would have made Connecticut the first state to require that health warnings be displayed near fish and shellfish died when the legislative session ended on June 9. The bill became stuck in the House after two controversial amendments, which would have allowed designated smoking areas in bowling alleys, taverns, and cafes, were attached to it two days before the legislative session was to end.

If passed, the bill would have required any store that sells fresh fish to place informational pamphlets detailing nutritional value and warnings about mercury hazards. The pamphlets would also list which types of fish pregnant woman and young children should avoid and a list of toll-free numbers and Web sites for more information.

Cyril Alapatt, executive director of the Connecticut chapter of Clean Water Action, said he was disappointed that the bill was never called for debate. Alapatt told *IWR* that the killing of the bill was "a disservice to the residents of Connecticut," and he said he will continue to push for the measure. "We will be back next session," Alapatt said.

MAINE

Groundwater Bill Becomes Law

Amid growing concerns in Maine about the impact of groundwater withdrawals by giant water-bottling companies and ski resorts, the state enacted a law on June 23 that calls for better groundwater planning. The law requires that the various state agencies involved in groundwater management, including the Department of Environmental Protection and the Land Use Regulation Commission, assess their procedures for reviewing groundwater withdrawal proposals. They must develop a "consistent, efficient, and effective approach" that ensures that any approved proposal will cause no "undue adverse effect" on existing water users, scenic character, and natural and historic resources in an area. Bottling companies have been critical of the existing proposal review process, which they say is confusing and redundant due to the many state agencies involved.

The law also requires that Maine's Land and Water Resources Council coordinate a study of current state law on groundwater withdrawals. The council must submit a report to the Legislature by late 2007 that identifies any changes in state law needed to "ensure a consistent, integrated and scientifically sound state policy" on groundwater withdrawals.

MASSACHUSETTS

Better Grade for Charles

On May 31, EPA announced a grade of "B+" for the Charles River, reflecting an improvement in the river's water quality. The grade is an increase over the "B-" the river received the year before and the highest grade since EPA began the "Clean Charles" effort in 1995. In a statement, Robert W. Varney, the regional administrator of EPA New England, said, "We can all be proud that we are bringing this urban river back to ecological health." The Charles is now safe for swimming 54 percent of the time, and safe for boating 96 percent of the time. Ten

years ago, those numbers were 19 and 39 percent respectively. EPA stressed that, while the river's condition has improved since the project began, more work must be done to bring the river to full ecological health. "EPA remains committed to additional efforts to keep improving the health of the lower Charles," Varney said.

Desalinization Plant Planned, Delayed

In May, Swansea residents approved the \$1.4 million needed for the design and permitting of a desalinization plant. If built, the plant would be used to help lessen the burden on the town's wells during dry periods. By combining well water with water from the nearby Palmer River desalinated by "reverse osmosis," the town would have access to two million gallons of water per day. The proposed plant was delayed, however, after the state's Executive Office for Environmental Affairs expressed concerns about how the water withdrawal from the river and brine discharge from the plant would affect aquatic life. Swansea Water District Superintendent Robert Marquis told *IWR* that they are considering changes in the plant's design, but also said that it was already designed in accordance with existing regulations. "We will fight [for the plant]," he said.

NEW HAMPSHIRE

EPA Mercury Rule Faces Legal Challenge

New Hampshire Acting Attorney General Kelly Ayotte was among officials from 11 states filing joint comments on June 28 stating their opposition to a new U.S. EPA rule that establishes a "cap-and-trade" system for regulating harmful mercury emissions from power plants. In her comments, Ayotte said, "Mercury emissions from coal-fired power plants are accumulating in New Hampshire's lakes and streams, forcing health advisories on fish consumption and threatening our children's health. EPA's proposed method for controlling these toxic emissions ignores clean air laws and can be characterized as 'too little, too late.'"

A total of 15 states, including New Hampshire, Connecticut, Maine, Massachusetts, New York, and Vermont, have joined together to sue EPA in an attempt to block the rule. According to the news service *Greenwire*, EPA is vigorously defending itself against the lawsuit, and in August scored a key victory when the U.S. Circuit Court of Appeals for the District of Columbia denied a motion seeking an immediate injunction against the rule's implementation.

Money for Monitoring

EPA New England awarded a grant of more than \$205,000 to New Hampshire to help keep its beaches clean. The money will be used to monitor water quality at the state's 16 beaches. Linda Murphy, Director of Ecosystem Protection for EPA New England, said the goal of "It's a Shore Thing," the agency's beach awareness program, is to keep beaches from being closed. In 2004, one-quarter of New England's 1,000 beaches were closed for at least one day, but only three beaches in New Hampshire were closed for a total of six days. The grants are provided through the Beach Act of 2000. New England states have received \$5 million since the grant program began in 2001. Information about EPA's Clean New England Beaches Initiative is available at www.epa.gov/ne/eco/beaches.

NEW YORK

Reformulated Gasoline Requirement Upheld

On June 2, EPA rejected petitions made by New York, Connecticut, and California to waive the oxygen content requirement for reformulated gasoline (RFG). The states had argued that their use of ethanol to meet the requirement actually causes an increase in air pollution. In denying the states' requests, EPA said the states failed to adequately demonstrate that the oxygen requirement interferes with their ability to meet National Ambient Air Quality Standards.

Congress established the RFG program to improve air quality in some of the country's most polluted urban areas, and the Clean Air Act specifies that RFG contain 2 percent oxygen by weight. The law doesn't state which oxygenate must be used, but RFG sold in New York, Connecticut, and California contains only ethanol. The three states have banned the use of MtBE, the other commonly used oxygenate, due to concerns over groundwater contamination.

Onondaga Lake Cleanup

The New York State Department of Environmental Protection and U.S. EPA have approved a \$451 million plan to clean up Onondaga Lake, which is heavily contaminated with mercury and other pollutants due to waste poured into the lake for years by an Allied Chemical plant. Honeywell International, which merged with Allied in 1999, is responsible for the cost of the cleanup. The plan calls for dredging of as much as 2.65 million cubic yards of contaminated sediment from the lake. In announcing the approval, NYS DEC said it will continue to work with Honeywell toward implementation of the plan.

RHODE ISLAND

Progress on MtBE and Mercury

On July 6, Rhode Island became the 22nd state in the nation to ban MtBE from gasoline. The ban will take effect on June 1, 2007. In signing the legislation, Governor Donald Carcieri said, "With this law, we are ensuring that our groundwater supply remains safe from MtBE contamination. No Rhode Islander should have to worry if the water coming from their tap is safe."

MtBE contamination became an issue in Rhode Island in 2001 when residents of Pascoag noticed a funny odor and taste to their drinking water. Tests confirmed high levels of MtBE and other gasoline components that were traced to a leak from a gas station. The oxygenate, which may cause cancer in humans if ingested in high doses, has also affected private wells in several other Rhode Island towns.

Maine, New Hampshire, and Vermont have enacted similar MtBE bans that will also take effect in 2007. As noted above, MtBE is already banned in New York and Connecticut.

On June 24, Governor Carcieri signed legislation requiring the collection, removal, and disposal of mercury switches contained in cars and trucks. The program requires carmakers to implement a voluntary program to collect and safely dispose of the switches once the vehicles are no longer in operation. The state estimates that every year at least 43 pounds of mercury switches will be removed and safely disposed.

continued on page 14

State Updates *continued from page 13***VERMONT****Burlington Bay Still Faces Challenges**

A five-year University of Vermont study of the condition of Burlington Bay, Lake Champlain's most urban harbor, shows the bay meets state water quality standards and boasts a diverse mix of fish and aquatic life. But while extensive progress has been made in capturing and treating Burlington's stormwater, the study shows that the stormwater that still enters the bay carries high levels of coliform bacteria, making it unsafe to swim along the waterfront except at public beaches. There's also the issue of those unwelcome aquatic invaders. "The biggest changes we will see in the bay in the next decade may come from the expansion of zebra mussels across wide expanses of the bay's bottom, and the invasion of non-native fishes," said Mary Watzin, director of UVM's Rubenstein Ecosystem Science Laboratory, at a news conference announcing the study results. "The Lake Champlain ecosystem is resilient, but

to understand and manage these changes, we will need to continue to investigate their impacts."

The \$1 million study was paid for largely by the Green Mountain Power Corporation. GMP was among the parties named by EPA as responsible for the contamination of the Pine Street Barge Canal Superfund site, located just south of downtown Burlington.

State of the Lake

On June 22, the Lake Champlain Basin Program held a news conference to release *State of the Lake: Lake Champlain in 2005—A Snapshot for Citizens*. The 24-page report answers important questions frequently asked by the public about the lake's health, and includes the latest scientific information on the lake's water quality; fish, wildlife, and habitat; and aquatic nuisance species. The report is available online (<http://lcbp.org/lcstate.htm>) or, for a hard copy, call the LCBP at (800) 468-5227 (N.Y. and Vt.) or (802) 372-3213. Since 1992, NEIWPCC has served as financial manager and program adviser to the LCBP. ♠

WORKING FOR RESULTS**16th Annual NPS Conference Puts Focus on Outcomes**

by Becky Weidman, NEIWPCC

At this year's Annual Nonpoint Source Pollution Conference, the emphasis was clear—and captured succinctly in the theme "Our Watersheds: Working Together to Achieve Results." The idea was to provide participants with a suite of tools to enhance the outcomes of the projects that they manage. Highlights of the conference included a discussion of regional models that can help watershed managers assess the impacts of various management strategies, and two popular interactive workshops conducted by John LaRocca of the Rensselaerville Institute. The workshops provided participants with tools to introduce an outcome-focused framework into the management of their projects and grants.

Held on May 24-26 at the magnificent Mount Washington Hotel in Bretton Woods, New Hampshire, the conference also featured sessions on atmospheric deposition and low impact development. Participants had the opportunity to tour the nearby Whitefield Power and Light Company (a wood-burning power plant) and Presby Environmental, an innovative producer of septic system technologies. On May 25, attendees shared an evening with special guest John Harrigan, a writer and farmer whose column "Woods, Water and Wildlife" has run in the New Hampshire Sunday News for 32 years.

The event marked the sixteenth consecutive year that NEIWPCC has coordinated the conference, which has grown into the premier forum in our region for sharing information and improving communication on non-point source pollution issues and projects. New Hampshire's Department of Environmental Services served as co-host, a job that next year will shift to Vermont's Department of Environmental Conservation. The conference is scheduled to take place on May 23-25, 2006, but the location in Vermont has yet to be determined. As details become available, they will be posted on the conference Web page (www.neiwpcc.org/npsannualmeeting.htm). ♠

Becky Weidman (rweidman@neiwpcc.org) is NEIWPCC's Nonpoint Source Pollution Conference Coordinator. She also coordinates our NPS Workgroup.



Conference participants brave stormy weather to examine one of Presby Environmental's pioneering septic systems.



John LaRocca of the Rensselaerville Institute, seen on right, led two of the NPS Conference's most popular sessions. His workshops explained outcome frameworks and how to use them to rethink current project management approaches.



A group from New Hampshire enjoys the May 25 dinner. Left to right: Wendy Waskin, New Hampshire Department of Environmental Services; Angie Vincent, Nashua Regional Planning Commission; Steve Landry, NH DES; Andy Chapman, NH DES; Jillian Jones, NH DES; and Jeff Marcoux, NH DES.

BASIC TRAINING**Maine's JETCC to Offer Four-Week Wastewater Treatment Course in Bangor**

by Leeann Hanson, NEIWPCC/JETCC

With a wastewater operator shortage looming and formal wastewater training no longer available through most technical colleges, Maine's Joint Environmental Training Coordinating Committee is kicking off a special four-week comprehensive "Basic Wastewater Treatment" training class to meet every Wednesday in October. The course will be led by Richard Darling, who oversees Operator Certification at the Maine Department of Environmental Protection. All classes will be held at the Bangor Wastewater Treatment Facility, and will feature training from a variety of operators, managers and experts from Maine's municipal treatment facilities and industry. Participants in the training will benefit from face-to-face interaction with a group of professionals with many years of diverse experience in the wastewater field.

The JETCC training program has always benefited from a supportive group of volunteer instructors who donate their time and expertise for the benefit of Maine's water pollution control community. JETCC's goal is to use this first four-week session as a model for future sessions; the plan is to develop a cadre of trainers in different locales for future basic wastewater courses in other regions of the state.

This structured overview of the wastewater treatment field is an excellent way to prepare for Maine's Wastewater Treatment Plant Operator Certification Exam. But these sessions will be worthwhile for anyone who seeks basic interactive training in WWTP operations, including job changers and newcomers to the field as well as current laboratory, operations and maintenance personnel. The course is based on the well-known Sacramento home study manuals on WWTP operations. Textbook instruction forms the backbone of the course, but students also benefit from "real life" experiences shared by the instructors.

Topics include:

- WWTP overview (and tour)
- Laws and regulations
- Pretreatment process
- Sedimentation and flotation
- Secondary treatment processes
- Activated sludge
- Trickling filters
- Rotating biological contractors
- Waste treatment ponds
- Disinfection

In addition to Richard Darling, the instructors for this training include Dean Dadmun, Clean Harbors; Brad Moore and Al Jellison, Bangor WWTF; Darold Wooley, Lincoln Sanitary District; Steve Butler and Ken Locke, Brewer WWTF; Gary Brooks, Veazie Sewer District; Bill Luksha, Woodard and Curran; and Annaleis Hafford, Olver Associates. ♠

Leeann Hanson is the coordinator of JETCC, which NEIWPCC has managed since 1985. For more information on this basic wastewater course and other JETCC classes, please contact JETCC at 207-253-8020. For more information on all courses offered this fall by JETCC and NEIWPCC's Environmental Training Center, visit the Training section of NEIWPCC's Web site (www.neiwpcc.org/training.htm).

IN THE SPOTLIGHT

On March 4, NEIWPCCC's **Laura Blake** participated in a **Congressional briefing** addressing federal water quality monitoring efforts in the United States. Blake highlighted a current project involving the use of the New England SPARROW Model to investigate nitrogen loading to Long Island Sound from the Connecticut River Watershed. By relating nutrient stream concentrations to pollutant sources and watershed characteristics, the SPARROW model estimates the origin and fate of contaminants in streams.



"Models are not a replacement for monitoring," Blake said during the briefing. "However, as we lose the ability to monitor all of our waters, we need alternative methods of obtaining the information that monitoring provides us with, so that we can most efficiently manage, protect, and restore our waters. Models help us meet this need. Predictive models like SPARROW, in combination with observed monitoring data, provide an opportunity to comprehensively assess our nation's waters by filling information gaps where no monitoring data exist."

A team at the U.S. Geological Survey's New Hampshire/Vermont District developed the New England version of the model, in partnership with NEIWPCCC and EPA New England. The team also wrote a study on the insights yielded by the model, which was the focus of a special two-page section in the Summer 2004 issue of *IWR* (available at www.neiwpc.org/iwrarchives.htm). More information on the model and its uses can be found at NEIWPCCC's SPARROW Model Web page (www.neiwpc.org/ne_sparrow.htm).

Tom Groves, NEIWPCCC's Director of Wastewater and Onsite Programs, has been elected to a two-year term as a regulatory representative to the **Board of Directors of the National Onsite Wastewater Recycling Association**. NOWRA's mission is to provide leadership and promote the onsite wastewater treatment and recycling industry through education, training, communication and quality tools to support excellence in performance. It is supported by a membership of more than 3,500 individuals within the onsite industry.

KNOW YOUR ACRONYMS!

by Stephen Hochbrunn, NEIWPCCC

After a one-issue absence, this ever popular *IWR* quiz makes its return with a challenging new list of six acronyms encountered in the water and wastewater fields. Do you know what the letters stand for? As usual, some of the acronyms should be familiar to you if you've read the articles in this issue. *Answers on page 16.*

DOB	LUST
FOG	NEAEB
KYA	SBR



NEIWPCCC's **Laura Chan**, seen here speaking at the recent Water Quality Standards Academy in North Chelmsford, Mass., is now working in our Lowell headquarters as an Environmental Analyst. Chan is the **newest member of our Water Quality team**, and is managing all of our stormwater and NPDES-related projects, including the regular meetings of our Stormwater Workgroup. Before moving to the Lowell office, Chan worked in Worcester, Mass., as a NEIWPCCC employee supporting the data management activities of the Massachusetts Department of Environmental Protection's Division of Watershed Management. (For more on the Water Quality Standards Academy, see page 9.)

David Ladd, the stormwater Phase II coordinator for Maine's Department of Environmental Protection and a longtime member of NEIWPCCC's Stormwater Workgroup, was featured in a lengthy article on NPDES reporting requirements in the **May/June issue of Stormwater magazine**. In the article, Ladd discussed the challenges of implementing Phase II and how Maine benefited from using Advanced Stormwater Information SysTems (ASIST) software to manage its Phase II program. The article can be viewed online at www.stormh2o.com/sw_0505_npdes.html

Betsy Blair, who oversees the work of a number of NEIWPCCC employees based in New York State, received the **2005 NOAA Excellence Award for Coastal and Ocean Resource Management**. Administered by NOAA, the National Oceanic and Atmospheric Administration, the award honors an individual who has initiated innovative practices and brought positive change to the management of ocean or coastal resources at either the state or national level. Blair has managed the Hudson River National Estuarine Research Reserve's research, education, and stewardship programs since 1985. Since 1992, she has also

overseen a variety of other habitat programs on the Hudson River Estuary and Long Island Sound, including habitat restoration, submerged aquatic vegetation and river bottom mapping initiatives, functional assessment projects, tidal wetlands research, and a variety of public education and outreach projects. Congratulations, Betsy!

NEIWPCCC employee **Lisa Windhausen** of the Lake Champlain Basin Program is an ex-officio member of the **National Aquatic Nuisance Species Task Force**. The ANS Task Force is an interagency committee established by the Non-Indigenous Aquatic Nuisance Prevention and Control Act of 1990. The Task Force coordinates activities of federal agencies regarding ANS issues in consultation with other regional, state, and governmental entities. At the LCBP, Windhausen is the Aquatic Nuisance Species Coordinator, helping to implement the ANS management plan for the Lake Champlain basin. For more on the Task Force, visit its Web site (www.anstaskforce.gov) or contact Lisa at the LCBP (lwindhausen@lcbp.org).



On April 23, NEIWPCCC joined more than two dozen organizations in sponsoring an **Earth Day Cleanup of Lowell's canal system**. Dozens of volunteers helped pick up litter and debris from around the canals, including several NEIWPCCC staffers (l-r): **Don Kennedy**, Training Coordinator; **Marianna Vulli**, Research Initiative Coordinator; and **Beth Card**, Director of Water Quality Programs. There are almost six miles of canals in Lowell's system, which in the mid-1800s powered ten major mill complexes employing more than 10,000 workers.

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CALENDAR OF EVENTS

Please note that NEIWPCC workgroup meetings are designed to foster focused small-group discussions among workgroup members on specific issues. Workgroup members are drawn from state and federal regulatory agencies and NEIWPCC staff. For general information about our workgroups and their points of focus, please visit our Web site (www.neiwpcc.org) or call 978-323-7929.

OCTOBER

October 4 – 6

Mississippi River Basin Nutrient Science Workshop
St. Louis, Mo.

October 6

NEWEA/JETCC Maintenance Management Seminar
Portland, Maine

October 8 – 13

Annual NOWRA Conference
Cleveland, Ohio

October 10 – 13

2005 State/EPA National Biosolids Conference/Workshop
Potomac, Md.

October 17 – 20

Association of State Drinking Water Administrators Annual Conference
St. Louis, Mo.

October 21

“Research to Practice: Science for Sustainable Water Resources”
WRRRC Annual Conference
UMass Amherst

October 29 – November 2

WEFTEC 2005
Washington, D.C.

October 31

Title 5 System Inspector Certification Course
Gardner, Mass.

NOVEMBER

November 2 – 4

Massachusetts Health Officers Association (MHOA) Annual Conference
Hyannis, Mass.

November 9 – 11

North American Lake Management Society 25th International Symposium
Madison, Wis.

November 13 – 17

Society of Environmental Toxicology and Chemistry (SETAC) Annual Meeting
Baltimore, Md.

November 15 – 16

Northeast Aquatic Nuisance Species Panel Fall Meeting
Stowe, Vt.

November 15 – 16

NEWEA/NEBRA Residuals and Biosolids Conference
Westborough, Mass.

November 19

Massachusetts Wastewater Exam

DECEMBER

December 9

NEIWPCC Executive Committee Meeting
Lowell, Mass.

To check for additions
or changes to this listing, see the Calendar of Events
at NEIWPCC's Web site www.neiwpcc.org.

Contributions to *IWR* are welcome and appreciated.
Please submit articles or story ideas to: Stephen Hochbrunn, *IWR* Editor
E-mail: shochbrunn@neiwpcc.org ♦ Phone: 978/323-7929, ext. 235

KNOW YOUR ACRONYMS ANSWERS

DOB – Depth of Blanket In the everyday world, DOB often stands for “Date of Birth,” but not so in the world of wastewater. The DOB, or depth of blanket, is the level of sludge in the bottom of a wastewater treatment plant’s clarifier. According to Don Kennedy, one of NEIWPCC’s training coordinators, wastewater operators use depth of blanket information in secondary clarifiers in conjunction with concentration of solids in the secondary process to adjust return activated sludge and waste activated sludge pumping rates.

FOG – Fats, Oil and Grease As explained in the article on page 3, fats, oil and grease can and frequently do have negative impacts on wastewater collection and treatment systems. Many wastewater collection system blockages can be traced to FOG, and the blockages are serious, causing sewage spills, manhole overflows, or sewage backups into homes and businesses. To help address this problem, NEIWPCC recently conducted a series of workshops that examined alternatives for treating FOG after the material has been removed from a wastewater system. Information from the workshops is available on our new FOG Web page (www.neiwpcc.org/fog), which includes a comprehensive list of FOG resources and links.

KYA – Know Your Acronyms

Sorry. We couldn’t resist.

LUST – Leaking Underground Storage Tank In honor of *LUSTLine’s* 20th anniversary (see page 7), we include this acronym, which must be used carefully around the general public. (Statements like “Hello, I’m calling for help with my LUST” can easily be misinterpreted.) In actuality, the term refers to one of the most serious environmental problems of our time. Petroleum leaking from an underground storage tank can make its way into groundwater, and if the gas contains MtBE and other contaminants of concern (as was often the case in the recent past), the groundwater in the area can quickly be rendered unsafe to drink. According to EPA’s Office of Underground Storage Tanks, more than 418,000 UST releases had been confirmed as of September 30, 2001. About 150,000 of those LUST sites have yet to be cleaned up.

NEAEB – New England Association of Environmental Biologists

This group, which serves environmental biologists from the New England states and New York State, conducts a popular annual conference, with the location rotating among the states. The 2005 conference, which was the 29th annual edition, took place in March in Lake George, N.Y. The speakers included NEIWPCC’s A.J. Smith, who delivered a presentation on the development of a Nutrient Biotic Index, a new method for assessing nutrient enrichment in streams using benthic macroinvertebrates.

SBR – Sequencing Batch Reactor As explained in the article on page 2, an SBR combines all of the typical wastewater treatment steps and processes into a single basin, or tank. (Conventional wastewater facilities rely on multiple basins for aeration, sedimentation, and clarification.) SBRs offer a number of advantages, including a smaller footprint than a traditional WWTP, but they are also complicated to design and operate. This fall, NEIWPCC will publish a guidance document that will explain the key elements to consider when designing an SBR as well as the specific configurations and processes that will optimize SBR performance.



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