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IWR Interstate Water Report

THE QUARTERLY NEWSLETTER OF THE NEW ENGLAND INTERSTATE WATER POLLUTION CONTROL COMMISSION

SECURITY CHECK IN SALEM

Plant Under Scrutiny as Experts Assess Vulnerability of New England's Wastewater Treatment Plants

by Stephen Hochbrunn

Just five years ago, the municipal wastewater treatment facility in Salem, Mass., completed a major overhaul that cost $285 million. The end result was a state-of-the-art plant. But could it be vulnerable to a security breach, particularly a possible terrorist attack? If so, what can be done to make it more secure? In late May, a small team of security experts traveled to the plant to assist in determining its vulnerability—and, if necessary, to offer solutions.

The visit was part of a series of vulnerability assessment assistance projects conducted over the past year at small to medium-size wastewater facilities in Connecticut, Massachusetts, New Hampshire, New York, and Rhode Island. With the help of an EPA grant, the New England Interstate Water Pollution Control Commission (NEIWPCC) assisted the states with coordinating the assessments. Security experts visited at least five plants in each state, and in Massachusetts, the list included the plant in Salem. When the experts arrived in May, plant officials opened the discussion with an admission.

"This facility wasn't exactly designed with security in mind," said Hal Newhall, acting executive director at the South Essex Sewerage District, which runs the plant. As at most wastewater facilities, the priorities at the Salem plant have been to run efficiently, cleanly, and as odor-free as possible. And, to be fair, before Sept. 11, 2001, few Americans worried much about terrorist activity at all, let alone at a wastewater treatment plant. But the threat posed by terrorists and other security risks, such as computer hackers and disgruntled former employees, should not be overlooked; if damaged, a wastewater facility could send untreated sewage and toxic chemical agents streaming into the environment and potentially into drinking water intakes.

David Spector, director of consulting services at ARM (Applied Risk Management), led the assessment in Salem as he has at all the plants. He quickly concluded there were some areas of concern. "That foliage near your fence is nice, but it's a problem, security-wise," Spector said. "A guy jumps over the fence, and you can't see him." Spector spoke gently, like a kind doctor, as he pointed out other problems, such as the practice of leaving keys in the plant's vehicles when they were parked at the facility. That's OK until an employee, by force of habit, leaves the keys in the ignition when the vehicle is parked *outside* the plant, creating an opportunity unlikely to be overlooked by someone with bad intentions.

Like all the assessments, the process in Salem consisted of several steps: Spector and his team identified the assets that needed protection and their value, the potential security threats, and any existing countermeasures. Armed with that information, they would prepare a draft report on what needed to be fixed, how

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Top (left to right): Hal Newhall, South Essex Sewerage District; Chuck Conway, NEIWPCC; and David Spector, ARM, tour the Salem wastewater treatment plant during the vulnerability assessment in May. Bottom: Part of the Salem plant's state-of-the-art odor control system.

INSIDE

ONLINE REVAMP

NEIWPCC Web Site Gets Overhaul

Major improvements are being made to the design, navigation, and content of NEIWPCC's Web site, and the changes should soon be readily apparent to visitors to *www.neiwpcc.org.* The extensively renovated site will feature a sophisticated search function and numerous other changes and additions to improve ease of use and enhance the user's experience. Revamped sections devoted to NEIWPCC's primary areas of focus—drinking water, underground storage tanks, wastewater and onsite systems, water quality, training, and publications—will be accessible directly from the home page. If you're looking for specific information about individual projects or programs, you'll find it easily and quickly. For example, from the TMDL page, you can access everything from details about the development of a TMDL for the Shawsheen River Headwaters to overviews of the various technical tools and guidance documents available to those involved with TMDLs.

We are targeting September for the launch of the updated site. Check it out!

CLEAR CHALLENGE

Restoring Water Quality in the Charles River

by Laura Blake

On May 2, a herd of reporters and TV camera crews converged upon EPA New England's Boston headquarters to get an update on the state of one of New England's most prominent features—the Charles River. What they learned is that, after nearly a century of neglect and abuse, this river that winds so gracefully from Hopkinton, Mass., to Boston is in the midst of an environmental turnaround. But, as the media also found out, the work to restore the Charles is far from over.

During the news conference, EPA New England's regional administrator Bob Varney announced the River was clean enough for boating 91 percent of the time in 2002, up from 39 percent in 1995. But the Charles met much stricter swimming standards only 39 percent of the time. Still, that was up significantly from the figure of 19 percent posted in 1995, the year EPA launched its Clean Charles 2005 Initiative. The goal of the program is to fully restore the Lower Charles so it is safe for fishing and swimming by Earth Day 2005. Thanks to intense efforts by a wide array of people and organizations, including NEIWPCC, that goal appears to be achievable—an amazing possibility when you consider the River's past.

Early European settlers harnessed the Charles for industrialization, and, over time, 20 dams were built along the River, hampering its ability to cleanse itself with uninterrupted flow. Water quality and fish populations declined dramatically as mills, settlements, and homes dumped waste directly into the River. In the early part of the 20th century, concern about the River's condition led to significant improvements to the river basin and its management. But construction of the Quabbin-to-Boston water supply system in the 1930's

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NEIWPCC
New England Interstate Water Pollution Control Commission

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
Boott Mills South
100 Foot of John St.
Lowell, MA 01852-1124
Tel: 978/323-7929
Fax: 978/323-7919
mail@neiwpcc.org
www.neiwpcc.org

IWR
Interstate Water Report

Editor
Stephen Hochbrunn, NEIWPCC

Design/Layout/Production
Ricki Pappo, Enosis,
The Environmental Outreach Group

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Article submissions and questions or comments about *IWR* are welcome and appreciated. Please send material to *shochbrunn@neiwpcc.org.*

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FROM THE EXECUTIVE DIRECTOR

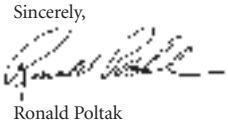
NEW LOOK, SAME COMMITMENT

For those of you familiar with the NEIWPCC publications *Water Connection* and *Interstate News,* the appearance of this issue of *Interstate Water Report* in your mailbox may have come as a surprise. Allow me to explain. After considerable debate at our headquarters in Lowell, it was decided that our desire to keep our constituents and the public apprised of NEIWPCC's activities and informed on critical water issues would best be served by publishing one comprehensive quarterly newsletter. So we bid a fond farewell to this publication's predecessors and present to you the first issue of *IWR,* as we've come to call it. I hope you will find it to be informative and illuminating.

I also hope that you will feel free to submit articles, story ideas, letters, questions, or feedback of any sort to our editor. You'll find the contact information on this page. Your contributions and input will help us in our effort to create a publication that will be read, enjoyed, and learned from, and that will stimulate further thought and discussion about the important water challenges faced by our member states.

We look forward to hearing from you.

Sincerely,



Ronald Poltak
NEIWPCC Executive Director

IN THE WORKS

Long-Planned Study of Radionuclides to Start Soon

Representatives from EPA, NEIWPCC, and the environmental agencies of Maine, New Hampshire, Rhode Island, and Vermont spoke in a conference call on July 9 to coordinate final plans for a much-anticipated study of radionuclides. These are the naturally occurring radioactive contaminants that may be present in groundwater and, if ingested, can result in an increased risk of cancer.

The project, which was started in fiscal 2002 with funds from EPA and the University of New Hampshire (UNH), will investigate what happens to radionuclides discharged by private homeowner onsite systems as well as larger ground water systems run by towns and small communities. When radionuclides are taken out of groundwater by treatment processes, they typically are disposed of with the rest of a system's wastewater, meaning they end up in septic tanks, leach fields, or sewers. Researchers at UNH will examine this process and whether radionuclides concentrate in septic solids or are discharged to subsurface soils and groundwater. They will do this by intensively studying three sites in New England.

"We started with nine proposed sites, and we've now narrowed it down to five," says Denise Springborg, NEIWPCC's director of drinking water programs, who is coordinating efforts by the states to locate appropriate sites and to develop alternative disposal policies. "Once we narrow it down further and identify the three sites for the study, the researchers can get to work. I expect that will happen by the fall."

The study is of particular importance to many of NEIWPCC's member states because radioactive contaminants are present in greater concentrations in the groundwater of certain regions of the country. One of those areas where they are found in greater abundance is northern New England.

For more information on radionuclides and this forthcoming study, contact Denise Springborg at dspringborg@neiwpcc.org.

EYE ON THE FUTURE

SFA Meeting Focuses on Lessons Learned and Next Steps

by Kara Sergeant

State fund administrators from across the country gathered in Duluth, Minnesota, from June 8-11 to discuss successes, failures, and the challenges that lie ahead for their program. The administrators, who manage state funds earmarked for covering the costs of cleaning up leaking underground storage tank sites, have been heavily affected by budget shortfalls in many states. In his speech at the annual conference, Cliff Rothenstein, director of EPA's Office of Underground Storage Tanks (OUST), addressed the issues the administrators are facing.

"We need to better understand emerging trends and evaluate the short-and long-term viability of state funds," Rothenstein said. "We also need to assess our ability to continue to fund cleanups in these days of tighter budgets and potentially recurring taps into the funds." Rothenstein emphasized the importance of making sure tank operators are in compliance with state and federal UST regulations, which would mean fewer leaks and fewer claims on the funds. NEIWPCC continues to work with industry to increase compliance on underground storage tanks and has sent EPA a proposal to update our UST training videos.

NEIWPCC co-sponsored the conference, along with OUST, the Association of State and Tribal Solid Waste Management Officials (ASTSWMO), and the Minnesota Petroleum Tank Release Cleanup Fund. Attendance was by invitation only, but the administrators discussed allowing consultants and contractors to attend in the future. This year, the UST/LUST National Conference, which NEIWPCC also co-sponsors, opened its doors for the first time to a limited number of industry representatives. A survey asking the State Fund attendees if they'd like to do the same is being created; results are expected to be released this November in Providence, R.I. at a planning meeting for the 2004 SFA conference.

Kara Sergeant (ksergeant@neiwpcc.org) is a NEIWPCC environmental analyst and coordinator of our Underground Storage Tanks Workgroup.

GONE SAMPLIN'

Crew Nets Key Data During Long Days on Hudson

by Stephen Hochbrunn

The crew, sitting amid the roar of a 115-horsepower outboard motor, spoke little as the boat wound its way downriver. Mostly, they looked into the wind, only occasionally glancing at the billowy trees, fat with fresh leaves, that lined the riverbank. Except for the handful of volunteers, who change daily, the crew had worked nearly 12 hours the day before. But if they were weary, they didn't show it; their faces looked fresh, alert. Ahead lay another day of fish sampling—a routine of examining, weighing, and tagging the fish hauled in with their giant net. Their duties would vary during the day, depending on their state of exhaustion. "What you do depends on how tired you are," said Kathy Hattala, the crew leader who's been doing this so long that she knows where all the big rocks are, where a net can be snagged, where fish are sure to be found.

Hattala works for the Hudson River Fisheries Unit of the New York State Department of Environmental Conservation (NYS DEC). Each spring since 1985, the Unit has conducted an annual spawning stock survey, collecting data on the American shad and striped bass that, after years of frolicking in the ocean, return to spawn in the Hudson, the place of their birth. NEIWPCC's involvement stems from our partnership with NYS DEC's Hudson River Estuary Program, which supports the work of the Fisheries Unit in various ways. Four NEIWPCC employees work with the Unit year-round, and were among the crew that motored down the Hudson that morning in late May.

"The spawning season only lasts about a month," said Gregg Kenney, a NEIWPCC environmental analyst. "When the fish are out here, we have to be out here." The crew made its first stop about five miles south of Athens, N.Y. After feeding out the 500-foot long, 12-foot deep small-mesh seine net in a wide arc that extended into the middle of the river, crew members near the shore pulled on each end to haul the net in, working as teams to ease the strain. A seine net has floats on the top edge and weights on the bottom, and when dragged through the water, picks up just about everything in its path. While perhaps the best method for ensuring a fair and non-selective sample, working with seines is hard work, labor-intensive, and learning to use the nets effectively in a waterbody can take years. The Hudson is currently the only place on the East Coast where you'll find biologists using the nets to conduct spawning stock surveys. "We had the good fortune 15 years ago to have the money to develop the gear and the methodology," said Andy Kahnle, a fisheries scientist and head of the Hudson Unit.

As the net came in, so too did the catch—carp, catfish, assorted other fish, and several striped bass, sporting distinctive black lines on their silvery sides. NEIWPCC's Amanda Cosman went to work. Standing in thigh-deep water and utilizing the equipment on a small, portable laboratory, she weighed each bass, measured its length, and took a scale sample. The data allow the Unit's biologists to assess the health of each year's spawning population. In recent years, the data have pointed to an increase in stripers beyond the age of eight—when most females reach maturity. That's a clear sign of a healthy striped bass population in the River.

Cosman also attached a small tag that gave each bass a unique number. The tag instructs anyone catching the fish to call the U.S. Fish and Wildlife Service (USFWS), and provide the date, location, and method of capture. This information is important for monitoring fish survival, movement, and catch rates, and helps in the evaluation and adjustment of limits on the fishing of the species. Fishermen who make the call receive a certificate and a hat from USFWS.

Top (left to right): Kathy Hattala, NYS DEC; Kris McShane, NEIWPCC; Gregg Kenney, NEIWPCC; and a volunteer haul in striped bass with a giant seine net during this spring's spawning stock survey in the Hudson River. Bottom: Amanda Cosman, NEIWPCC, takes a scale sample from a striped bass while Bob Ledrich, NYS DEC, records data from Cosman's inspection of the fish, which is moments away from being released back into the water.

"Occasionally we'll haul in one that's already tagged," said Cosman, an environmental analyst. "We just caught one yesterday, but you could barely read the tag—it was so covered in algae." If the number can be read, data on the fish are collected and later phoned in to USFWS, and the fish is sent on its way, to perhaps be caught again someday. If the tag can't be read, it's removed, and the fish released, free of the tiny adornment it wore unknowingly in the name of science.

After releasing all the fish, the crew moved upriver and cast the net a second time, hauling in more stripers. While Hattala repaired a hole in the net, she kept an eye on the darkening sky to the west. The crew works through rain, and had done so often during this year's sodden Northeast spring, but lightning is another matter. Hattala was once caught on the water during a thunderstorm, and she didn't care to relive the experience. On her boat's radio, a meteorologist warned of thunderstorms in the area. Hattala ordered the Unit's two boats to shore, where the crew ate lunch amid tall reeds and river detritus—a soccer ball, plastic milk jugs, beer cans, and, inexplicably, a portion of a highway road sign—while thunder rumbled, distinct but still distant.

As the storm grew closer and the forecaster warned it would not leave soon, Hattala decided to play it safe and called off the rest of the day's sampling. Beneath heavy, low clouds, the crew sped back to the launch in Athens, their work on the river done for the day.

The sampling resumed the next morning, and didn't stop until June 6, when the spawning season was all but over. Despite all the rain, the Unit had what Hattala called "a fairly successful season." Using the seine net, the crew hauled in a total of 582 striped bass and 574 American shad, nearly all of which they tagged. Earlier in the season, the crew had used an electro-fishing boat to tag another 850 striped bass. In electro-fishing, the fish are temporarily stunned, scooped up to be measured, then tagged before they wake up and are released back into the River.

With the spawning stock survey complete, the crew headed back to the Hudson to study the results of the spring spawning runs. From late June through early November, the Unit uses a smaller seine net to collect and examine juvenile shad, the so-called young-of-year. But when winter arrives, the crew will finally—and reluctantly—move inside, to fix boats and trailers, compile data, inspect the scales collected from the bass and shad. They'll look ahead to a new spring that will bring with it the demands and pleasures of a new spawning survey and, they hope, a little less rain.

Vulnerability *continued from page 1*

and when to make the changes, and the cost. The facility would finalize the report, and present it to the town officers, who would consider the recommendations. NEIWPCC has found that having the assistance of an outside entity adds credibility to the report and helps the facility achieve its implementation goals.

As the final step of the process, NEIWPCC conducts workshops in each state in which the results of the assessments are shared with managers from other non-assessed plants. "Our region is far ahead of the rest of the nation in doing all this," said NEIWPCC's Chuck Conway, who has been leading the workshops.

The assessment in Salem went smoothly, and in the end, the plant got good marks. "They have a very good perimeter fence," Spector said. "They also have a front gate that locks, something 95 percent of wastewater plants don't have. A locked gate helps keep unwanted people out, and if you do that, you have half the battle already licked." Still, there was work to be done to make the facility more secure. "We're not perfect," Newhall said. Not perfect, but now closer to it, thanks to a little expert advice.

SECURITY GUIDES

Not every wastewater treatment plant, of course, can be the focus of an extensive analysis by security experts, but all plants should be prepared for unexpected crises. Fortunately, there are a number of extremely helpful tools available.

The Association of Metropolitan Sewerage Agencies (AMSA) has developed the *Asset Based Vulnerability Checklist for Wastewater Utilities,* a 48-page booklet that helps utilities identify and evaluate a wide range of vulnerabilities. Go to AMSA's Web site, *www.amsa-cleanwater.org*, to download a free PDF version or to buy a hard copy for $10.

Also available from AMSA is *The Vulnerability Self Assessment Software Tool (VSAT),* which provides a comprehensive system for wastewater utilities seeking to analyze their vulnerability to intentional threats and natural disasters. The software comes on CD-ROM, and can be ordered free of charge at AMSA's Web site.

For systems serving less than 10,000 people, an excellent resource is *Protecting Your Community's Assets: A Guide for Small Wastewater Systems,* published by The National Environmental Training Center for Small Communities. NEIWPCC's Tom Groves and Chuck Conway participated in the review of this guide, which helps utility managers, operators, and local officials improve security and plan for emergency situations. To order a hard copy, call 800-624-8301 and ask for product TRBKMG03. A PDF version can be downloaded at *www.nesc.wvu.edu/netcsc/netcsc_index.htm.*

Charles River *continued from page 1*

led to a population boom, and the area grew faster than the capacity to treat domestic, municipal and industrial wastes.

By the mid-1960s, raw sewage flowed into the River from outdated wastewater treatment plants; toxic discharges from industrial facilities colored the river pink and orange; and fish kills, submerged cars, leaching riverbank landfills, and obnoxious odors had become routine. Conditions improved in the '70s and '80s, but the longstanding and pervasive water quality problems in the basin—specifically, high bacteria levels and poor aesthetic quality—severely limited recreational activities such as kayaking and swimming in the Lower Charles.

The unveiling in 1995 of EPA's initiative brought much needed attention and funding to the cause. In the past five years, we have seen extensive efforts to reduce the discharge of pollutants from combined sewer overflows and illicit sanitary sewage discharge. And NEIWPCC's involvement in the restoration effort continues to grow.

A crew on the Charles River adjusts a portion of the Gunderboom Beach Protection System, which delivered promising results in a study of the system's ability to shield the river's swimmers from high levels of bacteria and pollutants.

With the help of an EPA grant, NEIWPCC conducted a study of the Gunderboom Beach Protection System (BPS) technology in the Lower Charles River Basin. The system employs a filter barrier that hangs like a curtain in the water, letting water pass through but screening out debris and contaminants. Researchers deployed the system in two locations on the River and examined how it affected water clarity within the enclosed area. (Massachusetts requires swimming beaches to have four feet of clarity, as measured by a Secchi Disk.) Researchers also looked at the system's ability to reduce total suspended solids, turbidity and bacterial concentrations. In May, NEIWPCC released the final report on the study, which clearly shows the system works; the results demonstrated the potential for the Gunderboom technology to improve clarity and other water quality conditions in the Lower Charles.

NEIWPCC is involved with other Charles River water quality projects, including the development of a seasonal bacteria model of the lower basin. The model will be used to assess the effects of different levels of stormwater management and Best Management Practices on water quality; the results of the model will also help Massachusetts and EPA determine the reductions necessary to meet water quality standards for bacteria.

NEIWPCC is also assisting with the development of a TMDL for the Charles, which will address water quality impairments associated with excessive algal blooms. The severity of the blooms is attributed primarily to high nutrient loadings from wastewater treatment plants, discharges from urban stormwater drainage systems, combined sewer overflows, thermal loadings from a power plant that discharges into the lower basin, and long retention times in the basin. A three-dimensional, time variable water quality model is being developed to assist in the development of the TMDL. The model can simulate algal dynamics as well as dissolved oxygen levels in the basin.

At the news conference in May, EPA's Varney gave the Charles a grade of "B" for 2002, the same grade as 2001, but up from the "D" received in 1995. Varney also presented a $400,000 grant to help the Charles River Watershed Association in its cleanup efforts along the Charles River. It was one more sign of progress for a river that, despite its problems, is still one of the busiest recreational rivers in the world, attracting nearly 20,000 users daily. Come Earth Day 2005, those users should be enjoying a much cleaner and clearer Charles.

Laura Blake is a NEIWPCC environmental analyst and coordinator of our TMDL programs. For more information regarding these projects, contact Laura at lblake@neiwpcc.org or visit www.neiwpcc.org.

NEW PERSPECTIVES

Nonpoint Source Meeting Focuses on Innovative Ways to Achieve Results

At this year's 14th Annual Nonpoint Source (NPS) Meeting, the conference's theme, "Environmental Results," may have been best symbolized by one event: A group of attendees went on a field trip to the Caretaker Farm in Williamstown, Mass., where farmers are employing an innovative irrigation system that relies on a combination of solar power and gravity to pump water to their organic crops. It's a novel solution to an age-old problem, and it reflects the type of progressive thinking that was so prominent in this year's presentations.

Held from May 13-15 at the beautiful Jiminy Peak ski resort in Hancock, Mass., the NPS Meeting began with a keynote address by Peter Berle, former president of the National Audubon Society and Commissioner of the New York State Department of Environmental Conservation from 1976 to 1979. Berle set the tone for the sessions that followed when he emphasized that it's impossible to solve the problems that have been created with the same thinking that created them. With this thought in mind, attendees moved on to a variety of technical presentations on everything from implementing best management practices to how to develop NPS and stormwater management plans. Other field trips offered included a visit to the Darrow School "Living Machine" wastewater treatment plant in New London, N.Y., which utilizes plants to purify contaminated water.

NEIWPCC and the Massachusetts Department of Environmental Protection co-sponsored the meeting in cooperation with EPA Regions 1 and 2, and the NPS programs of the New England states, New Jersey, and New York.

Nonpoint Source Meeting attendees listen as Elizabeth Smith explains the solar-powered irrigation system employed at Caretaker Farm in Williamstown, Mass., which Smith owns and operates with her husband Sam.

FRESH FACES

NEIWPCC Welcomes New Commissioners

The 2002 elections ushered in new governors in several New England states, and when there's change at the state level, there's change at NEIWPCC. That's because NEIWPCC is overseen by 35 Commissioners (five from each of our seven member states) who are appointed by their state governors or, in some cases, assume the post due to their position. So, when an administration changes, so too does our list of Commissioners. Here's a brief introduction to the new additions.

Christine Ferguson was appointed commissioner of the Massachusetts Department of Public Health in January. She previously served as director of the Rhode Island Department of Human Services for seven years. Ferguson is represented on the Commission by **Elaine Krueger**, the head of Massachusetts's Environmental Toxicology Unit.

Dawn Gallagher is the commissioner of Maine's Department of Environmental Protection, after serving for five years as the deputy commissioner for Maine's Department of Conservation. Her representative on the Commission has not been announced.

Robert Golledge, Jr. is the new commissioner of the Massachusetts Department of Environmental Protection (MA DEP). Golledge headed the department's Central Regional Office from 1998 to 2002. He started as commissioner on July 7. Golledge is represented by **Glenn Haas,** director of MA DEP's Division of Watershed Management.

Michael Nolin took over in May as commissioner of New Hampshire's Department of Environmental Services (NH DES). Prior to the appointment, Nolin was an engineering consultant at a Manchester-based firm. He's represented on our Commission by **Harry Stewart,** director of the Water Division, NH DES.

Peter Walsh has assumed responsibilities as the Acting Commissioner of Maine's Department of Human Services (ME DHS). Walsh has worked for the department for 25 years, serving most recently as Deputy Commissioner for Programs. He'll be represented by **Clough Toppan**, director of Health Engineering at ME DHS.

Jeffrey Wennberg, who spent 12 years as mayor of Rutland City, Vermont, took over in March as commissioner of that state's Department of Environmental Conservation. Wennberg is represented by **Wallace McLean**, director of Vermont's Water Quality Division.

In addition to the new Commissioners listed above, **Yvonne Bolton**, acting chief of Connecticut's Bureau of Water Management, is the new representative on the Commission for **Arthur Rocque, Jr.**, commissioner of Connecticut's Department of Environmental Protection.

FULFILLING THE PROMISE OF NO NET LOSS

A Regional Quest to More Effectively Recreate Wetlands

by Rebekah Lacey

For 13 years now, the federal government has had a goal for America's wetlands—no net loss. It's a principle from the world of accounting, and it means quite simply that any wetland acreage that is lost must be compensated for by gains elsewhere. Natural wetlands that get devoured by development should be replaced by new, man-made versions. But a goal is one thing—reality something else. The latest research confirms that creating new wetlands to mitigate the damage done to natural ones is not an easy task. And it only underscores the importance of the regional effort in New England to find solutions.

Currently, compensatory wetland mitigation takes place under various state and federal programs, one of the most significant of which is the permitting program required by Section 404 of the Clean Water Act. With a few exceptions, anyone seeking to fill a wetland over which the federal government has jurisdiction (i.e., most wetlands except isolated, intrastate wetlands) must obtain a federal permit, which is issued by the U.S. Army Corps of Engineers in cooperation with EPA.

The 404 permitting program is one of the key means by which the government attempts to achieve no net loss. The Corps requires permittees to follow a 3-step process: (1) Avoid filling wetlands unless it is unavoidable, (2) minimize impacts when they aren't avoidable, and (3) engage in compensatory mitigation if the Corps determines that the impacts require it. Compensatory mitigation can include wetland restoration, creation, enhancement, and sometimes preservation of other wetlands.

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CORPS STUDY SHOWS ROOM FOR IMPROVEMENT

The U.S. Army Corps of Engineers, New England District (Corps-NE) recently released the results of a study designed to determine the effectiveness of wetland creation and restoration conducted by Corps permittees. The Corps-NE visited 60 compensatory mitigation sites throughout New England to examine whether the sites comply with permit requirements and achieve the goal of replacing wetland functions lost due to permitted activities.

The study found that:

- Inadequate record-keeping and data management is a significant problem.
- 67 percent of projects met permit conditions.
- Only 17 percent of projects were adequate functional replacements for the impacted wetlands. Created wetlands were often of a different type than the wetlands that were lost; there was a net replacement of forested wetlands with open-water and emergent systems.
- Insufficient compensatory mitigation has been required to offset project impact on both an acreage and functional basis.
- When mitigation sites do not achieve their intended functions, causes include adjacent land uses, improper hydrology, inadequate maintenance and protective measures, use of cultivated (not wild) plant species, and invasive plant species.

In response to these findings, the Corps-NE made various recommendations, including:

- Data management must be improved; information must be complete, must be retained, and be made accessible. This information should include maps that identify mitigation site locations; thorough records on quality, type, and functions and values of impacted resources; the mitigation plan; and tracking of mitigation project information.
- Development and approval of compensatory mitigation should concentrate on identifying and replacing the functions proposed to be impacted.
- In order to better replace lost functions, increased quality and quantity of mitigation should be considered.

The "Success of Corps-Required Wetland Mitigation in New England" study report is available on the Corps-NE web site at *www.nae.usace.army.mil,* on the "Regulatory/Permitting" page.

PROFILE

A Conversation with NEIWPCC Wetlands Expert Matt Witten

by Stephen Hochbrunn

Matt Witten

Matt Witten spends a lot of time working in what most people call swamps, and that's just the way he likes it. Witten, 41, has a master's degree in natural resources from the University of Vermont (UVM), and he's been involved with wetlands protection since 1997, when he worked at EPA's Wetlands Division in Washington, D.C. Hired by NEIWPCC in 1999 as an environmental analyst, Witten organizes training workshops in wetland monitoring, consults with groups considering wetland assessment and monitoring, and—most often—works directly with school groups to monitor wetlands. He spoke with us from his office in Richmond, Vt.

IWR: It's been a busy year for you. What are you working on now?
Witten: There are two main wetland studies that I'm getting groups involved with in Vermont. One is a partnership with the UVM Watershed Alliance to reclassify wetlands considered to be "not significant" by the State of Vermont. I go out with school groups, usually high school kids, to wetlands that may have been overlooked and therefore aren't protected from development. I help the students mark the wetland's boundary using GPS technology, survey vegetation, assess the habitat, collect and analyze soil and macroinvertebrate samples—basically get all the data needed for the state to consider upgrading the wetland's status to "significant."

The other project I'm involved with in Vermont is characterizing and monitoring oxbow wetlands. These are the wetlands that lie alongside winding rivers, usually shaped like a crescent. Again, I've been working mostly with students, who are collecting data on the wetlands that I then pass on to the U.S. Fish and Wildlife Service and the Vermont Department of Environmental Conservation. They're using the information to create target criteria for the wetlands being created or restored in floodplains.

IWR: If you weren't doing this, would it just not be done at all?

High school students from Milton, Vt., rinse off a dip-net after collecting an invertebrate sample—with Matt Witten's assistance—from the oxbow wetland at the Lower Lamoille River Wildlife Management Area in Milton.

Witten: I think school groups do go out and muck about in wetlands, but they're not tied to a larger effort. By working with me and NEIWPCC, they have someone who can train them to use standard protocols so the data they collect are useful to government agencies.

IWR: You had a good job in Washington. Why leave it?
Witten: I was raised in southern Vermont and across the border in Upstate New York, and I wanted to get back. The Northeast states are considered to have the best infrastructure among the states for both volunteer monitoring and for wetlands preservation, and it seemed like a good place to try to put the two together. There already existed a really good network of volunteer river and lake monitors, but we're still getting there with volunteer wetland monitors. Wetlands are the black sheep of waterbodies.

IWR: Speaking of volunteers, do you ever get tired of working with them?
Witten: No, not at all. There are always surprises, as far as their talent and eagerness and sense of humor. There are other surprises, too. Just the other day, we saw a watersnake, and the next day, a pileated woodpecker. To be honest, I love my job. It gets people—including me—outside, and I think that's the most important thing.

LEGAL LINES

A Review of Significant Water-related Legal Developments

by Beth Card

Ruling in Wetlands Case Supports Federal Authority Over Waters

Whether Congress intended the Clean Water Act to provide the federal government with broad jurisdiction over surface waters has been debated in earnest since January 2001. That's when the U.S. Supreme Court, in the case of Solid Waste Agency of Northern Cook County (SWANCC) v. U.S. Army Corps of Engineers , withdrew the federal government's authority to regulate isolated, non-navigable systems that might be used by migratory birds. EPA subsequently released an Advanced Notice of Proposed Rulemaking on the issue of Clean Water Act Jurisdiction. NEIWPCC and many of our member states responded with comment letters stating a narrow interpretation of "waters of the United States" to mean only waters that are actually navigable would mean that many systems, such as isolated wetlands and streams that don't flow year-round, would be in jeopardy due to a lack of federal protection.

A ruling in June by the 4th U.S. Circuit Court of Appeals added a new dimension to the debate. The case began in the 1990s when James and Rebecca Deaton drained some wetlands on their Maryland property by digging a ditch that led into a roadside culvert. The water ultimately flowed into a river and on into Chesapeake Bay. The Army Corps of Engineers took note, and fined the Deatons for polluting a water of the U.S. without a permit. A district court overturned the action, but the 4th Circuit upheld the fine. After the U.S. Supreme Court's opinion in the SWANCC case, the Deatons filed a motion asking the circuit court to reconsider its ruling. The court did, but the Deatons went down to defeat. To the dismay of developers and the delight of conservationists, the 4th Circuit said the SWANCC ruling does not have an impact on federal authority over waters that have a hydrological connection to navigable waterways.

Are the Deatons done? Not necessarily. They're said to be reviewing their options and considering an appeal, possibly to the Supreme Court. In the meantime, the Bush Administration is considering a formal rulemaking to clarify the jurisdictional questions. Some fear that process might remove many systems from Clean Water Act protection.

Arsenic Rule Closer to Adoption After Legal Challenge Rejected

Another key ruling in June concerned the debate over arsenic in drinking water. The 1996 amendments to the Safe Drinking Water Act (SDWA) required EPA to promulgate a national primary drinking water regulation for arsenic by January 2001, and EPA complied by initiating a rulemaking proceeding. The existing regulation sets the maximum contaminant level (MCL) for arsenic at 50 parts per billion (ppb), but the published final regulation, known as the Arsenic Rule, sets the MCL at 10 ppb. It's scheduled to take effect in 2006.

The big drop in the MCL in the final regulation hasn't gone unnoticed. The State of Nebraska and the City of Alliance, Nebraska filed a petition for review with the D.C. Circuit Court of Appeals, challenging the SDWA and the Arsenic Rule. They say the regulations exceed the federal government's power under the Commerce Clause and violate the 10th Amendment. But the Petitioners didn't voice these objections to EPA during the public comment period of EPA's rulemaking process. That was their undoing. In June, the appeals court rejected the challenges on the grounds that the Petitioners failed to express their concerns to EPA before bringing them before the Court, the required course of action in suits involving federal agencies. The Court also said EPA may have addressed the concerns had they been raised at the appropriate time.

The ruling allows EPA to move forward with its new arsenic standard, but not without controversy. Critics from industry and some states argue that EPA has overstepped its bounds. But some environmentalists claim the 10 ppb limit isn't stringent enough as arsenic, even in tiny amounts, may increase a person's risk for developing lung and bladder cancer. As for the legal battle, it's not over yet. More challenges are likely, and the Nebraska petitioners are now considering the possibility that regulation of intrastate systems may be exempt from SDWA authority. They feel the door may have been left open for Commerce Clause challenges.

Victory for EPA as TMDL Ruling Stands

Also in June, the U.S. Supreme Court declined to review a ruling in another critical case involving EPA. In 1992, the Garcia River was placed on California's Clean Water Act, Section 303(d) list of impaired waters. This meant a Total Maximum Daily Load (TMDL) needed to be established, which would specify the amounts of pollutants the river could absorb without harm to its health. When the state failed to establish a TMDL by a 1998 deadline, EPA Region 9 took over the process. That's when Guido and Betty Pronsolino, who owned 800 acres of timberland in the Garcia River Watershed, applied for a harvesting permit from the state. The Pronsolinos learned that in order to comply with the existing TMDL for the watershed, they had to provide for mitigation of 90 percent of controllable run-off and accept limits on how many trees they could remove at certain times of the year.

That didn't sit well with the Pronsolinos. They claimed the mitigation requirement would cost them an estimated $750,000. In 1999, they teamed up with several farming organizations to file suit against EPA, challenging the agency's authority to impose TMDLs on rivers such as the Garcia that are polluted solely by nonpoint sources. A district court decided in favor of EPA in August 2000, and an appellate court upheld the ruling, stating, "… the Clean Water Act is best read to include in the Section 303(d)(1) Listing and TMDLs requirements waters impaired only by nonpoint sources of pollution."

When the plaintiffs appealed this decision to the Supreme Court, both EPA and a group of wastewater treatment facilities filed briefs urging the justices not to reconsider the appellate court's decision. In its June order, the Supreme Court let the decision stand, and in doing so, handed a major victory to EPA. As U.S. District Judge William Alsup said in his 2000 ruling on this matter, "The Clean Water Act called for a comprehensive set of water quality standards for every navigable river and water in America. No substandard river or water was immune by reason of its sources of pollution."

Beth Card (bcard@neiwpcc.org) is NEIWPCC's director of water quality programs.

Wetlands *continued from page 5*

In theory, it should be working. But it's not. Two years ago, the National Research Council published the findings from an evaluation of the effectiveness of compensatory mitigation under Section 404. The report found that, despite progress in the last 20 years, the goal of no net loss for wetland functions wasn't being met by the mitigation program.

It wasn't good news, but it set in motion a promising initiative. In response to the report, the New England District of the Corps (Corps-NE) assembled a mitigation task force made up of federal and state agency staff to look for ways to improve compensatory mitigation programs. In June 2002, NEIWPCC participated in a "Mitigation Summit," where the task force identified eight themes on which federal and state agencies can focus their attention, including maintaining the ecological integrity of wetlands and replacing lost functions. The Corps-NE also initiated a scientific study of wetland creation and restoration required by permits it has issued under Section 404.

Lieutenant Colonel Brian Green, deputy district engineer for the New England district of the U.S. Army Corps of Engineers, delivers opening remarks at the April 3 regional wetland mitigation meeting.

In April, the Corps-NE and NEIWPCC jointly sponsored a regional wetland mitigation meeting in Chelmsford, Mass., at which the Corps presented the findings of the study. The results, which are summarized in the article on page 5, were not exactly encouraging. About a third of the projects that were studied didn't meet permit conditions, and only 17 percent of the projects were adequate functional replacements for the impacted wetlands. Those numbers may have made some in the room wince, but it was important news for the attendees to hear. "The study reinforced some things we've noticed in Maine," said Mark Margerum, wetlands policy coordinator at Maine's Department of Environmental Protection. "It's given us food for thought as we apply our own wetland mitigation requirements."

NEIWPCC has assumed responsibility for organizing, facilitating, and supporting the work of the mitigation task force, which will be incorporated into NEIWPCC's Wetlands Workgroup. The workgroup will focus on mitigation at its Oct. 2 meeting, and the plan is to devote one workgroup meeting each year to the topic. NEIWPCC is also tracking national policy and science related to wetland mitigation and will update workgroup members on developments that could affect mitigation programs in New England.

The goal of all these efforts is to help the states move toward more effective compensatory wetland mitigation. The ultimate goal, of course, is no net loss, the goal spelled out years ago. It's a good thing New Englanders aren't afraid of a challenge.

Rebekah Lacey (rlacey@neiwpcc.org) is a NEIWPCC environmental analyst and coordinator of the Wetlands Workgroup.

TIME CAPSULE

Trainers Go Mobile in a Big Way

by Stephen Hochbrunn
Research by Andrea Urban

1972 is memorable for many reasons—President Nixon's historic visits to China and the USSR, the Dow Jones Industrial Average crossing the 1,000-point mark for the first time, Bobby Fischer beating Boris Spassky to become the first American to hold the world chess title. It was also the year when the effort to train wastewater treatment plant personnel in New England got a big boost from a large new addition.

In 1972, NEIWPCC's New England Regional Wastewater Institute (NERWI) in South Portland, Maine, rolled out its brand new, 25-foot long Mobile Training Facility (MTF). Bought with a generous grant from the EPA, the MTF cost $16,500, at a time when the average car cost around $4,500.

It was money well spent. The MTF, which was equipped with a laboratory, audio-visual materials, a technical library, and demonstration equipment, allowed NERWI to significantly expand its training operations. Two instructors drove the unit to wastewater facilities throughout New England to conduct courses and provide hands-on instruction. One of those instructors was Kirk Laflin, who worked for NEIWPCC for 26 years and is now executive director of the Partnership for Environmental Technology Education.

"We needed the unit because so many of the plants back then were small, remote, and minimally staffed," says Laflin. "Usually, the folks working at them had been chosen by their communities and had no training. They couldn't afford to be off the job for any length of time, so we had to bring the training to them."

The MTF was on the road often in an era when it was not uncommon to see waste washing ashore at beaches along the East Coast, particularly in areas near New York City. Laflin says people would often make the wrong assumption when they saw the unit. "We were cornered any number of times and grilled as to what we were going to do to clean everything up," he says. "We had to tell them we were only there to do training."

In 1977, NERWI replaced the original unit with a similarly large vehicle, but as newer, more sophisticated wastewater plants came online, the Institute recognized it no longer needed to carry so much equipment to conduct field training. By the early 80s, the large unit was gone, as the trainers began operating out of minivans.

The New England Regional Wastewater Institute's Mobile Training Facility, washed and ready to roll out to one of many training sessions conducted at wastewater treatment plants in the 1970s.

The NERWI is also history, having ended operations in 1998. NEIWPCC, however, continues to conduct field training through our Environmental Training Center and our management of Maine's Joint Environmental Training Coordinating Committee (JETCC).

While the big MTF may be gone, Laflin hasn't forgotten it or the many days he spent on board. "It was a fun time," he says. "The people we trained were like human sponges when it came to training, because they wanted to do the job right. It was very rewarding being out there to assist them."

Andrea Urban, a student at New York University, is a former intern at NEIWPCC's Lowell headquarters.

The following article appeared on the Op-Ed page of The Detroit News on June 19. It is reprinted with the permission of the publisher.

EVERYONE UNDERVALUES THE TRUE WORTH OF WATER

By G. Tracy Mehan, III / Special to The Detroit News

Adam Smith, the 18th century philosopher credited with laying the foundation of modern economics, wondered how it could be that water, so essential to life, is so cheap, while diamonds, used only for adornment, are very costly. The paradox provides a troubling description of the way water is treated in our economy. While water may be critical to life, we don't have a clue about its true value.

Instead of diamonds, compare the average American household's expenditures for water and wastewater with those for soft drinks. The American household spends an average of $707 per year on soft drinks (carbonated) and other (noncarbonated) refreshment beverages. The same household, on average, spends only $474 per year on water and wastewater charges.

We can turn on the faucets at any time of the day or night and expect clean water. Monthly water bills, for most of us, hardly approach the cost of cable TV. But underneath this rosy picture lies a monster.

In most cities and towns, the pipes used to distribute clean water and collect wastewater have passed their life expectancy. In fact, we can expect a large wave of financial obligation to replace these pipes in the coming decades. Dubbed the "Nessie Curve" by the Australians, it is named after the Loch Ness Monster because so much of it (like our pipes) lies beneath the surface.

The same demographics that create the large future liabilities for Social Security are creating a similar wave of liability for our water systems. Thousands of miles of pipe that were laid more than 100 years ago will need to be replaced during the next several decades. Treatment plants have a much shorter life, some 25 to 40 years, and a large chunk of those will also need to be replaced or overhauled to meet EPA standards. As the repair and replacement needs of pipes and treatment plants combine with sewer overflow and stormwater regulations, the high cost era dawns.

Today's diamond and water paradox is more pronounced than it was in Adam Smith's day. Not only is clean water more scarce, water prices today frequently don't even capture the actual financial cost of providing clean and safe water—let alone the human health and environmental values. Many water systems are publicly owned natural monopolies managed by local governments (and elected officials) that don't necessarily adhere to competitive pricing or cost-based pricing.

Even when water is metered and priced, other revenue sources are often mixed in with the water department so that rates do not reflect the full cost of providing service. Charging water and wastewater rates that reflect the full and complete costs of service—and perhaps adding an additional component to encourage conservation—would be a huge step in the right direction.

In 1987, Congress created the Clean Water State Revolving Fund, and later, in 1996, its sister program, the Drinking Water State Revolving Fund, to provide a water infrastructure funding resource in perpetuity. Because these are revolving loan funds, each dollar going into such a fund is recycled and results in much greater assistance than grants.

Even during these tight budget times, President George W. Bush has proposed to extend the federal capitalization of the Clean Water fund with an appropriation of $850 million a year during 2004-2011. The president also proposes to extend the federal commitment to the Drinking Water fund with annual grants of $850 million for 2004-2018. With these loan funds, states can choose where the money is needed most and are free to fund estuary protection and nonpoint source pollution control in addition to water treatment.

Money alone won't slay our monster. Today's water challenges demand a multi-faceted approach; so we at the EPA are calling for better management practices, conservation and the watershed approach.

Knowing the condition of your assets and linking that information to inventory, service levels, and useful life can lead to optimal repair and replacement decisions. Recently, working with Australian and U.S. consultants, the Orange County (Calif.) Sanitation District approved an investment of $22 million to $38 million over a six-year period, to implement an asset management plan, as part of a $2 billion investment strategy during the next 20 years. This front-end investment in manpower, planning and assistance, information systems, software, training and other process changes will translate into a reduction of $150 million in their capital improvements program and a total life cycle savings of at least $200 million.

In addition, we need to use water more efficiently. At this writing, nearly half of the continental United States has been experiencing drought conditions. Moreover, we're reaching the end of the era in which we could always expand water supply. With the supply curve pushed almost as far as it can go, we're going to have to become experts on the demand side: conservation, recycling, reuse and improved water-use efficiency.

Finally, we need to make water management decisions based on the hydrologically defined boundaries of a watershed. To advance this approach, we have released a policy that renews our efforts to pursue water-quality trading for nutrients, sediments and other pollutants within a watershed. States and tribes may now use trading to meet the requirements of the Clean Water Act. On Long Island Sound, publicly owned treatment works are expected to save over $200 million dollars through nitrogen trading. Gains from such trading improve our water quality at a lower cost. And the other policies and practices help us get a handle on this water and wastewater monster before it is too late.

G. Tracy Mehan III is assistant administrator of the Office of Water at the U.S. Environmental Protection Agency in Washington, D.C.

TECHNOLOGY FOCUS

SCADA and Wastewater Treatment

By Don Kennedy

Wastewater treatment plants are systems comprising a series of unit processes that, when taken together, should deliver an acceptable product—a good effluent. Before computers were used to control processes, a plant operator's mode of operation entailed making visual observations, accumulating and reviewing data from individual meters and analyzers, and performing laboratory checks on influent and effluent samples. Separate pieces of data were individually recorded, reviewed and then considered as a whole to gauge proper operation and process efficiency. If operators wished to view the reliability of their plant processes historically, the task of combing through such information was left to their own organizational skills.

While today's operators still perform these same process checks, computers now aid the organization and storage of data. And many wastewater treatment plants are going a step further and using systems that incorporate SCADA, which stands for "supervisory control and data acquisition." SCADA systems use software to track data in conjunction with graphical displays, and send limited control instructions to instrumentation and processes. The operator can view process trends and variability, and decide how much process control the system be allowed. This 'real time" information can be used by people with the proper security at remote locations.

SCADA systems are composed of four basic units:

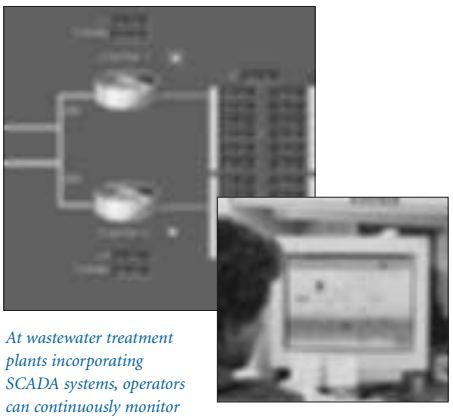
1. Field-mounted sensors and instrumentation that transmit input signals to the SCADA system. These devices also receive command output signals from the SCADA that affect process changes.
2. Remote Terminal Units (RTUs), which gather data from the field-mounted equipment and provide signal responses back to the equipment.
3. A communications interface, which is a telemetry link between the Main Terminal Unit and the RTUs. A variety of communication mediums are available including leased telephone lines, radio and FM transmission, and fiber-optic cable.
4. Supervisory control and monitoring equipment. This includes hardware systems such as graphic displays, annunciator panels and chart recorders; software systems including microprocessors, workstations and minicomputers; and hybrid systems that combine both of the above.

While in the past operators had to gather information independently and manipulate data manually, today SCADA performs these functions automatically. Operators can trend, graph and compare historical pieces of process information. They can make process changes manually or allow the software certain latitudes to do this automatically.

So, what are some of the wastewater treatment process applications compatible with SCADA? Consider these two examples:

Pump station monitoring and wet weather operations
Flow measurement is one of the primary process control variables utilized in wastewater treatment. Many of the changes made in operation—RAS and F/M ratios, and aeration and disinfection control—are dictated by process flows, laboratory analyses, and field observations. Another reason to observe and trend flows is to prevent sanitary sewer and combined sewer overflows. A major feature of SCADA is its ability to process information in "real time"; that is, the processing of information or data at a speed sufficient to influence the process rapidly. For example, a SCADA system can be used to "poll" or scan wet well levels and pumping rates through pump stations, and pumping flow rates can be automatically adjusted to match rainfall levels. SCADA software has the ability to monitor a number of these stations simultaneously and prevent individual pump station visits. Real time flow monitoring can successfully anticipate increases in wet weather flows and prevent sewage overflows to receiving streams.

Chlorination and dechlorination
For waste treatment plants that use chemicals for final effluent disinfection, SCADA can help minimize chemical addition and avoid costly overdosing. Chemical feeds can be increased or decreased by using plant flow as a variable. Chlorine residual analyzers can also be added to the SCADA system in a control loop for further fine-tuning of final effluent residual. Since it takes at least a day to get results from coliform tests, real time flow analysis coupled with chlorine residual analysis is useful to pace chemical feed rates. Proper addition of chemicals should not only result in good pathogenic bacteria kills, but also minimize excessive chlorine residual chemicals needed for dechlorination.



At wastewater treatment plants incorporating SCADA systems, operators can continuously monitor operations on a "real time" graphical display.

SCADA systems are also capable of generating operational, maintenance and regulatory reports. O&M reports, spare parts inventories, and labor and equipment charges can all be handled by the SCADA system. Emergency response procedures can also be programmed into SCADA to provide detailed written instructions on what to do in the event of different emergency scenarios.

Although SCADA systems allow for less intervention on the part of operators, operators are still needed to maintain and control SCADA. And, because of its versatility and variability, operators need to decide which functions of SCADA are applicable to their processes, and determine the degree of control to be used with their SCADA system.

Don Kennedy (dkennedy@neiwpcc.org) is NEIWPCC's training coordinator. NEIWPCC will be offering two courses on SCADA in the fall. For more on our fall lineup of classes, see page 10.

TREATMENT TRAINING

Buffalo Conference Spotlights Innovations, Education

Given the sheer complexity of wastewater treatment plants and the continual advances in treatment science, technology, and management practices, the job of operating a plant—and recruiting and training those who do—is not an easy one. It's imperative to keep up on the latest developments, and this year, more than 120 people took the opportunity to do just that at the 20th Annual National Operator Trainers' Conference, held from June 8-11 in Buffalo, N.Y.

The conference brings together the federal, regional, and state personnel responsible for providing wastewater treatment plant operator training and technical assistance to small communities across the country. This year, NEIWPCC co-sponsored the conference with the New York State Department of Environmental Conservation (NYS DEC) and U.S. EPA. It began on Sunday with a half-day pre-conference workshop covering the latest concepts in microorganism identification and control. Dr. Michael Richard, Sear Brown Group, led the session; Richard is internationally known for his experience in diagnosing and correcting wastewater treatment microbiology problems.

At the National Operators Trainers' Conference awards dinner, NEIWPCC's Chuck Conway (left) and Tom Groves each received a Spark Plug Award, which goes to a person or group that is at the forefront of the Operator Training Program and has made positive things happen to ensure the program's continuation.

The rest of the conference featured a blend of the latest technical and non-technical training topics. A session devoted to educating the public—and particularly young people—about careers in wastewater treatment included presentations by Tom Groves, NEIWPCC's director of wastewater and on-site programs, and Chuck Conway, our manager of training operations. In an all-day workshop on Tuesday, experts from around the country presented the latest information in advanced activated sludge control and troubleshooting. This workshop was a demonstration of the training module being developed for NYS DEC through an EPA grant to NEIWPCC.

As this was the 20th consecutive year for the conference, a sense of achievement was in the atmosphere, an acknowledgement of the progress made over two decades of providing assistance to small communities. Feedback was very positive, with many participants praising the speakers, technical sessions, and overall content. Next year's conference will take place in June in Reno, Nevada.

YOUTH MOVEMENT

Students Learn By Doing in Summer Program

by John Murphy

When asked in early July about the students in this year's Youth and the Environment Program at the Lowell Wastewater Treatment Plant, Alana Van der Mude responded enthusiastically. "They're really great," said Van der Mude, who coordinated the students' daily activities. "They're curious and engaged and have already been asking in-depth questions about requirements for discharges from restaurants downtown." Not typical questions for a teenager, but an indication of the caliber of this year's group.

For the thirteenth consecutive summer, NEIWPCC and the Lowell facility collaborated in conducting the program, which is part of a national effort started in 1990 by EPA. The program stresses hands-on work experience and academic training to introduce high school students to professional opportunities in the environmental field. A particular emphasis is placed on careers in the wastewater industry, which is experiencing a shortage of young people entering its workforce.

Van der Mude, a NEIWPCC intern and a student at Tufts University in Medford, Mass., worked with the Lowell Center for Learning to select the five students in this year's program. On July 7, the students went to work, literally. For the next six weeks, they spent four days a week at the Lowell plant, undergoing training in just about everything done at the facility. They worked on maintenance, plant operations, industrial inspections, engineering, and lab analysis. Each day, Van der Mude also led them in a discussion of an environmental topic such as groundwater, nonpoint source pollution, and combined sewer overflows.

NEIWPCC's Tom Groves and Chuck Conway oversee the program, and often accompanied the group during the field trips taken each Friday. This year's trips included a visit to the New England Aquarium to learn about biodiversity and how to help maintain it; a tour of one of the most sophisticated treatment plants in the country, Deer Island in Boston Harbor; and a visit to the Squam Lake Aqua Lab in Holderness, New Hampshire where the students studied the ecology of the lake during a boat tour.

Top: The 2003 Lowell Youth in the Environment group at the New England Aquarium in July. Left to right: Bryan Batista; Frank Minaya (front); Jeser Lopez (rear); Danny Dionne; Alana Van der Mude, NEIWPCC; Stephanie Martir. Right: Program member Bryan Batista gets a lesson in marine life identification from Erin Zook, a seasonal naturalist at the Seacoast Science Center in Rye, N.H..

On August 15, the group joined students from other Youth in the Environment programs in the Northeast at a graduation ceremony held in Roger Williams Park Zoo in Providence, R.I.—a fine and fitting way to end a productive summer for five bright and talented teens.

John Murphy (jmurphy@neiwpcc.org) is a student at UMass Lowell and a NEIWPCC intern. For more information on the Youth and the Environment program, contact Tom Groves at 978/323-7929 or tgroves@neiwpcc.org.

NEW TOOL FOR INDUSTRY IN NEED

by Tom Groves

The wastewater industry has suffered in recent years from a lack of qualified people entering the field, and part of the problem is the negative stereotype of what it's like to work in a treatment plant. In an effort to fight that impression and recruit fresh talent to the industry, NEIWPCC funded and assisted in the creation of an exciting new brochure that folds out into a poster and encourages readers to "Be a Water Quality Professional."

Development was truly a collaborative effort, involving input from NEIWPCC, the New England Water Environment Association, and the wastewater associations of the New England states and New York State. Enosis: The Environmental Outreach Group wrote and designed the piece, which convincingly conveys the many rewards of working in this increasingly technology-driven industry and the wide range of skills that plants are looking for in applicants. The poster can be displayed on job placement or career opportunity boards, and NEIWPCC plans to distribute it to a variety of places, including technical high schools and centers for those seeking a mid-life career change. To request a free copy, contact NEIWPCC's Lowell offices at 978/323-7929.

DEVELOPING STORY

States Mull Options as Deadline Looms for Numeric Nutrient Criteria

by Stephen Hochbrunn

To understand what EPA wants states to do with regard to nutrients, consider this statement from New Hampshire's regulations: "(Lakes and ponds) shall contain no phosphorus in such concentrations that would impair any usage assigned to the specific class involved, unless naturally occurring." Many states have similar narrative standards for nutrients, and while useful, they're too vague from EPA's perspective. The Agency wants states to develop, by the end of next year, far more specific numeric standards for distinguishing natural nutrient enrichment in a waterbody from the damaging over-enrichment caused by pollution.

The imminence of the deadline has increased pressure on states to adopt the best possible strategy for responding to EPA's request. EPA has released criteria that states can use as a starting point, and a variety of approaches are now being proposed and pursued around the country. Numerous state water quality managers have expressed interest in learning what other states are doing, and, to that end, NEIWPCC recently assisted the North American Lake Management Society in conducting a survey that queried states about their approach to the nutrient criteria issue. In April, NEIWPCC's director of water quality programs, Beth Card, summarized the responses of the Northeast states in a presentation at the "Enhancing the States' Lake Management Programs" annual conference in Chicago.

"What we found," Card said, "was that most Northeastern states are rejecting the EPA's 304(a) criteria for our ecoregions because they were based on arbitrarily chosen points on the statistical distribution of each variable, with no direct relationship to the water quality conditions necessary to support the designated uses. As an alternative, the states intend, in many instances, to use expert judgment to develop their own effects-based criteria for the protection of designated uses, such as recreation, aesthetics, aquatic life, and water supply."

Card emphasized that criteria development raises complicated questions about how already financially strapped states will comply with and enforce new nutrient standards. There are also obvious implications for the states' Total Maximum Daily Load (TMDL) projects. And the issue doesn't only involve state water quality staff; other stakeholders, such as municipalities, the academic community, industrial dischargers, watershed groups, and the general public are interested in influencing the way nutrient criteria are developed.

Fortunately, there is a vehicle for working on these issues. EPA has established Regional Technical Assistance Groups (RTAGs), in which a region's EPA and state representatives work together on criteria development. Since 1998, NEIWPCC has coordinated meetings and organized workshops for New England's Lakes, Rivers, and Estuaries RTAGs. Using a grant from EPA, NEIWPCC also funds and manages the work of a contractor, ENSR International, which is collecting, classifying, and evaluating data on nutrients in the region's water bodies. Several of ENSR's reports, including a brand new one that compiles all the nutrient data that states and the U.S. Geological Survey have developed over the past 10 years, are available for download at *www.neiwpcc.org.*

For more information, contact Beth Card at bcard@neiwpcc.org.

IN THE SPOTLIGHT

MANAGEMENT ISSUE

First International Conference on Managing Stormwater in Cold Climates Set for November

Stormwater experts from as far away as Sweden and Norway will be heading to Portland, Maine this fall to share their expertise at the "Stormwater Management in Cold Climates: Planning, Design, and Implementation" conference. Set to take place over three days from November 3 to 5, the conference is the first of its kind to be held in North America.

NEIWPCC, through its Maine JETCC program, is one of several organizations helping to coordinate the conference, which is being presented by the Casco Bay Estuary Project, Cumberland County Soil and Water Conservation District, and the Maine Coastal Program/Maine State Planning Office. The conference will bring together engineers, planners, stormwater managers, natural resource professionals, contractors, developers, and municipal, state, and federal government personnel to share approaches and experiences with the effective management of stormwater in cold regions. An impressive list of presenters will cover everything from the design of stormwater infiltration systems for cold climates to snowmelt research and management. Special attention will be given to financing of stormwater management in light of the NPDES Phase II stormwater regulations and the challenges that communities face in implementing them.

Exhibitors and vendors offering stormwater-related products and services will be featured in an exhibit area, and there is still space available. If you're interested in exhibiting or attending, please contact NEIWPCC's Leeann Hanson at the Maine Joint Environmental Training Coordinating Committee at 207/253-8020 or jetcc@maine.rr.com. For general information on the conference, including how to become a sponsor, exhibitor or participant, please visit *www.cascobay.usm.maine.edu/coldsw.html.*

NEIWPCC's **Victoria Pretti** presented a paper at the National Environmental Monitoring Conference, held July 21-24 in Arlington, Va. The paper, which Pretti wrote with the assistance of several others including NEIWPCC's **Jason Fagel**, reported the results of a New York State Department of Environmental Conservation (NYS DEC) study of organochlorine pesticides in the southernmost part of the Hudson River Basin. The study found that concentrations of four organochlorine compounds exceeded applicable state water quality standards. Pretti and Fagel work out of NYS DEC's central office in Albany, N.Y. In April, they delivered a presentation at EPA's National Conference on Managing Environmental Quality Systems in New Orleans, La.

Tom Groves, NEIWPCC's director of wastewater and on-site programs, will present a paper at the Water Environment Federation's Technical Exhibition and Conference in Los Angeles on October 15. Groves's paper focuses on the training and assistance in security and emergency preparedness provided by NEIWPCC to wastewater treatment plants in the wake of the September 11 attacks.

The Connecticut River Watershed Council singled out **Astrid Hanzalek**, one of our Commissioners from Connecticut, for special recognition. The Council presented Hanzalek with one of its Connecticut River Watershed Conservation Awards, citing her tireless efforts to promote increased protection of the Connecticut River and her contributions to the Council as a trustee, chair, volunteer, and member.

On Earth Day, U.S. EPA's New England Office recognized 40 individuals and organizations from across New England with Environmental Merit Awards, including two with close ties to NEIWPCC. The awards honor those who have shown particular ingenuity and commitment in their efforts to preserve the region's environment. **Eric Smeltzer**, a member of our Nutrient Criteria Regional Technical Assistance Group (RTAG) workgroup, received an Individual Award. Smeltzer is a state limnologist at the Vermont Agency of Natural Resources and the primary author of the Lake Champlain Phosphorus TMDL (Total Maximum Daily Load) report, which determines the cutbacks in phosphorus pollution that are necessary for Lake Champlain to meet water quality standards by 2016. **David Courtemanch**, a member of our RTAG, TMDL, and Monitoring workgroups, was one of three people at Maine's Department of Environmental Protection to receive a Lifetime Achievement Award. Courtemanch and his colleagues, Susan Davies and Leon Tsomides, were honored for developing a biological monitoring program that assesses the health of rivers and streams by evaluating the composition of resident biological communities, rather than directly measuring the chemical or physical qualities of the water. As EPA put it in their announcement of the awards, "The Maine biomonitoring program serves as a shining example to other state environmental programs."

Attendees at the 2003 Regional 104(g) Conference in Stowe, Vt., pose with retiring Roy Fredrickson, CT DEP (front row, far right).

Roy Fredrickson, a longtime member of NEIWPCC's Operation and Maintenance Workgroup and a frequent instructor in our wastewater treatment courses, retired in June from the Connecticut Department of Environmental Protection, where he worked for 34 years. Since leaving state government, Fredrickson has remained active in the profession. He's now working as a process control manager at a wastewater treatment plant in Bridgeport, Conn.

FALL PREVIEW

NEIWPCC and JETCC Plan Full Slate of Classes

Amid the heat of August, it's hard to imagine there will soon be a chill in the air and lifeless leaves piling up on lawns. But fall is not far off, and that means a new lineup of courses from NEIWPCC's Environmental Training Center and Maine's Joint Environmental Training Coordinating Committee (JETCC), which NEIWPCC has managed since 1985.

The Environmental Training Center is offering several new courses, including Rapid Sand Filtration and Chemical Addition, which will be held in Newburg, N.Y., and an Advanced Activated Sludge Troubleshooting Workshop, to be conducted at the IBM plant in Fishkill, N.Y. These two workshops are part of training modules that were developed for the New York State Department of Environmental Conservation (NYS DEC) under a grant to NEIWPCC; they will cover the latest developments in the fields and feature state-of-the-art teaching tools and materials. Also new this fall are two Confined Space Entry refresher courses. These are for students who have already taken the basic Confined Space Entry class and are looking to brush up on their skills. NEIWPCC also plans to offer onsite/decentralized wastewater system training programs through the Center for the very first time.

Elsewhere on the schedule, the Center will be teaming up with NYS DEC to offer a series of courses in New York, including Biological Nutrient Removal and Collection Systems Operation and Maintenance. As has become customary in the fall session, a 4-day Basic Wastewater Treatment course will be conducted in New Hampshire. It's a structured overview of the field that helps students prepare for the State WWTP Operator Certification exam, but anyone seeking basic interactive training in plant operations would benefit from the course, which includes a tour of a treatment plant. NEIWPCC plans to conduct two workshops on the new version of "Clarifier"–our software tool for POTWs. These workshops will be held in Massachusetts at the Millbury Training Center Computer Lab, and enrollment is open to interested parties both inside and outside Massachusetts. The Center is also joining with JETCC to offer several classes in Maine including Basic Microbiology and Filamentous Bacteria.

As for JETCC itself, the fall schedule includes classes in Phosphorus Issues and Removal, Use of Advanced Excel Software for Water and Wastewater Operators, SCADA System Management and Maintenance, and Chlorination Disinfection Science: Comparing Gas Liquid and Powder Chlorination Processes (this class will also reveal the 10 Best Kept Water and Wastewater Process Management Secrets).

JETCC will also be coordinating three of its ever-popular Tank Truck Rollover courses, where oil and hazardous management specialists from Maine's Department of Environmental Protection explain how to respond when trucks carrying large amounts of fuel or hazardous chemicals roll over in an accident. These classes typically attract hundreds of firemen, truck drivers, and emergency responders.

More information on all our fall courses, including dates, times, locations, and registration forms, will be included in the NEIWPCC Environmental Training Center and JETCC fall training catalogs. Both will be available for download from the Training section of NEIWPCC's Web site *(www.neiwpcc.org)*, or you can request a copy by contacting NEIWPCC at 978/323-7929, JETCC at 207/253-8020, or by sending an email to *training@neiwpcc.org.* If you're interested in having us design and provide a course tailored to your specific environmental training needs, contact Don Kennedy or Chuck Conway at NEIWPCC or Leeann Hanson at JETCC.

100 YEARS OF CHANGE

Study Shows Mixed Effect of 20th Century on Major New England Rivers

Scientists at the U.S. Geological Survey recently examined water quality data collected during the 20th century from three of New England's best-known rivers—the Connecticut, the Merrimack, and the Blackstone. The scientists were looking for statistically significant trends in five different indicators of quality, and they certainly found ample evidence of change.

In a report released in late July, the USGS revealed that, in all three rivers, concentrations of chloride, total dissolved solids, and nitrate increased throughout the century. "Most striking of the trends we observed is the relation between increased use of salts to de-ice roads during the winter and the concentration of chloride in the rivers," said Keith Robinson, the study's lead scientist. Robinson, who is currently working with NEIWPCC on several projects including the effort to develop a New England Regional SPARROW model, said, "In the Merrimack River, the mean-annual concentration of chloride increased 760 percent during the century. In the Blackstone and Connecticut Rivers, the increase was more modest but still significant at 186 percent and 344 percent respectively." If present at high levels in a river, chloride can harm wildlife and have a negative impact on farms that rely on the river's water for irrigation.

On a brighter note, the study showed the positive impact of modern wastewater treatment and environmental protection laws. In the second half of the century, concentrations of phosphorus decreased in all three rivers, thanks in part to the banning of phosphates in detergent and soaps. And sulfate concentrations dropped in the Connecticut and Merrimack Rivers, due largely to the reduction of sulfur emissions to the air.

The report, titled "Water-Quality Trends in New England Rivers During the 20th Century," USGS Water-Resources Investigations Report 03-4012, is available online at: *http://water.usgs.gov/pubs/wri/wrir03-4012/*.

HELP FROM ABOVE

Northeast States Consider Artificially Recharging Groundwater Supplies

by Kara Sergeant

Unlike the states of the West and Southwest, the New England states and New York historically haven't had to worry about having enough water to meet demand. But last year's drought threatened water supply levels in many areas of the Northeast, and even this year's wet spring didn't erase growing concerns in NEIWPCC's member states about water quantity. Land development continues to increase in the region, meaning less permeable ground available for natural recharge of groundwater supplies.

The possibility of aquifers running dry has states in the Northeast considering increasing their efforts to enhance groundwater supplies through artificial groundwater recharge. Various techniques are used to boost the natural replenishment or percolation of surface waters into groundwater aquifers, resulting in more groundwater available for abstraction. Common sources of recharge water are treated wastewater, storm runoff, and surface water bodies. States such as California and Arizona already have large-scale recharge projects underway, but the Northeast isn't at that stage yet—for a simple reason.

"They're far ahead on artificial recharge in the West because they've overdrawn their aquifers so dramatically that their backs are against the wall," says Eileen Pannetier, president of Comprehensive Environmental Inc., a consulting firm based in Milford, Mass., and Merrimack, N.H. "In New England, we're more aware of groundwater and we have more of it. But people here are starting to realize that development creates an alarming reduction in recharge and that has to be reversed if we're going to protect water supplies and stream flow."

Pannetier spoke about her experiences with artificial recharge projects at the latest quarterly meeting of NEIWPCC's Groundwater Managers Workgroup. She says part of the difficulty in launching such projects is there's no real funding mechanism in place. Still, small-scale recharge projects, such as directing stormwater to spreading basins, wetlands, and infiltration basins, are becoming more common in the region. NEIWPCC has taken the initiative to educate the states by writing a white paper on the subject, which outlined and analyzed the methods of artificial groundwater recharge, examined current regulations, and reviewed New York's groundwater recharge history.

Eileen Pannetier, president of Comprehensive Environmental, spoke about artificial recharge during a workgroup meeting at NEIWPCC's Lowell headquarters. "People in the Northeast are starting to recognize that development breaks the hydrologic cycle, and it has to be fixed," she said.

The Northeast states are also taking a proactive approach by exploring the potential benefits of large-scale efforts underway elsewhere. For example, many states outside the region are finding success with one of the more popular techniques, Aquifer Storage and Recovery. ASR is the storage of water in a well during times when water is available, and recovery of the water from the same well during times when it is needed. According to a 2001 American Water Works Association survey, more than 50 ASR facilities exist in the U.S., but there are none in the Northeast.

Artificial recharge may be in its infancy in this region, but, in many people's minds, it's a concept that must be explored further. As Pannetier puts it, "Techniques that improve and protect recharge must go hand in hand with quality protection."

Kara Sergeant (ksergeant@neiwpcc.org) coordinates our Groundwater Managers Workgroup.

KNOW YOUR ACRONYMS!

In the environmental field (and just about any field these days), acronyms are everywhere. Why waste time and space using the full name of something when you can reduce it to a string of capital letters? The trouble is, there are now so many that it's hard—if not impossible—to know them all. We hope this quarterly quiz will help. See if you know what the abbreviations in the following list stand for. *Answers on page 12.*

ANPRM

GMS

HREP

NBP

SOS

IWR Interstate Water Report

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CALENDAR OF EVENTS

AUGUST

Aug.10-12
Environmental Council of the States (ECOS) Annual Meeting
Salt Lake City, Utah

Aug. 13
NEIWPCC Onsite Wastewater Task Force Meeting
Lowell, Mass.

Aug. 14
NEIWPCC Residuals Workgroup Meeting
Northwood, N.H.

Aug. 16-19
National Governors Association (NGA) Annual Meeting
Indianapolis, Ind.

Aug. 21
NEIWPCC Drinking Water Administrators Workgroup Meeting
Lowell, Mass.

Aug. 24-26
Association of State and Interstate Water Pollution Control Administrators (ASIWPCA) Annual Meeting
Whitefish, Mont.

SEPTEMBER

Sept. 9
NEIWPCC Groundwater Managers Meeting
Lowell, Mass.

Sept. 11-12
NEIWPCC Executive Committee and Commission Meeting
Kennebunkport, Maine

Sept. 13-17
Ground Water Protection Council Annual Forum
Niagara Falls, N.Y.

Sept. 18
EPA Region 1 Quality Assurance Roundtable
NH DES, Concord, N.H.

Sept. 25
JETCC Board Meeting
Brunswick, Maine

OCTOBER

Oct. 2
NEIWPCC Wetlands Mitigation Meeting
Location TBA

Oct. 6-9
Association of State Drinking Water Administrators (ASDWA) Annual Conference
Boston, Mass.

Oct. 8
NEIWPCC Stormwater Workgroup Meeting
Lowell, Mass.

Oct. 11-15
2003 Water Environment Federation Technical Exhibition and Conference (WEFTEC)
Los Angeles, Calif.

Oct. 20-23
Association of State Wetland Managers Annual Meeting
Nashua, N.H.

Oct. 22-24
Association of State and Territorial Solid Waste Management Officials (ASTSWMO) Annual Meeting
Washington, D.C.

Oct. 27-29
National Brownfields Conference
Portland, Ore.

To check for additions or changes to this listing, see the Calendar of Events at NEIWPCC's Web site (www.neiwpcc.org). And remember to check in September for major improvements to the site. Tell us what you think by emailing us at mail@neiwpcc.org.

CONTRIBUTIONS TO *IWR* ARE WELCOME AND APPRECIATED
Please submit articles or story ideas to:
Stephen Hochbrunn, *IWR* Editor
Email: shochbrunn@neiwpcc.org ◆ Phone: 978/323-7929, ext. 235

KNOW YOUR ACRONYMS *ANSWERS*

ANPRM – Advance Notice of Proposed Rulemaking. Government agencies issue ANPRMs to tell the public that they are considering an area for rulemaking and to request written comments on the appropriate scope of the rulemaking or on specific topics. An ANPRM doesn't include the proposed regulatory text. That comes later, in the Notice of Proposed Rulemaking (NPRM).

GMS – Groundwater Modeling System. Developed at Brigham Young University under the direction of the U.S. Army Corps of Engineers, GMS is an advanced software package that provides tools for developing models that illustrate such things as groundwater supply and the underground movement of contaminants.

HREP – Hudson River Estuary Program. New York State's Department of Environmental Conservation runs this program, which coordinates the state's efforts to protect and restore the Hudson's estuary—the famous river's most familiar part, running from Albany to New York City. NEIWPCC supports the program by providing funding and staff.

NBP – National Biosolids Partnership. The NBP is a not-for-profit alliance of the Association of Metropolitan Sewerage Agencies, Water Environment Federation, and U.S. EPA. It works to advance sound and sustainable biosolids programs designed to gain public confidence within local communities.

SOS – A bit of a trick question, admittedly. This abbreviation, widely known as the international distress call, is also used by some environmental organizations as a catchy way to refer to themselves or a project. There are Save Our Streams and Save Our Species programs, and even a Save Our Springs alliance in Texas. By the way, it's generally accepted that SOS didn't come into use as a distress call because it stood for "Save our ship" or "Save our souls" or anything else. Rather, it became the standard in the early 20th century because its translation in Morse code—three dots, three dashes, three dots—was easy to send and receive.

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New England Interstate Water Pollution Control Commission
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