Interstate Waters

Taking Out the Trash

Also:

Training Wastewater Leaders EPA's Pete Lopez



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Established by an act of Congress in 1947, the New England Interstate Water Pollution Control Commission is a not-forprofit interstate agency that meets the water-related needs of our member states: Connecticut, Maine, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont. The NEIWPCC Commissioners from each member state are appointed by their state governors.

Interstate Waters

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From the Executive Director

Warning and Hope

THE NATIONAL CLIMATE CHANGE REPORT, Released by the EPA last November, has some disquieting news about climate change in the Northeast, and one hopeful note.

• Changing seasons threaten rural ecosystems and industries that are consequently "at risk from further changes to forests, wildlife, snowpack, and stream-flow."



• "Warmer ocean temperatures, sea-level rise, and

ocean acidification" threaten our coastal "commerce, tourism, and recreation."

• Cities in the Northeast are already experiencing "major negative impacts on critical infrastructure, urban economies, and nationally significant historic sites." These effects "will become more common with a changing climate."

• Climate-change-induced "extreme weather, warmer temperatures, degradation of air and water quality, and sea-level rise" threaten the health of people in the region.

Finally,

• Communities in the Northeast are adapting to these changes with "actions to reduce risks posed by climate change." These include new building codes and planning for extreme weather.

Those of us working in the water industry see the patterns. Ocean warming and acidification, extreme weather events (increased flooding followed by severe drought) and increased inundation during high tides are facts of life here.

The new year brought in a new U.S. Congress that is starting to embrace the challenge of climate change. Success would entail broad, bipartisan support for solutions that deal with long-term problems. The Northeast is a leader in addressing these challenges through such efforts as the Regional Greenhouse Gas Initiative (RGGI), a cooperative effort among nine Northeast and mid-Atlantic states.

Writing for the Environmental Law Review Syndicate a year ago, James Flynn cataloged RGGI's accomplishments. Flynn cited estimates that the initiative had reduced carbon emissions by 24 percent, "generated approximately \$2.9 million in net economic benefits," and reduced energy costs for consumers.

The weak point? Transportation, which "accounts for 44 percent total carbon dioxide emissions in the region." He notes, "Emissions from the transportation sector in RGGI states have remained relatively level or have increased."

We can acknowledge that changes to our coastal and ocean habitats and our Northeast seasons have a significant impact on our urban areas, communities, and health. We can choose to safeguard our homes and businesses through measures like RGGI that also contribute to the nation's growth and competitiveness.

We can act.

Sincerely, ujan

Susan Sullivan NEIWPCC Executive Director

The Docket

Pending: Invasive Species

A law stripping states of their power to regulate ballast-water discharges, **PL 115-282**, was signed by President Trump on December 4. NEIWPCC had urged legislators to reject an earlier version of the law, which failed to pass the Senate last spring.

Ballast water can transport invasive species that, if released into waters naturally foreign to them, can spread, sometimes with serious consequences for the receiving ecosystem.

Under the law, the EPA and the Coast Guard will develop national standards for ballast discharge. The law requires boat operators to flush their ballast water with salt water at least fifty nautical miles from shore, or two hundred nautical miles in the case of voyages originating outside of the U.S.-Canada Economic Zone. A provision new to this version gives to governors of Great Lakes states a path to petition the EPA for more-stringent discharge standards for the lakes.

Pending: Clean Water Rule

A proposal to curtail the government's authority to protect wetlands had started a sixty-day clock for public comment as this issue of *Interstate Waters* was going to press. However, the Commission has asked that the comment period be extended for this complex proposal, **Docket No. EPA-HQ-OW-2018-0149.** At press time, the comment period was set to end on April 15.

The new rules proposed on December II by the EPA and U.S. Army Corps of Engineers are the latest attempt to resolve questions about the scope of the agencies' authority to protect the "waters of the United States" under the Clean Water Act. The new rule would exclude from federal jurisdiction water resources that lack a surface water connection to regulated waters. Groundwater, seasonal waterbodies, water-control features, artificially irrigated areas, and wetlands converted to croplands before 1986, could lose federal protection.

Correction

Due to a production error, the first paragraph of James Ammerman's September, 2018, story about phosphorus in estuaries was not written by the author. The error is corrected in the online edition.



The comment period was delayed by the partial shutdown of the federal government, and the proposal likely faces challenges in court.

If the future of the proposed rule is unclear, the status of the current scope of jurisdiction is downright muddled. The proposal would replace a 2015 rule that, owing to multiple lawsuits and court decisions, did not take effect until last summer, and then only in about half of the states. The 2015 rule is currently in effect in twenty-three states (including all of the Northeast). In the remaining twenty-seven, the EPA follows an ad-hoc, case-by-case process to determine jurisdiction. The ad-hoc system dates from the George W. Bush Administration.

Both of the current systems recognize that wetlands and noncontiguous water bodies may be protected if they share a 'significant nexus" with jurisdictional waters. The "nexus" standard was articulated in a divided Supreme Court decision in 2006. Further litigation, which could redefine the applicability of the 2015 rule, is pending, and the composition of the court has changed since 2006.

The convoluted legal history of this issue was the subject of a report in the March, 2018, issue of *Interstate Waters*.

The Commission has requested a longer comment period to allow an informed response to the lengthy proposal. The comment period on the current (2015) rule was extended twice in 2014 and comments were ultimately open for more than half a year. The docket also included peer review by the EPA's Science Advisory Board of the rule's primary supporting document.

The Commission has also provided com-

ments in some of the many related proceedings. NEIWPCC's initial comments in the summer of 2017, in response to an undocketed request from the EPA, focused on the need to consult states and the importance of basing rules on the best available science. The proposed rule eschews science for a purely legal argument.

When the EPA and Corps proposed to repeal the 2015 rule in **Docket No. EPA-HQ-OW-2017-0203**, NEIWPCC recommended in comments that the EPA should look to its own 2014 literature review on hydraulic connectivity as the basis for determining jurisdiction.

Last fall, the Trump Administration said it planned to repeal the current rule and replace it in two steps in 2019. Meanwhile, pages on the EPA's website relating to the 2015 Clean Water Rule that had been deleted in the first half of 2018 have been restored.

New: Discharged Material

In January, in response to an invitation from the EPA, the Commission submitted pre-proposal comments about a plan to encourage more states to assume greater authority to regulate the discharge of dredged and fill material into waters and wetlands. NEIWPCC expressed openness to the idea, but also concerns about lack of funding and the additional burden that multiple state standards and procedures would place on permittees who work with several states. The idea has not reached the proposal stage and has no docket number as this issue of *Interstate Waters* goes to press.

Resolved: Aluminum

Criteria for freshwater aluminum are final as of December 21. Aluminum poses a threat to aquatic life. The Commission staff, in comments in **Docket No. EPA-HQ-OW-2017-0260**, had provided several pages of technical criticism, including information about concentrations of aluminum found in water bodies in the region. NEIWPCC's comments also expressed concern about the possible inclusion of marine waters in the criteria as then written.

The final criteria are only for fresh water. In addition, in response to comments from others, the EPA expressed its criteria as ranges of acceptable dissolved aluminum depending on ambient pH, hardness, and dissolved organic carbon. The new criteria supersede those promulgated in 1988.

Stormwater, Wetlands, Contaminants

TORMWATER AND A RAPID response to perfluorinated compounds in groundwater have been front and center for many NEIWPCC states this year. States are at the forefront of water-quality issues as the federal government continues to wrestle with its role and ability to act.

Connecticut

Connecticut's first state water plan still awaits legislative approval after being implemented last summer by executive order. The plan aims to protect water quantity and quality for all of its current and future instream and out-of-stream uses, in anticipation of changing regulations, climate, and economic conditions.

The water blueprint was developed by the Connecticut Water Planning Council following a legislative mandate. NEIWPCC supported this work by hiring and supervising project engineers, who

drafted the plan and held a series of public and stakeholder meetings to develop the final version last year.

The state legislature did not ratify the plan before its final adjournment in 2018, but the plan has been refiled for the new legislative session.

Maine

In Maine, planning is underway for the 2019 biannual North Country Convention in Presque Isle on April 24 and 25. This event from NEIWPCC's Joint Environmental Training Coordinating Committee (JETCC) brings environmental training opportunities to Northern Maine. Classes offered during the two-day event can fulfill education requirements for wastewater-operator certification and recertification.

This year is the first that the North Country Convention will be held on the campus of the Northern Maine Community College, where environmental training



Maine will hold its fifteenth North Country Convention in Presque Isle April 24–25. Above, a scene from the 2017 convention.

is undergoing a renaissance. Starting in the fall of 2018, the school began offering associate degree and certificate programs in water and wastewater-treatment technologies (WTT), in conjunction with a new WTT laboratory. The associate degree program is the only such in all of Maine.

Paul Mercer, then the commissioner of the Maine Department of Environmental Protection and a NEIWPCC commissioner, cut the ribbon for the new program and lab at an event at the college on October II. Leeann Hanson and Spring Connolly, NEI-WPCC employees who compose the JETCC staff, serve on the program's advisory board.

The two-year associate degree program covers state-of-the-art technologies in both water and wastewater treatment. The oneyear certificate programs offer certification in either water or wastewater technology and prepare students for state-approved operator testing for immediate employment in the industry.

Massachusetts

A statewide coalition of municipal stormwater coalitions has launched an outreach and education campaign to promote clean-water practices and policies related to stormwater management.

Think Blue Massachusetts, a project of the Massachusetts Statewide Municipal Stormwater Coalition, has information for residents, developers, industry, and businesses. It has developed materials that cities and towns can use to satisfy the education and outreach requirements of the Bay State's new general municipal separate storm sewer system permit.

The Massachusetts Department of Environmental Protection has actively promoted and nurtured municipal stormwater coalitions, which develop templates, training, and other resources useful to member public-works departments. In 2016, these coalitions, also with help from the DEP, banded together to to help cities and towns meet the requirements of the new municipal separate storm sewer systems permit. The statewide group comprises ten regional stormwater coalitions representing 130 of the Commonwealth's 351 cities and towns.

Meanwhile, short-term rentals on Cape Cod will be taxed 2.75% to pay for water-quality projects there. The new tax is one of several "Airbnb tax" provisions adopted by the state legislature at the end of 2018, effective July 1.

New Hampshire

New Hampshire public health officials met a January I deadline for proposing groundwater limits for four perfluorinated compounds in Granite State groundwater. The deadline was mandated by the state legislature last July.

The perfluorinated compounds are emerging contaminants of concern nationally and were the subject of a report in the September, 2016, issue of the *Interstate Water Report*, predecessor of *Interstate Waters*. The effects of these compounds are not well understood, and states are scrambling to set groundwater standards that are based on science that is still unfolding.

The Department of Environmental Services proposed the following maximum contamination levels for individual contaminants:

- perfluorooctanoic acid (PFOA), 38 parts per trillion;
- perfluorooctanesulfonic acid (PFOS), 70 ppt;
- perfluorononanoic acid, 23 ppt;

• perfluorohexanesulfonic acid (PFHxs), 85 ppt.

A separate standard limits PFOA and PFOS combined to 70 ppt.

This urgent call for regulation comes as the state is responding to instances of groundwater contamination in Merrimack, Newington, and Portsmouth. April 12 is the last day for public comment on proposed state groundwater standards for these four perfluorochemicals.

The DES posted the draft regulations for comment in January, with public hearings scheduled in March.

New York

The New York State Water Quality Council has recommended strict statewide limits on three chemicals found in drinking-water supplies that have health effects that are not well understood. The proposal would set the following maximum contaminant levels for drinking-water supplies as follows:

- perfluorooctanoic acid (PFOA): 10 parts per trillion
- perfluorooctanesulfonic acid (PFOS): 10 ppt
- 1,4-dioxane: 1.0 parts per billion

The proposed standards were awaiting action by the New York Department of Health as this issue of *Interstate Waters* was going to press. A sixty-day public comment period will follow.

The Water Quality Council includes two NEIWPCC members: Basil Seggos, the commissioner of the New York State Department of Environmental Conservation, and Dr. Howard Zucker, commissioner for the New York State Department of Health. Dr. Roger Sokol, the director of the DOH's Bureau of Water Supply Protection, is also a member of the Council.

In October, Governor Cuomo announced \$200 million in grant funding to help communities address PFOA, PFOS, and 1,4-dioxane in their drinking water supplies. The funding will provide support and assistance for communities to combat these emerging contaminants.

Rhode Island

Voters in the Ocean State last fall voted to approve a \$47 million environmental bond referendum that includes funding for many water projects.

The "Green Economy and Clean Water Bond" includes \$5 million for coastal resiliency and public access, \$7.9 million for clean-water and drinking-water state revolving funds, \$7 million for dredging the Providence River, \$5 million for wastewater-plant resiliency, and \$4.4 million for dam safety.

Other areas to receive bonded funding include parks and recreation facilities, bikeways, open-space preservation, brownfield cleanup, and farmland preservation.

The bond referendum is the third such biennial funding vote to include authorization for clean-water projects. The referendum passed by a margin of nearly four to one.

Vermont

In the Green Mountain State, the Department of Environmental Conservation is readying a "Three Acre General Permit" for sites with three or more acres of impervious surface that lack a stormwater permit. The three-acre permit will follow new stormwater rules that the Department submitted in January to the Legislative Committee on Administrative Rules for final action. The new permit and rules are mandated by the legislature in Act 64, the Vermont Clean Water Initiative. Permits for threeacre discharges already permitted under 2002 standards will continue to be valid.

Act 64 was adopted in 2015 to improve water quality throughout the state. Vermont policy makers are seeking funding sources to help municipalities and property owners meet the Act's ambitious goals.

Meanwhile, the state's Agency of Natural Resources in January initiated a proposed drinking water standard for five toxic perfluorinated chemicals. The proposal would limit the combined concentrations of PFOA, PFOS, and PFHXS, and also perfluoroheptanoic and perfluorononanoic acids, to 20 parts per trillion.

The proposal mirrors a July health advisory on the substances from the Department of Health.



April 2–4, 2019 Groton, Connecticut neiwpcc.org/shortcourse

Managing for Clean Water A Decade of Wastewater Management Training

By Michelle St. John

ASTEWATER TREATMENT PLANTS have been in existence in New England since the turn of the twentieth century. Although not the first— Brooklyn and Chicago are still debating who has bragging rights—the Providence Sewage Treatment system first began processing wastewater in 1901.

Those hired to run the plant a hundred years ago received little or no training despite the plant's importance to public health. It would be more than a half century before operators would have the opportunity for professional recognition through training and certification.

In 1968, after twenty years immersed in water issues, the New England Interstate Water Pollution Control Commission established a multifaceted training program aimed at professionalizing the industry and educating operators. The Commission would do the same thing for water managers forty years later.

The Commission's first push for wastewater training in the late 1960s came as the federal government prepared to help local governments to build many wastewater plants. These plants, and the generation of operators who ran them, would play a key role in meeting many of the goals of the 1972 Clean Water Act.

The Commission's training program helped to forestall a shortage of qualified wastewater operators in the region.

Today, NEIWPCC's environmental training program serves the broadest population in its fifty-one-year history. In fiscal 2018, NEIWPCC provided 28,096 training contact hours to more than 2,900 participants from all six New England states and New York.

The Greying of a Profession

By the middle of the first decade of this century, the wastewater treatment profession was in transition. Recruitment suffered due to abundant career choices for young adults

Michelle St. John is an information officer at *NEIWPCC*.

and a general lack of awareness about the profession. Adding to the complexity was an aging workforce. Those who were hired in the boom years of the 1970s and 80s were edging towards retirement.

While younger operators had the technical skills necessary for advancement, most lacked the leadership and softer skills required to make the leap into management. Succession planning was on the minds of many.

Training for Managers

The Commission responded by working with Rhode Island on the region's first training program for wastewater managers. The ten-month management "boot camp" was founded with a grant from the EPA. It has graduated eighty individuals since the program began in 2007, though the program is not offered every year. Today's program includes "job shadowing" of plant superintendents, interaction with environmental advocates, and a public-presentation requirement.

Maine followed the lead of the Rhode Island program with its own version of the boot camp. In the fall of 2009, NEIWPCC's Joint Environmental Training Coordinating Committee (JETCC) hosted its first Management Candidate School.

Massachusetts was next (2010), followed by New Hampshire (2011), and then Connecticut (2012). Vermont offered its management training program through the state's Department of Environmental Conservation and the Green Mountain Water Environment Association.

The EPA recognized NEIWPCC's part in these programs with an Environmental Merit Award in 2013.

The Commission's role varies with each program. Today, NEIWPCC provides full program coordination in Maine and Massachusetts, collaboration on Rhode Island's program, and program-administration support in Connecticut. NEIWPCC provided guidance in an advisory capacity for both the New Hampshire and Vermont programs, which are currently on hiatus. These programs operate as classes by year, in which candidates take courses and graduate together. In Massachusetts, however, the program experimented with a flexible, individually paced model for a few years. Those enrolled during those years completed their coursework based on individual schedules.

Massachusetts returned to the cohort-based system in 2017 to afford students greater opportunities for networking and relationship-building amongst participants and instructors. Today, the Bay State's program includes the opportunity to job shadow with a plant manager at the midpoint of the training program. The 2019 program is scheduled to begin on March 14.

The Connecticut Management Leadership Program is currently running its fifth program since 2012. Eighty-one graduates have completed training and the current class includes sixteen participants.

As in Rhode Island and Massachusetts, the Connecticut program includes superintendent shadowing. Job shadowing offers students the opportunity to observe and participate in budget preparations, public meetings, facility upgrades, and the implementation of new programs.

Ten Years of Maine Training

The JETCC Management Candidate School, in Maine, is the only management training program that has run every year since its inception. The tenth management class commenced last November with 19 participants. In total, 175 men and women have reaped the benefits of the program. They represent wastewater and drinking water operators, administrative personnel, and others in the industry.

The success of JETCC in attracting students to its program is testament to both the quality of the program and the commitment from wastewater professionals and associations across the state. Graduates return to teach or support the program and help with recruitment efforts each year. Close to 10 percent of certified wastewater operators in the state have completed the program.



The first-ever Rhode Island Management Boot Camp graduating class in 2008. NEIWPCC's former training operations manager, Chuck Conway (back row, far right), helped establish the program with William Patenaude of the Rhode Island Department of Environmental Management (kneeling, far left). Patenaude continues as the program coordinator. Janine Burke-Wells, a NEIWPCC commissioner and 2008 Boot Camp graduate, stands second from right in the second row.

Results Realized

The region's management-training programs do not guarantee advancement, but they do encourage those that participate to expand their connections to the industry. Many graduates go on to more advanced positions, or to move laterally into other roles, including compliance or teaching.

A well-known graduate of a management training program is Janine Burke-Wells. A NEIWPCC commissioner and the executive director of the Warwick Sewer Authority, she is a graduate of the first Rhode Island Management Boot Camp in 2008. Most recently, Burke-Wells served as the 2018 president of the New England Water Environment Association. She has held multiple roles with the Narragansett Water Pollution Control Association.

Another management training graduate is Stacy Thompson, the deputy director of the Water Resource Recovery Division for the City of Saco, Maine. Thompson graduated from JETCC's Management Candidate School in 2012. She is currently the president of the Maine Water Environment Association (MEWEA).

In Connecticut, fifty of the eighty-one graduates have advanced their careers by

assuming greater responsibilities. Twenty-three are now chief operators or assistant superintendents, and ten are plant superintendents.

Another Maine graduate, Travis Jones, says he feels fortunate to be in the wastewater industry. He is the regulatory compliance manager for the York Sewer District. Since graduating from the Management Candidate School in 2011, Jones has been appointed vice chair of the JETCC Board. and will serve as its chair starting in June. He has also taught classes for JETCC and MEWEA and has served on numerous association committees.

Management Training Today

All of the current management training programs include engineering topics, blueprint reading, business communications, and state regulations, including the permitting process.

Wastewater management training programs vary from state-to-state by schedule and content. They all, nonetheless, fill a critical gap by providing the next generation of managers with the skills in leadership, management, and technical subjects that are required to take the next step in a wastewater career.

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Taking Out the Trash

Public Participation Is Central to Curbing Aquatic Trash



By Drew Youngs

T REGULAR INTERVALS IN THE SUMmer of 2017, small teams of students, volunteers, and event coordinators donned hip boots and waded into the Bronx River at Muskrat Cove. Some wore tee shirts, broad-brimmed hats, or sunglasses. On those days, the groups splashed toward a bright yellow boom floating across the full width of the river to trap plastic bottles and bags, straws, polystyrene cups, cigarette butts, and more trash.

The teams took the debris from the river and counted and categorized it, down to the last Styrofoam pellet and Dunkin Donuts cup. For nearly two years, such teams

Drew Youngs is an environmental analyst at NEIWPCC.

performed sixty-eight similar assessments throughout the spring, summer, and fall at Muskrat Cove and at other sites along the river. Monitoring sites also included marshes and the riverbank. Partner organizations performed ten additional assessments.

The result is a detailed census of river trash that today informs outreach efforts to keep trash out of the water.

The project was led by the Bronx River Alliance. It was one of seven undertakings targeting aquatic trash that were funded and administered by NEIWPCC. The collective effort involved hundreds of volunteers.

Aquatic Trash

According to the EPA, 80 percent of aquatic trash is the result of improper waste management or disposal somewhere within the

watershed. We produce a plethora of waste on land and do not properly dispose of it. Eventually, it ends up in our water.

A recent study by NV-NJ Baykeeper found that, at any given time, more than 165 million pieces of plastic are floating in the New York–New Jersey Harbor estuary. In the most polluted stretches of the East River, there are more than half a million plastic particles per square kilometer of surface water. Roughly 85 percent of the plastic particles collected for the Baykeeper report were microplastics, measuring less than five millimeters across.

It's not just New York, and it's not just cities. In areas around the globe, aquatic trash harms aquatic organisms, habitats, and ecosystems. This trash is also disrupting human use of aquatic environments for food, recreation, and resources. Students from Brooklyn's PS 15 characterize beach litter at Jamaica Bay Wildlife Refuge in April of 2017.

ers involved business owners working to reduce their use of items that commonly end up in water. Another project took an especially creative approach toward involving youth in community education.

Bronx River

The Bronx River project operated in the Bronx and lower Westchester County, New York, to reduce the volume of floatable trash entering the Bronx River. To reach this goal, organizers engaged citizen-science volunteers from within the community in hands-on trash collection and assessment. The volunteers were recruited through outreach efforts and events held with local organizations, agencies, and schools.

The work of the Bronx River Alliance hinged on skillful project management by those with credentialed backgrounds in science. Nonetheless, the overall outputs of the project would not have been possible without volunteers.

The volunteers installed trash booms in the river at the border between the Bronx and Westchester County and near the river's mouth. In teams, the volunteers documented the types, materials, quantities, brands, and sources of floatable pollution in the river. They then used these assessments to determine probable point sources of pollution within the Bronx River watershed. They developed outreach strategies to target those sources of trash. In particular, project participants tailored their efforts toward public officials, businesses, and students, educating these key groups on best-management practices and trash-abatement strategies.

Single-Use Utensils

On Long Island's North Fork, the Product Stewardship Institute reached out to small businesses in Greenport. The area's beaches have a problem with debris, particularly during the summer when tourism peaks. The PSI targeted single-use plastics, such as the straws, cups, lids, and utensils that are purchased by local restaurants for their customers.

Four businesses volunteered to participate in the program. After first measuring the "plastic footprint" of participants, the PSI worked with the businesses to identify reusable, compostable, or recyclable alternatives to the plastics in use, and conducted a cost-benefit analysis of switching to the alternatives. The Institute worked with each business to write source-reduction plans, and participants piloted the changes to their procurement strategies.

Based on data collected during the test periods, the PSI estimates that, together, the four participating businesses could

continued on page 14

Outputs and Outcomes

The bronx river project engaged 385 citizen scientists. Outreach efforts reached an additional 475 students and 134 educators from twenty-five participating schools in the Bronx and Westchester. The effort removed more than 150,000 pieces of floatable trash from the river, which corresponds to approximately 6,700 pounds of garbage.

On Long Island, the Product Stewardship Institute's work with waterfront restaurants and food vendors in the village of Greenport corresponded with a decrease in foodware debris on Mitchell Park Beach, which is near the businesses. The Institute also developed and published a guide for food businesses to assess their plastic use and implement changes. The guide includes model purchasing policies and sample ordinances for local governments.

On the Hudson River, the North Hudson Sewerage Authority installed 250 trash-filtering faceplate covers in the New Jersey cities of Hoboken, Union City, and West New York.

In New York City, Cafeteria Culture's project mobilized students for community outreach. The knowledge and skills that students developed in the classroom, and the data they collected, empowered the students to create and use videos, posters, presentations, and social media to bring their findings to the community. The trash assessments that followed this outreach found a 23 percent reduction in local street litter.

Elsewhere, other projects executed outreach and education programs, worked directly with food businesses, and handed out thousands of reusable bags.

Unlike some environmental challenges, such as climate change and emerging contaminants, aquatic trash is visible and easy for people to understand. The issue is ripe for citizen involvement.

Program Partnership

From 2016 to 2018, NEIWPCC joined with EPA Region 2 to administer the Aquatic Trash Reduction grants program. With NEI-WPCC's guidance, grantees led a variety of projects to reduce trash in the surface waters of New York and New Jersey. NEIW-PCC selected seven organizations, including the Bronx River Alliance, to participate in the program.

Most of the projects involved community members as active project participants. Some saw citizen scientists collecting data and conducting community outreach. Oth-



Enabling Success with Pete Lopez

EPA Region 2 Administrator Offers Partnership

By Anna Meyer

The Federal Response to Hurricanes Irma and Maria was just beginning in the Caribbean when Pete Lopez accepted the appointment to lead the EPA's Region 2 in early October of 2017. At the time, Lopez was in his tenth year as a member of the New York State Assembly.

Region 2 has jurisdiction over the storm-tossed U.S. Virgin Islands and Puerto Rico, as well as New York, New Jersey, and eight tribal nations. When Maria extensively damaged Puerto Rico's already fragile electric grid, hundreds of small drinking-water systems in rural areas lost the capacity to deliver water to their customers. Many systems had chronically not met drinking water standards before the storm.

When we caught up with Lopez in mid-December of 2018, he described his approach to the incapacitated systems, which was informed by years of work in rural upstate New York. In addition to participating in the coordinated emergency response, the EPA continued to be responsible for enforcing federal environmental regulations. For small public drinking-water systems in Puerto Rico, that enforcement role took the form of technical and financial support.

Working with non-governmental organizations, EPA Region 2 assessed 237 independent rural drinking-water systems, each serving between twenty-five and one thousand people. Many were informal arrangements that had no legal existence and thus could not receive federal funds.

To drive resources to the small systems, the EPA Region 2's recovery efforts included helping system owners and operators prepare incorporation papers. The EPA also supported repair work on damaged systems and connections to generators or solar power.

Anna Meyer is an environmental analyst at NEIWPCC.



EPA Region 2 Administrator Lopez (left) brought to Puerto Rico lessons honed in upstate New York. Above, in Caguas, Puerto Rico, in 2017, Lopez greets a staff member of an organization partnering with the EPA to improve resilience of small drinking water systems.

These efforts exemplify how Lopez enables small, low-income communities to achieve environmental quality. It is an approach that embraces support over fines and other penalties. He said when a water system has no organizational structure and no money, punitive enforcement wouldn't lead to environmental quality. "We can go and dig up their pipes, and then what do we do? What have we solved?" Lopez said.

In September of 2018, the EPA, the U.S. Department of Agriculture, and multiple non-governmental organizations launched an effort to further support the small systems. It involves establishing risk-reduction strategies and developing academic projects to study sustainable designs and technologies, with the goal of moving each system toward meeting water quality standards.

The initiative also includes circuit riders, environmental professionals who provide ongoing technical support in day-to-day operations. Lopez said this idea has been successful in other rural areas, such as the Tug Hill Plateau region in New York's North Country.

Empowerment

Lopez reflected on how his collaborative approach in Puerto Rico was shaped by his two decades of work as a staff member to the New York State Legislature. He served as assistant director of the Legislative Commission on Rural Resources, which was chaired at the time by Senator Charles Cook.

"When I was working with Senator Cook on the Legislative Commission on Rural Resources, our whole goal was empowerment," Lopez said. The Legislative Commission went about this by "identifying strengths and weaknesses, and developing comprehensive strategies to strengthen communities to achieve outcomes, rather than compelling them through punitive sanctions." The strategies were "based on collaboration and injection of necessary resources and support," he said.

Lopez also shared with us a philosophy that he promotes within the region and nationally: "Even as we drive toward achieving environmental outcomes, if we're thoughtful about it, we can also address economic outcomes," as well as "agricultural" and "community quality-oflife outcomes."

Emerging Challenges

Lopez's empathetic attitude toward small,

rural communities extends to his perspective on per- and polyfluoroalkyl substances (PFAS), a class of chemicals used in myriad consumer products. The substances persist in the environment and in living organisms.

When asked how he'd advise the states to respond to the emerging problem of PFAS, he pointed to the EPA's work with the New York Department of Environmental Conservation in Hoosick Falls. "We've worked with DEC to engage with the communities, understand the nature of contamination, drive mitigation efforts, look for responsible parties and bring them to the table," he said. "We are there to be partners, so please take advantage of our ability, research capability, our laboratory ability, our enforcement mechanisms."

Lopez added, "And then continue to talk with us and work with us as we try to wrap our arms around the science behind being protective."

"That's what we all want, that we're setting standards that are protective and that we have the best understanding possible of cause and effect of the contamination and sources of contamination," he said.

Spotlight

A Season of Recognition

W ike Gerel is the new program director for the Narragansett Bay Estuary Program. Gerel is an environmental scientist with more than twenty-five years of experience in water quality research, restoration, and policy. He started on February 1.

Congratulations to **Traci lott** of the Connecticut **Department of Energy and Environmental Protection.** Iott won a 2018 Emerging Leader Award from the **Association of Clean Water Administrators** (ACWA). She is a supervisor with the department's **Planning and Standards Division**.

The Association also recognized **Peter LaFlamme** with its Environmental Statesman Award. He has served Vermont as director of the **Watershed Management Division** at the **Department of Environmental Conservation** since 2007, and is a past chair of NEIW-PCC. The two received their awards at an August 14 ceremony at ACWA's fifty-seventh annual meeting in Portland, Oregon.

Susan Sullivan, NEIWPCC's executive director, received a service award from the **Water Environment Federation** at the organization's ninety-first annual conference last October in New Orleans.

Arthur Marin has stepped down as the longtime executive director of the Boston-based Northeast States for Coordinated Air Use Management. Replacing him is Paul Miller, who had previously been deputy director and chief scientist of the nonprofit association. Marin, meanwhile, is staying on as a senior policy advisor.

The former director of the **Lake Champlain Basin Program**, **William Howland**, received the EPA's (Region I) Lifetime Achievement Award this past September. Howland served as director for nearly twenty years before retiring in 2016.

Long Island Sound Study Bioextraction Coordinator Nelle D'Aversa made a presentation to the joint meeting of the Northeast Aquaculture Conference and Exposition and the thirty-ninth Milford Aquaculture Seminar on January II in Boston. Her talk was "Nutrient Bioextraction Initiative: Removing Excess Nitrogen in New York and Connecticut Waters through Aquaculture."

To get its message across, the Upper Blackstone Water Pollution Abatement District is now doing business as **Upper Blackstone Clean Water**.

Ellen Kujawa, a **Lake Champlain Basin Program** technical associate, has been appointed as the Region I director for the Wisconsin-based **North American Lake Management Society.**



Dozens of regional wastewater professionals were honored during the New England Water Environment Association's annual conference in late January. Above: Mike Bisi accepts the Alfred E. Peloquin Award from the Association's outgoing president, Janine Burke-Wells. Also honored (among others) were Michael Spring, William Patenaude, Stacy Thompson, and the York (Maine) Sewer District. Thompson and several York District employees are graduates of the Management Candidate School offered by NEIWPCC's JETCC program. Nora Lough also received an award from the EPA at the conference.

Welcoming Our Newest Workgroup

EIWPCC WORKGROUP MEETINGS bring together environmental professionals from agencies and organizations across the region to discuss developments in research, public opinion, regulation, and program implementation. Members collaborate to train personnel, pool resources, develop regional approaches to issues, and advocate for clean water.

State and federal staff biologists came to the first meeting of NEIWPCC's Northeast Aquatic Biologist (NAB) Workgroup on October 3. The workgroup will help the biologists discuss developments in science, share research methods, and grapple with water quality issues. At the meeting, members formed two subcommittees, both regarding indices of biotic integrity (IBI). These are tools that gauge impairment and recovery of water bodies by assessing key aquatic species. One NAB subcommittee will focus on indices that assess fish, and another on indices for slow-moving, wadeable streams. Biologists in both subcommittees aim to develop consistent methodologies for conducting IBI assessments in the Northeast.

Before and after the October meeting, a subcommittee worked with NEIWPCC to plan the 2019 Northeast Aquatic Biologist Conference for February 27 to March 1 in Saratoga Springs, New York. The conference will be an annual project of the workgroup.

Environmental Workforce

Many NEIWPCC workgroups focus on training environmental professionals or, in the case of the **Volunteer Monitoring Workgroup**, training citizen scientists to collect high-quality data that states can use. On October 22, Meghan Smart of the Arizona Department of Environmental Quality called in to the Volunteer Monitoring Workgroup meeting. Among state citizen science programs, her agency's program, Water Watch, is esteemed for fostering applicable citizen-science data.

Smart shared Water Watch's "video microlessons." These short recordings demonstrate monitoring techniques, such as how to determine stream flow using a floatable object. Smart invited members of NEIWP-CC's workgroup to use the videos to train



citizen scientists in their own states. Outside their meeting, workgroup members planned a panel discussion for the NAB conference.

Members of the **Massachusetts Training Advisory Committee** on December 12 discussed ways to increase the pass rates for wastewater exams. The discussion comes as the Association of Boards of Certification is revising the wastewater examinations used by many states, including Massachusetts. Such revisions typically introduce new material and, initially, depress pass rates. Committee members learned that the Massachusetts Water Pollution Control Association was planning to bring back exam preparation classes for wastewater operators.

The revised wastewater exams were also discussed during a **Wastewater Certification Workgroup** conference call on August 14. On the same call, a regulator at the Connecticut Department of Energy and Environmental Protection reported on the state's new continuing education requirement for operators. Operators must now earn six training hours every year. They, and the treatment plants where they work, must now maintain training records.

Cybersecurity at wastewater treatment plants was among the topics discussed at the **Trainers Forum** meeting on November 19. Cyber attacks are on the rise and wastewater treatment plants' reliance on SCADA (supervisory control and data acquisition) to optimize process controls makes these systems vulnerable to outside intrusions. Workgroup members discussed developing a special informational session to provide On a field trip in November of 2018 to a restored wetland in Oaksville, New York, members of NEIWPCC's New England Biological Assessment of Wetlands Workgroup and its mid-Atlantic counterpart hear from Marcie Foster of the Otsego Land Trust. The wetland is on the site of a former tree nursery.

training and case studies for plant superintendents and state regulators.

During their August 9 meeting, members of the **Total Maximum Daily Load Workgroup** discussed plans for an April training they are coordinating. The creator of an Excel-based "Lake Loading Response Model" will train state environmental employees to use the model to outline pollution budgets for lakes. Workgroup members hope training staff members in their departments to use such models will cut down on time and money spent hiring contractors.

The Commission co-facilitated a joint meeting between the **New England Biological Assessment of Wetlands Workgroup** and its mid-Atlantic counterpart November 14–16 in Cooperstown, New York. There, wetlands professionals had the opportunity to draw knowledge and resources from outside their region.

The event featured more than twenty educational presentations. Topics included engaging stakeholders online using geospatial-based "story maps," and tools for improving aquatic connectivity—a process that often involves dam removal or culvert replacement. The meeting included a field trip (see photo).

New Programs, Regulations

At the September 7 meeting of the **Source Water Protection Workgroup**, New Hampshire Department of Environmental Services staff members described a mobile app that the state is developing. The app will make it easier for private-well owners to access water-test results and treatment choices. A workgroup member from the

Workgroups

EPA also described funding opportunities related to source-water protection in the 2018 version of the Farm Bill.

Onsite Wastewater Workgroup members shared updates via a conference call on September 28. In Vermont, the Department of Environmental Conservation will use a grant from the Northern Border Regional Commission to identify and address barriers to implementing decentralized wastewater-treatment solutions for three rural communities. The DEC hopes the project will be replicable across the state. Workgroup members have also been collaborating extensively to plan the 2019 Northeast Onsite Wastewater Short Course conference, April 2-4 in Groton, Conn.

Vulnerability assessments were central to the Water Resource Adaptation and Climate Change Workgroup's discussion via conference call on September 17. NEIWPCC's member states each have different programs for assessing the

vulnerability of their water resources to such climate-change effects as extreme weather, sea-level rise, flooding, and coastal acidification. Many workgroup members shared news about, next steps for, and resources used to conduct the assessments in their states' communities. watersheds. and estuaries.

Regulators learned how other states manage tank removals at a December 14 meeting of the Underground Storage Tanks (UST) Workgroup, and discussed other pertinent issues related to release prevention and cleanup. States require the removal of aged USTS because the tanks can corrode and leak hazardous material into the environment. Many states approach removals by regulating how frequently tanks are inspected. Others mandate periodic replacements. Connecticut, for instance, requires that tanks be replaced every forty years.

Issues with per- and polyfluoroalkyl substances (PFAS) are in the public eye and n the forefront with many environmental professionals. During a September 5 conference call, **Residuals Workgroup** members continued to discuss environmental persistence of PFAS and the implications of their potential presence in wastewater residuals. Members of the workgroup and the NEIWPCC staff member who leads it attended the New England Water Environment Association's Residuals and Microconstituents Conference in October.

An anticipated federal wetlands rule would probably not affect the Northeast directly. That was the tentative conclusion of state officials at a November 1 meeting of the Wetlands Workgroup. Most wetlands in the region are protected by state regulations. NEIWPCC has filed written comments in various proceedings related to this proposal, which seeks to end federal protection for many wetlands. More recent information about the rule. which was announced on December II, is included in a report on page 3 of this magazine. \geq

Except as noted, workgroup meetings were held at NEIWPCC headquarters in Lowell, Mass.

Commission Changes

HE COMMISSION WELCOMES THREE new Connecticut Commissioners: Michael Bisi, Denis Cuevas, and Jane Stahl.

Bisi is the superintendent of sanitation in Glastonbury, Connecticut. He has managed Glastonbury's Town Water Pollution Control and Solid Waste and Recvcling divisions since 1993.

Cuevas has served as the general manager of Waterbury's Water Pollution Control Department since 2009. He is currently managing the design and construction of a phosphorus reduction project there. Cuevas is the current president of the Connecticut Association of Water Pollution Control Authorities.

Stahl is an environmental consultant with more than thirty years of experience in the environmental field. From 1997 to 2005, she served as deputy commissioner



Michael Bisi



Denis Cuevas



Jane Stahl



Richard Kotellv

Treasurer

HE COMMISSION EXPRESSES ITS GRATITUDE to Richard Kotelly, who served as NEIWPCC's treasurer for more than two decades (1995–2018). Kotelly, a former engineer at New England EPA, helped to establish the Deer Island wastewater treatment facility. Harry Stewart, a former NEI-WPCC Commissioner and chair, succeeded Kotelly in September. Stewart is a senior associate at Normandeau Associates and a former director of New Hampshire's Water Division.



Harry Stewart

of the Connecticut Department of Environmental Protection, overseeing the state's air, waste, water, and Long Island Sound programs.

The Commission also welcomes Gerald Reid and Jeanne Lambrew, appointed by Maine Gover- Gerald Reid nor Janet Mills to serve as

commissioners to the departments of Environmental Protection and of Health and Human Services, respectively.

Reid joins the Commission with more than twenty years of experience in the Maine Attorney General's Office, the last



🖞 eleven as chief of the Natural Resources Division.

Lambrew has spent twenty-five years in public health policy as a university professor and in government. From 2009 to 2011, she served as deputy director of the White House Office of Health Jeanne Lambrew Reform.



All of NEIWPCC thanks outgoing Commissioners Arnold Bevins (Connecticut, from 2008), Mark Zessin (Connecticut, from 2008), Paul Mercer (Maine DEP, from 2016), and Ricker Hamilton (Maine DHHS, from 2017) for their service to the region. \blacklozenge

Trash continued from page 9

eliminate more than 950,000 plastic items from procurement and more than 7,500 pounds of plastic waste each year. The businesses could save more than \$12,000 combined per year by using the alternatives, and they would spend less overall on waste hauling. Participating businesses noted other encouraging results of the switch during the test period, including an improved dining experience for customers, increased operational efficiency, and an increase in overall business.

As for environmental monitoring, the Institute established a baseline by conducting visual surveys of trash on a local beach near the businesses before source-reduction plans were implemented. Follow-up surveys conducted after the pilot found a 74 percent reduction in plastic foodware debris and a 76 percent reduction in overall foodware debris.

More Outreach

Trash is a people problem, so it is not surprising that outreach for behavior change was the goal of many of the projects. Many single-use plastic items are used in connection with food. In addition to the Product Stewardship Institute's pilot program on Long Island,

• A project of the New Jersey Clean Water Fund reached out to food truck owners, festival vendors, and popular boardwalk eateries. Twenty-six businesses participated in a program of using alternatives to single-use utensils and containers in the communities of Asbury Park, Red Bank, and Newark. Four of the businesses also conducted waste audits to determine the effects of using the alternatives. Customers and business owners generally liked the changes. The Clean Water Fund intends to recruit additional businesses in the future.

• The New York City Department of Environmental Protection focused its efforts on plastic bags distributed by grocery stores near Jamaica Bay. The Department gathered data about how customers and business owners view the problem of aquatic trash, and whether those groups are willing to pay more for alternatives to plastic. The surveys found that roughly 80 percent of respondents in the area think single-use plastic bags have a significant impact on New York's water bodies, and that nearly 60 percent of respondents would be willing to pay more for alternatives. The Department produced and distributed thousands of reusable bags to market the concept to the community and to reduce distribution



Faceplate cover installation

of single-use plastics in the area.

• In New Jersey's Passaic River watershed, the Hudson River Foundation and partners worked with community groups and volunteers to identify the common types of floatable trash found on community streets within the watershed. Roughly two thirds of the more than twenty-eight thousand items collected were floatable: mostly cigarette butts, plastic, rubber, and polystyrene. This effort culminated with an outreach campaign to educate the community on pollution-prevention strategies.

A Physical Solution

The North Hudson Sewerage Authority saw a problem with the standard storm drains in its jurisdiction: trash could fit through the inches-tall opening at the back of the grate, against the curb. With an Aquatic Trash Reduction (ATR) grant, the Sewerage Authority purchased and installed grated faceplate covers for the open section of 250 storm drains in Hoboken, West New York, and Union City, New Jersey (see photo).

All together, the 250 storm drains captured an average of eighteen more pounds of trash per significant rainfall event with the metal faceplate covers. More covers may be installed in more locations as funding allows.

Mobilize the Students

Another ATR grant helped 145 elementary and middle-school students to lead assessment, education, and engagement campaigns. The program was designed by Cafeteria Culture, a project of the nonprofit Fund for the City of New York. It comprised classroom education, citizen science, and outreach. Teachers and Cafeteria Culture staff members also taught the students valuable skills to use for student-led campaigns, including video production and creative messaging.

In each of three participating schools, teachers taught a curriculum developed by Cafeteria Culture that exposed students to the interconnected concepts of sewer overflows and marine litter, and their effects on wildlife and human health.

In their roles as citizen scientists, and with help from their teachers and the Cafeteria Culture staff, the 145 students conducted litter characterization studies. They collected and categorized trash from pre-defined areas around their schools, located in the Brooklyn neighborhoods of Red Hook (PS 15) and East Flatbush (MS 246), and in Manhattan's Alphabet City (PS 34). They also conducted trash assessments on the nearby beaches of Jamaica Bay. Through their work, students learned about the connection between street and beach litter, as they discovered similar trash items both in their neighborhoods and on the shore.

NEIWPCC's Support

The Commission staff helped grantees over the course of the ATR program, especially with respect to quality assurance and formal reporting. Every EPA grant that involves collection of environmental data for decision-making must have a quality-assurance plan. With NEIWPCC's support, the grantees documented the ways that data collection would be scientific and consistent. For some, it was a learning experience.

Cafeteria Culture, for example, wanted to empower elementary and middle school students to conduct street and beach litter characterization studies as a core component of its project. NEIWPCC helped the group to design verifiable collection and assessment protocols. With the quality assurance plan, Cafeteria Culture set the number of students per litter-sample area and the size of each sample area. The group also defined the roles of students and adult participants, developed a data recording sheet, and determined who would manage and report on the data.

In the process, Cafeteria Culture gained valuable experience in quality assurance.

Aquatic trash is a daunting problem. Nonetheless, many people, from concerned citizens to professional scientists, stand ready and able to work on the solutions. One need not be a researcher to know that trash does not belong in our water.

Parting Shot



Perfluorooctanesulfonic Acid

S TATES ARE WRESTLING WITH CONcerns related to the widespread presence of perflouroalkyl and polyflouroalkyl substances (PFAS) in the environment. Many of these chemicals are toxic at very low levels and pose challenges in groundwater, drinking water, and even sewage residuals.

We know these manufactured substances as components of nonstick coatings, stain repellants, and firefighting foams. They are in household goods from cookware to dental floss. Most that have been studied are persistent and accumulate in living organisms. While much more research is needed on human health effects, studies link high levels of some of these compounds to several different forms of cancer, as well as to impaired thyroid and immune system function.

A closer look—much closer—sheds light on these characteristics. Much of what is useful, harmful, and troublesome about these chemicals boils down to the presence of a single element, fluorine, and its bond with carbon.

Long Chain: These molecules are constructed of a carbon atom chain with an attached charged functional group. A molecule of perfluorooctanesulfonic acid (PFOS), above, is organized around an eight-carbon chain (grey), like a spine, with fluorine atoms (green) at every available bonding site. The chain is capped at one end with the sulfonic functional group (gold, red, and white). PFAS molecules with seven or more carbons present in the chain are described as *long-chain*. The length of PFOS'S chain contributes to its durability.

Electronegativity: Chemists use the term *electronegativity* to quantify the tendency of an atom to attract electrons in a bond. Fluorine is the most electronegative element on the periodic table, resulting in a short bond with carbon atoms that is very strong.

The strength of any one of these strong carbon-fluorine bonds also strengthens the adjacent bonds. Consequently, each fluorine atom added to the carbon chain makes these molecules more stable.

Size: The small size of a fluorine atom, combined with short bond lengths, means the atoms are able to pack in tightly around the carbon chain. This shields the chain from outside atoms and makes the spine more rigid, contributing further to chemical stability.

Fully Fluorinated: The "per" in "perfluoro" refers to the fact that each carbon atom is fully occupied with fluorine. In contrast, a polyfluorinated compound has a mixture of fluorine and hydrogen atoms bonded to

the carbon. Because PFOS is perfluorinated, it has seventeen fluorine atoms, each of which adds stability and durability. Longchain perfluorinated compounds are very slow to break down.

Polarization: Fluorine also has a low polarizability, meaning that it is unlikely to interact with an external field or molecule. Consequently, PFAS resist water and fats, making them excellent stain repellants. Combined with the characteristics described above, the low polarizability of fluorine makes PFAS more resistant to other chemicals and heat, and suitable for high-temperature uses.

The stability of these substances that makes them excel in their intended uses also means they persist in both the environment and human body. Because they resist degradation, PFAS last long enough to spread over long distances and build up in living things, including humans. Humans cannot metabolize these chemicals, which consequently remain present in human organs and blood long after exposure.

Because of these characteristics, PFOS, which has not been manufactured since 2003, will be with us for a long time. State health officials are in the process of setting acceptable levels of PFOS and other PFAS in drinking water.



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Events

March 19–20, Alexandria, Va.: Association of Clean Water Administrators' mid-year meeting. bit.ly/2SDU0eu

April 2–4, Groton, Conn.: 2019 Northeast Onsite Wastewater Treatment Short Course and Equipment Exhibition. neiwpcc.org/shortcourse April 3–4, Washington, D.C.: National Water Policy Fly-In. New England Water Environment Association, Water Environment Federation, National Association of Clean Water Agencies, and Water Research Foundation. bit.ly/2EkpKTc

April 8–10, Crystal City, Va.: Environmental Council of the States spring meeting. bit.ly/2v2xEuy April 18–19, Portsmouth, N.H.: Thirtieth Annual Nonpoint Source Pollution Conference. Hosted by NEIWPCC in partnership with the New Hampshire DES and EPA Region 1. neiwpcc.org/NPS30NH

April 24–25, Presque Isle, Maine: North Country Convention. Joint Environmental Training Coordinating Committee. bit.ly/2SBTCDp

April 29, Worcester, Mass.: State of the Blackstone Watershed Workshop. Narragansett Bay Estuary Program. bit.ly/2GJx1h6

May 2–3, Providence, R.I.: Spring meeting of NEIWPCC's governing Commission. June 2–5, New Castle, N.H.: New England Water Environment Association's spring meeting and exhibit. bit.ly/2Ea92WE

September 12–13, Saratoga Springs, N.Y.: Fall meeting of NEIWPCC's governing Commission.

September 14, Oyster Bay, N.Y.: *Estuary Day*. Long Island Sound Study, Peconic Estuary Program, and South Shore Estuary Reserve.

Ongoing, various locations: Courses and workshops around the region for wastewater and drinking water professionals. tinyurl.com/neiwpcc-training

On our cover, two middle school students work with a coordinator from the Bronx River Alliance on a census of river trash in March of 2017. Story, page 8. Bronx River Alliance photo.

