



# Interstate Waters

Spring 2021

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## Charting Our Course

Also:  
Assessing Nitrogen  
Removal Retrofits



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NEIWPCC is a regional commission that helps the states of the Northeast preserve and advance water quality. We engage and convene water quality professionals and other interested parties from New England and New York to collaborate on water, wastewater, and environmental science challenges across shared regions, ecosystems, and areas of expertise.

## Interstate Waters

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## FROM THE EXECUTIVE DIRECTOR

It has been over a year since states began issuing stay-at-home advisories to prevent the spread of the coronavirus; over a year since all of our lives changed overnight. Faced with the challenges presented by the pandemic's strict quarantine, NEIWPCC quickly pivoted our way of working, and continued to carry on with our commitment to help the states of the Northeast preserve and advance water quality.



Now, as more and more Americans get vaccinated, businesses open up, and we find a new "new normal," I am focusing on how we will keep evolving in 2021 and beyond.

In this issue of "Interstate Waters," we explain the five programmatic priorities we established in 2020: contaminants of emerging concern, watershed planning and waterbody protection, infrastructure improvements, Clean Water Act modernization, and training and certification for wastewater and other environmental professionals. These priorities will serve as a road map for NEIWPCC through 2025 and a way for us to measure progress on preserving and advancing clean water in the Northeast.

We also describe some of our new initiatives around the region, including a chloride pollution collaborative with the states of the Northeast, and our program partners' efforts to address racism in the environmental field. We relay lessons learned from a project that recommended improvements to wastewater treatment plants in the Long Island Sound watershed.

We also include a new department in this issue, a roundup of NEIWPCC news posted on our website. To read these news posts in full, readers can visit our website or subscribe to our e-newsletter, "Streamlined." I encourage all of you to subscribe by emailing [communications@neiwpcc.org](mailto:communications@neiwpcc.org).

Finally, this past winter, we launched a weekly social media campaign where we shared photos of wastewater operators in the Northeast, to give our support to them and raise awareness about these essential workers. Their work is often unseen and taken for granted, but these everyday heroes have ensured we have access to clean water throughout the pandemic. Those photos are shared on pages 14-15.

My sincerest gratitude goes out to these essential workers, to our staff, and to our other partners in clean water. I eagerly look forward to all of us being together in-person again soon.

Susan J. Sullivan

NEIWPCC Executive Director



## SPOTLIGHT

**Christina Stringer** is NEIWPCC's new Wastewater and Onsite Programs Division director, moving from her previous role as program manager for NEIWPCC's Water Resource Protection Division. Stringer has led NEIWPCC's efforts to explore PFAS topics, residuals, and environmental surveillance efforts through her role in the Emerging Contaminants and Ground Water and Source Water Protection workgroups.



**Don Kennedy**, NEIWPCC training coordinator, was honored by the U.S. Environmental Protection Agency's (EPA) New England Office for outstanding service throughout his career. He received a 2020 Lifetime Achievement Award for his many years of providing training and technical



assistance to wastewater professionals in New England. Kennedy, who recently retired, but will continue with NEIWPCC in a part-time capacity, is well known for his enthusiasm while providing training to the wastewater employees as well as encouraging the younger generation to

become involved in the environmental sector through the "Youth and the Environment Program."

"Across New England, the professionals operating wastewater treatment plants, and the municipalities and state environmental agencies that support them, are essential to keeping our environment healthy by protecting water quality," said EPA New England Acting Regional Administrator Deborah Szaro. "It's not every day you come across someone as dedicated as Mr. Kennedy is and I am proud to acknowledge his outstanding contributions to help protect public health and water quality for so many years and give him the credit he deserves. Mr. Kennedy's impact will surely continue to make a difference in our region for years to come."

Kennedy was also honored by the New England Water Environment Association (NEWEA) with the 2020 James J. Courchaine Collection Systems Award. The award recognizes outstanding efforts and dedication in the collection systems field.

**John Sullivan**, NEIWPCC commissioner, received the Elizabeth Cutone Executive Leadership Award from NEWEA for leadership leading to significant advances in a water, wastewater or other environmentally focused organization. Sullivan has worked for the Boston Water and Sewer Commission for more than 30 years and has served as its chief engineer since 1990.

**Nora Lough**, Narragansett Bay Commission biologist and a wastewater training instructor for NEIWPCC, received the Clair N. Sawyer Award from NEWEA for outstanding service in the wastewater industry.

**Colleen Hickey**, NEIWPCC information officer, was recognized by the EPA Region 1 with a 2020 Environmental Merit Award, for her accomplishments benefitting the communities and ecosystems of the Lake Champlain Basin.

**Julia Twichell**, NEIWPCC environmental analyst, won the Best Interagency Collaboration Award from Esri, a geographic information system (GIS) software provider, for a new StoryMap she created with colleagues at the EPA. The map, "How Do We Use Our Coasts?" can be viewed through the Narragansett Bay Estuary Program's GIS Data Hub.

**Janine Burke-Wells**, NEIWPCC commissioner, was featured in a Water Environment Federation podcast, discussing how PFAS regulations impact biosolids programs. Burke-Wells, executive director of the North East Biosolids & Residuals Association, also talked about technologies for PFAS treatment and productive regulatory approaches by states. The podcast series, "Words on Water," features conversations with influential people from the water sector and news from the Water Environment Federation. 🌊

## Welcome to Our New Commissioners

### **Michael Abbott** *Maine*

Michael Abbott is an associate director of the Maine Center for Disease Control and Prevention, leading the Division of Environmental and Community Health, which includes the drinking water program, health inspection, radiation control, and environmental and occupational health. Abbott is also a licensed professional engineer and certified geologist in Maine.



### **Stacy Thompson** *Maine*

Stacy Thompson is deputy director for the Saco Water Resource Recovery Department. She oversees the daily operations for the treatment facility and the 29 pump stations located throughout the city. Thompson is a past president of the Maine Water Environment Association (MEWEA).



### **Amy Parmenter** *Rhode Island*

Amy Parmenter is serving as interim chief and supervising environmental scientist for the Rhode Island Department of Health's Center for Drinking Water Quality. She protects and promotes health and safety by ensuring the quality of the state's public drinking water supplies.



# HIGHLIGHTS FROM NEIWPCC AND OUR PARTNERS

## Connections

### Binational Partnership Studies Pollution in Missisquoi Bay

The increasing persistence of algal blooms in the Missisquoi Bay led to NEIWPCC's involvement in a binational water quality report on the Lake Champlain Basin. Missisquoi Bay, the northern-most sub-basin shared between the Province of Québec and Vermont, has been chronically afflicted by excessive phosphorus loads. NEIWPCC and the Lake Champlain Basin Program partnered with the Québec watershed group Organisme de bassin versant de la baie Missisquoi to conduct a comprehensive review of the bay's nutrient problems. The recommendations from this collaborative effort were incorporated into a final report, "Nutrient Loading and Impacts in Lakes Champlain and Memphramagog," provided to the American and Canadian governments. The report provides an overview of scientific knowledge related to regional nutrient loading and recommendations for restoring the bay.



### Updated Resource Compiles, Compares Water Regulations in the Region

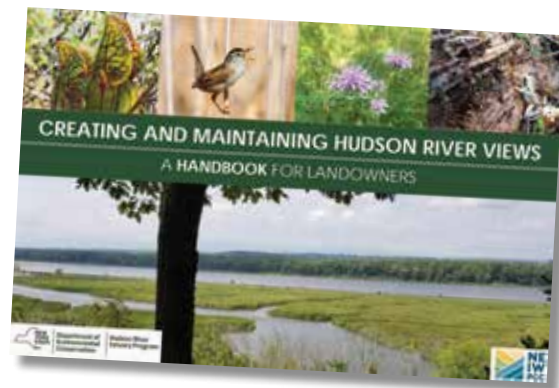
NEIWPCC updated its water quality standards matrix, comparing how the Northeast states regulate different water quality parameters. The matrix, available on NEIWPCC's website, includes criteria for 30 water quality parameters—pollutants or characteristics—that some or all the states regulate, from the aesthetics of water bodies to tritium concentrations (a radioactive hydrogen isotope). The criteria describes what states mean by "clean water," and are based on the main ways people and wildlife use a water body. Under the Clean Water Act, the EPA usually delegates their authority to regulate water quality to the states. The states often follow the EPA's recommendations, but they can also set science-based standards which better reflect their own unique natural conditions and water resource needs.

## Protection

### New Handbook Guides Hudson River Landowners

"Creating and Maintaining Hudson River Views: A Handbook for Landowners" provides guidance for historic sites, land trusts, and owners of other large properties

to use the best methods for environmental stewardship, for scenic vistas that balance aesthetic and historic goals with the protection of habitat and natural areas. Landscape architect and engineering firm Saratoga Associates, through a NEIWPCC contract in partnership with the Hudson River Estuary Program, developed and produced the handbook, which is accompanied by a three-part training video series. The handbook is available on the New York State Department of Environmental Conservation website.



### A New Plan to Protect the Peconic

The Peconic Estuary Partnership's (PEP) new management plan has a rededicated focus on cultivating relationships with new and existing partners. With support from NEIWPCC, PEP updated the plan for the first time since 2001. Climate change, nitrogen pollution, and other threats to water quality, including loss of shoreline wetlands, are some of the challenges facing





the Peconic Estuary, which lies between Long Island's north and south forks. Partnership will be key to addressing these issues. A stronger network will reinforce PEP's goals, which include resilient communities prepared for climate change, clean waters for ecosystem health and safe recreation, and a healthy ecosystem with abundant, diverse wildlife.

## Quality Management: Critical to Sound Science

NEIWPCC's Quality Management Program—a requirement of the U.S. EPA's Quality Program—safeguards the scientific integrity of all of our environmental data projects. Projects collecting or analyzing data for decision-making are required to have an approved quality assurance project plan (QAPP) to help ensure high-quality data, yielding reliable and useful results. In 2020, NEIWPCC conducted five field assessments to ensure that all approved procedures in a QAPP were being followed. The projects included: the planning and design of a bog restoration project in Freetown, Massachusetts; a municipal road stream crossings resiliency project in Saugerties, New York; the development of a data collection and management protocol for potential restoration sites in Bethlehem, New York; invasive mussel impact on native freshwater mussel communities in Lake Champlain (Vermont); and an aquatic invasive species survey, map creation, management plan and boat steward initiative in Bristol, Vermont.

## New Culvert Constructed

Following a management plan developed by Trout Unlimited and funded by the Hudson River Estuary Program in partnership with NEIWPCC, the town of Copake, New York completed



the construction of a new road culvert, replacing one severely in need of repair. The old culvert presented a barrier to aquatic organisms, impeding fish passage and reducing opportunities for spawning and survival, which can impact the population sustainability for migratory fish such as trout. The new culvert's design allows the stream bed to remain intact so that the water flows naturally and fish are able to move easily through the stream at ground level. It will also improve the town's flood resiliency, protecting both public safety and the health of the ecosystem. Estuary program staff were involved in the project's launch, educating the community and stakeholders on the importance of well-designed road stream crossings for aquatic connectivity and ecology, water quality and flood resiliency.

## 2020 State of the Hudson Report

New York State Department of Environmental Conservation (DEC) and the New York-New Jersey Harbor & Estuary Program have released



the "2020 State of the Hudson." The report was prepared with support from the New York State Environmental Protection Fund in partnership with NEIWPCC. It documents the status and trends of the Hudson River Estuary's water quality, its natural communities and inhabitants, and the health of the landscape that nurtures the Hudson and its tributaries. This compilation of recent scientific data and historical information allows program managers, partner organizations, and interested members of the public to measure and communicate progress toward state and federal goals for conserving and restoring the estuary ecosystem. The report also identifies environmental areas of need.

## Education

### L.U.S.T.Line Delves into New Normal for Tanks

The latest issue of "L.U.S.T.Line" focuses on how state underground storage tanks (UST) programs have adjusted to COVID-19's impact, as well as other topics on virtual inspections, PEI RP100, and operator training. The issue was the last for longtime editor, Ellen Frye, who has been



associated with the publication since its inception. "L.U.S.T.Line" serves as the publication of record for UST matters nationwide, covering issues such as clean-up funds, spill remediation, and prevention technologies; informing state, tribal, territorial, and federal UST regulators, consultants, contractors, and tank owners.

The publication is produced twice a year with support from the EPA's Office of Underground Storage Tanks. NEIWPCC maintains a full archive of past issues and an index, organized by topic, at [www.neiwpcc.org](http://www.neiwpcc.org).

# HIGHLIGHTS FROM NEIWPCC AND OUR PARTNERS

## A Year for the Ages: Serving our States in 2020

The fiscal year 2020 state summaries, now available on the NEIWPCC website, describe how NEIWPCC helped the Northeast preserve and advance water quality during a year dominated by the COVID-19 crisis. Despite barriers to in-person collaboration, NEIWPCC worked closely with its partners to face public health and clean water challenges. From protecting the Peconic Estuary down in New York to ensuring clean drinking water up in Maine, and everything in between: the summaries highlight on-the-ground work in each member state as well as the collective benefits from participating in our commission.

pioneer species, then an intermediate tube-building species, which today appears to be giving way to a mature and diverse community.

## A Day in the Life of the Hudson and Harbor Interactive Videos

Last October, educators from the New York State Department of Environmental Conservation (DEC) and more than 50 environmental education organizations traveled to the shores of the Hudson River estuary and piers of New York Harbor to study the Hudson's fish and invertebrates, track the river's tides and currents, and examine water quality and chemistry, during the annual event,



"Day in the Life of the Hudson and Harbor." However, this year's event took place without the 5,000 students and teachers who typically participate, so educators filmed their activities to bring the event to students. The DEC produced three interactive videos demonstrating how to measure the river's water

## Recovery on the Sea Floor

The Narragansett Bay Estuary Program (NBEP) released a StoryMap—an interactive, Esri GIS-based tool—to share research on the Narragansett Bay's sea floor in an accessible and engaging way. Readers can scroll through text, photos, cartoons, and maps, gradually unfolding 30 years of science and history at the bottom of the Bay. In 1988, the Narragansett Bay was heavily polluted, and the sea floor became uninhabitable. However, water quality in the Narragansett estuary has greatly improved over the last three decades; upgrades to wastewater treatment plants and other changes have decreased nutrient pollution in the watershed. The StoryMap walks through the species succession scientists saw happening as water quality improved—starting with a







temperature, dissolved oxygen, and salinity and show students how to identify fish species. The videos, available on the DEC website, are accompanied by online data sheets for students to record the results of the activities.

## Developing A Climate Resilience Vision

Waterfront communities on the tidal Hudson face rising sea levels and flood risk for important infrastructure, homes, and businesses. To help plan in addressing these threats, the Hudson River Estuary Program has created two short videos on the history and future of the Hudson. The videos, funded by NEIWPCC, are designed to show communities how they can adapt to climate change while prioritizing ecological and social resiliency. They are available with both English and Spanish subtitles.

One video looks back to when pollution was prevalent along the Hudson River, showing the life-changing impact of environmental cleanups, and improvements to public access by the New York State Department of Environmental Conservation (NYSDEC) and other leading organizations. Another video highlights how communities along the Hudson are envisioning the future in response to the climate change crisis and sea level rise. A key message of the video is that everyone, including low-income communities and communities of color, must be meaningfully represented in a vision for the future and the process for creating it. The NYSDEC's website features additional videos offering guidance and more information on adaptive action.

*For more information about these stories, go to the News page on NEIWPCC's website, at [www.neiwpcc.org](http://www.neiwpcc.org). You can also get our online news posts sent straight to your inbox! Email [communications@neiwpcc.org](mailto:communications@neiwpcc.org) to subscribe to our e-newsletter, "Streamlined."*

## Engagement

### Proposed Funding Formula for Sewer Overflow and Stormwater Reuse

In a letter last fall, NEIWPCC weighed in on the U.S. EPA's proposed allotment formula for the Sewer Overflow and Stormwater Reuse Municipal Grants program, addressing the proposed funding that will help manage combined sewer overflows (CSOs), sanitary sewer overflows (SSOs), and stormwater. NEIWPCC noted that the proposed formula relies on old data; approximately 83 percent is based on the 2012 Clean Watersheds Needs Survey (CWNS) and the 2010 U.S. Census. Also, the 2012 CWNS did not include complete CSO, SSO, and stormwater infrastructure needs. The letter requested that the EPA increase the weighting factor in the proposed formula for average annual precipitation, and focus on only the urban population where issues with CSOs, SSOs (municipal sewer systems) and stormwater are most prevalent.

### Streamgauge Network Funding

NEIWPCC urged Congress to increase federal funding for the United States Geological Survey Streamgauge Network, in a letter last October. The program provides invaluable data for water resource management, collecting real-time water flow data in rivers and streams across the country. The network is currently supported with federal and state matching funds, but the financial burden on states has grown unsustainable. Federal appropriations have not kept up with the rising maintenance costs. NEIWPCC suggests federal appropriations be adjusted with a roughly 50-50 cost-sharing split.

"Without current and historical streamgauge data, we cannot accurately predict how to safely repair, replace, or construct infrastructure and development," wrote Executive Director Susan Sullivan. "Continuous investment in streamgauge placement, maintenance, and research is critical to water resource management, including forecasting and responding to water resource emergencies." 🌊





# A Roadmap for Preserving and Advancing Water Quality



BY MICHELLE ST. JOHN

**N**EWPPCC's mission, to preserve and advance clean water in the Northeast through collaboration with, and service to, our member states, is articulated through our work to connect, protect, train, educate, and engage those within the water community.

Every five years we review our complete body of work in respect to the needs of our member states, and determine which water program topics should take priority.

Our goals are illustrated through NEWPPCC's water program priorities, which serve as a roadmap and will guide our work over the next several years.

This latest iteration was developed

*Michelle St. John is an information officer in NEWPPCC's Communications Division.*



under the shadow of the COVID-19 pandemic and aligned with the launch of our new name, strategic plan, critical objectives, mission, vision, and values in 2020 ("Interstate Waters," September 2020).

Unlike previous years, the 2020 update provides a narrowed number of topics, each representing a key area of concern among member states. Five were ultimately selected to represent a

snapshot of the evolving water-related topics in which NEWPPCC is best positioned to realize progress and are of importance to our member states.

The process in which we determined the five priority topics centered on a comprehensive analysis of a stakeholder survey distributed to commissioners, partners, and staff. The multi-month effort was led by NEWPPCC Wastewater and

Onsite Systems Division Director Christina Stringer and Environmental Analyst Peter Zaykoski.

NEWPPCC's current water program priorities include: contaminants of emerging concern, watershed planning and waterbody protection, infrastructure improvements, Clean Water Act modernization, and training and certification for wastewater and other environmental professionals.





## Water Priorities — New Considerations

Tumultuous social justice events that continue to bring light to inequities across our nation, coupled with access to clean water in communities such as Flint, Michigan, led NEIWPCC to emphasize our commitment to environmental justice. NEIWPCC's mission—to advance clean and sustainable water throughout the Northeast—is further nuanced by a commitment to clean water for all, especially in communities with lower socio-economic status and larger minority populations. We are not achieving our mission and realizing our vision until all of our communities have access to clean and safe water.

Climate change and resiliency, which was identified as a stand-alone priority in previous versions, is being addressed within each priority topic.

Additionally, NEIWPCC linked

## 2020 NEIWPCC Water Program Priorities

- Contaminants of Emerging Concern
- Watershed Planning and Waterbody Protection
- Infrastructure and State Revolving Fund
- Clean Water Act Modernization
- Training and Certification

each water priority topic to three critical objectives from our strategic plan—funding, workforce development, and engagement. By connecting our objectives and priorities, we are ensuring that NEIWPCC and our partners remain focused on the most critical issues facing our region today.

### The Five Priorities

#### Contaminants of Emerging Concern

As with the 2015 water program priorities, contaminants of emerging concern (CEC) remain a significant issue for NEIWPCC's member states. Per- and polyfluoroalkyl substances (PFAS) have emerged as an inexorable and intensifying threat to the environment and humans alike. PFAS contaminants are persistent and can easily travel through the environment—in wastewater, residuals, and surface water.

In 2016, the U.S. Environmental Protection Agency (EPA) issued a lifetime health advisory level of 70 parts per trillion for two major PFAS compounds—perfluorooctanoic acid (PFOA) and perfluorooctane sulfonic acid (PFOS). Many states have adopted the EPA's health advisory level, while others have developed more stringent standards or guidelines and expanded guidance to include other PFAS compounds. The variety of approaches to defining standards/guidance and the resulting disparity in drinking water values has exacerbated challenges related to risk communication in many states.

More recently, NEIWPCC and its member states have expanded their purview to include the impact PFAS (and other CECs) may have on ambient surface water. Preliminary research and planning, currently in progress, will serve to inform and guide how NEIWPCC can best support this effort, which is still largely at the state level.

NEIWPCC is leading efforts to address the cross-cutting impact

from these and other CECs through regular discourse during workgroups, commission meetings, and other gatherings. For example, our efforts to support the Northeast sewage sludge infrastructure as it addresses stressors related to PFAS impacting regional capacity for effective waste management continues to evolve.

NEIWPCC's residual workgroup is a major generator of ideas, meeting monthly to address deficiencies in regional wastewater sludge treatment, transportation, and disposal options.

Throughout the next several years, NEIWPCC will continue to develop opportunities and strategies to translate lessons learned into proactive and standardized approaches to addressing CECs in the future.

#### Watershed Planning and Waterbody Protection

A priority for NEIWPCC since 1947 when NEIWPCC set out to establish water quality standards, watershed planning and protection is an ongoing issue. Watershed planning and protection comprises water quality monitoring, pollution budgets—also known as total maximum daily loads (TMDLs), permitting, and the development of best management practices. Much of this work is carried out through our program partners—the Hudson River Estuary Program, Hudson River National Estuarine Research Reserve, Lake Champlain Basin Program, Long Island Sound Study, Narragansett Bay Estuary Program, and Peconic Estuary Partnership.

Beyond our partners, regional and state-federal collaboration is orchestrated through NEIWPCC's longstanding workgroups, including the Northeast aquatic biologists, monitoring, water quality standards, National Pollutant Discharge Elimination System (NPDES), nonpoint source, TMDL, and stormwater.

Annual conferences and workshops bring water professionals together to address issues, offer potential solutions



and explore best management practices. Future efforts, supported by NEIWPCC commissioners, include a regional monitoring network, PFAS, MS4 stormwater permits, nutrient criteria, a water quality standards academy, a collaborative tracking and accounting initiative, and a potential update to the regional mercury TMDL.

### **Infrastructure and State Revolving Fund**

Aging infrastructure throughout the Northeast is a growing problem. It is estimated that over the next 20 years, wastewater and drinking water infrastructure needs will hover close to \$100 billion. Infrastructure improvements are funded through the Clean Water and Drinking Water State Revolving Fund programs.

Many of the water distribution and collection systems are close to being in continuous use for a hundred years. With age, comes issues—water main breaks and combined sewer overflows (CSOs) are common occurrences. CSOs have a direct effect on public health, with each overflow dumping untreated wastewater into local waterways. Several cities throughout our members states still have combined sewer systems.

Federal funds are crucial for improving our water infrastructure. NEIWPCC taps into our core abilities—our knowledge, resources, and collaborative approach—to address this priority. We are currently partnering with the New York City Department of Environmental Protection (NYC DEP) to upgrade and maintain wastewater treatment facilities in watersheds from which they receive drinking water. Another NEIWPCC/NYC DEP partnership oversees the funding to communities in the East of Hudson watershed to address inadequate wastewater treatment and protect drinking water supplies for New York City.

This priority is a keen example of the environmental justice issues plaguing equal



access to clean water.

With these concerns in mind, NEIWPCC's recent efforts include a 2020-21 virtual webinar series designed to develop a national response to this critical water problem.

### **Clean Water Act Modernization**

Ensuring that the Clean Water Act (CWA) provides adequate tools to solve our nation's 21st century water challenges continues to be a priority for NEIWPCC. Increasingly complex issues—nutrients, contaminants, stormwater, nonpoint source pollution, jurisdiction rulings, climate change—necessitate the focus on Clean Water Act modernization to better serve our current needs and current reality.

Much of this work is realized through NEIWPCC's representation of our member states in national discussions, legislative monitoring, and subsequent comment letters addressing proposed amendments. Through dedicated engagement with our Congressional delegation, NEIWPCC's staff and extended network lend expertise to the conversations, to ensure that the collective voice of our member states are heard in the national conversation. With modernization, we are better positioned to address climate change and resiliency issues,

improve funding opportunities, and expand the national conversation to include other NEIWPCC program priorities including infrastructure funding and workforce development.

### **Training and Certification**

Since 1968, NEIWPCC has been committed to providing professional development and training opportunities for wastewater, drinking water and other environmental professionals preparing for state licensure and re-certification. These programs are a NEIWPCC essential offering and continue to be a priority for

our member states. Without trained and certified operators, clean water would be at risk for all.

Training opportunities continue to evolve and be responsive to member state's needs. NEIWPCC's regional in-person training program, which has had a long and robust presence within the wastewater operator training community, came to a full stop when the COVID-19 pandemic hit. In a matter of weeks, NEIWPCC staff pivoted this program into a live, virtual training opportunity, which continues to grow and expand well into 2021.

NEIWPCC has deep roots supporting wastewater operator training, certification exams, and license renewals in Maine, through the Joint Environmental Training Coordinating Committee and in Massachusetts. Our work in ensuring wastewater operators gain new skills and prepare for entry and advancement into the water workforce is adaptable. NEIWPCC partners with states and the EPA to offer training courses on a range of priority topics—whole effluent toxicity, permit writing, extreme weather events, and municipal cybersecurity.

### **On the Horizon**

Throughout the next five years, NEIWPCC will be illustrating our progress against each priority topic, offering case studies, reports, news updates and featured stories in our digital and print publications, presentations, and other public-facing opportunities. Our strengths lie in our ability to convene and collaborate with interested individuals connected to a myriad of water quality issues. Roadmap in hand, we invite you to join us on our journey. 🌈





# Assessing Nitrogen Removal Retrofits

BY AUDRA MARTIN

In 2013, NEIWPCC commissioned a study funded by the Long Island Sound Study to assess the feasibility of low-cost nitrogen removal retrofits to wastewater treatment plants in the upper Long Island Sound (LIS) watershed. The study, completed by JJ Environmental, LLC in 2015, presented a suite of cost-efficient retrofit and process modification recommendations for 21 plants in Massachusetts, New Hampshire, and Vermont.

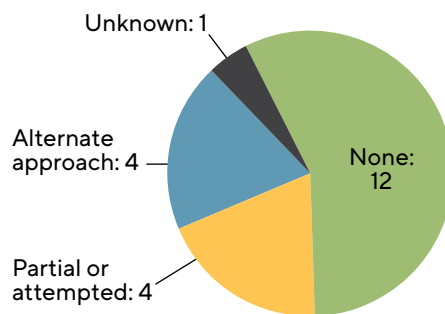
Five years later, NEIWPCC contacted the facilities to learn about any nitrogen removal upgrades and operational changes made since the study's completion.

As shown in Figure 1, of the 21 facilities included in the study, eight made some type of upgrade, of which half attempted to implement the study's recommendations and the other half chose an alternate approach to the recommendations presented. Two of the facilities were required to make changes in order to meet permit requirements, while changes were voluntary at the other six. Twelve facilities made no changes, and one could not be reached.

Excess nitrogen has long been the dominant water quality concern in LIS. In 2001, the EPA approved a total maximum daily load (TMDL) for dissolved oxygen in LIS. Nitrogen pollution in the Sound reduces dissolved oxygen to unhealthy levels, and the TMDL is designed to reduce the amount of nitrogen reaching the Sound from both point and non-point sources throughout the LIS watershed, which includes portions of all the states in the Northeast except Maine.

The study created conceptual designs using BioWin simulations that took into account current facility configuration, operation and maintenance costs, and effluent nitrogen concentration to recommend the most practical, cost-effective upgrades. The report found that 20 facilities could improve

**Figure 1. Nitrogen removal actions taken by 21 wastewater treatment facilities involved in a 2015 study.**



nitrogen removal using low-cost retrofits, predicting additional nitrogen removal totaling about 2,313 pounds per day or 844,525 pounds per year at a capital cost of \$5 million.

Of the eight facilities that attempted or partially implemented the study's recommendations, the practices to achieve nitrogen reduction involved better control of dissolved oxygen levels at the facilities, including the addition of automatic controls and timers and installation of new variable frequency drives, pumps, aerators, and/or blowers. Another plant began operating with simultaneous nitrification/denitrification, which is an accepted nitrogen removal strategy. Other facilities are undergoing complete upgrades which will include nitrogen optimization. Several facilities received supplemental funding from programs including the Massachusetts Clean Water State Revolving Fund, Massachusetts Clean Energy Center, and the Long Island Sound Futures Fund.


The study motivated one plant to implement changes, but it did not follow the recommendations due to higher than expected costs. To stay ahead of any possible mandates, that facility took an alternate approach, accomplishing nitrogen improvements with no increase in operating costs. Three facilities reported conducting additional studies on their own.

The study's recommendations raised concerns for many facilities. Two of the plants tried to incorporate operational recommendations for several years but encountered problems. The reasons

that others did not attempt the study's recommendations included concerns over damage to the plant and reduced performance, significant maintenance requirements, and preference for more traditional treatment methods. The feedback suggests that future studies should combine computer-simulated design recommendations with on-the-ground experiences and include additional facility training or support to successfully implement recommended retrofits.

Permit requirements are the primary incentive for increased nutrient removal. For most facilities, any actions are entirely voluntary as they are meeting their current National Pollutant Discharge Elimination System (NPDES) permits. Most of the facilities' permits require that they monitor and report total nitrogen concentrations in wastewater effluent, but do not specify a limit. Little incentive exists to perform voluntary upgrades, although sometimes a plant can save money by changing its operation or is eligible for funding not available for meeting permit requirements. A host of barriers may deter action, including budget constraints, limited support from community leadership, and higher priorities for their limited funds such as addressing water quality contaminants of increased concern like PFAS/PFOA. However, several facilities are anticipating changes to their next five-year permit, at which time they will initiate changes to meet newly specified nitrogen limits.

A review of the study shows that it did influence wastewater treatment facilities, but with relatively minor reductions to nitrogen reaching the Sound. Our findings suggest that presenting facilities with a conceptual design and cost estimate per additional pound of potential nitrogen removal did not prove sufficient to spur action in most cases. A more successful—albeit more costly approach—might include a comprehensive facility plan, including an iterative and adaptive implementation approach using more traditional treatment methods and providing funding for implementation. NEIWPCC remains committed to help improve water quality in Long Island Sound.

For more information, contact Richard Friesner, director of the Water Quality Programs Division, at [rfriesner@neiwpcc.org](mailto:rfriesner@neiwpcc.org). 

Audra Martin is a former environmental analyst with NEIWPCC.



# New Regional Initiative to Address Salt Pollution

*Keeping highways and other paved areas clear of ice and snow is taking a toll on the region's waters.*

**N**EWIWPCC is launching a new collaborative to help our member states address chloride contamination in drinking water and surface water, which is caused primarily by application of salt to roads, parking lots, and sidewalks. Household and industrial water softening systems also contribute to this problem.

Some states in the Northeast, such as New Hampshire and Vermont, have been monitoring chloride pollution in their waters for decades. Other states do not have comprehensive chloride monitoring programs in place, but are nonetheless seeing the cumulative effects on their watersheds of millions of tons of road salt applied over the years.

Elevated salt concentrations in drinking water can be harmful to human health. In rivers, lakes, and streams, too much salt can harm the fish, amphibians, and bugs that are adapted to live in freshwater environments.

In December 2020, NEIWPCC held two meetings for environmental staff to share data and strategies their states have taken to reduce road salt use and raise awareness about the issue.

*To learn more or to get involved in NEIWPCC's regional chloride coordination efforts, contact Christina Stringer at [cstringer@neiwpcc.org](mailto:cstringer@neiwpcc.org) or Emma Gildesgame at [egildesgame@neiwpcc.org](mailto:egildesgame@neiwpcc.org).*



While the states in the Northeast have diverse approaches to addressing chloride impairments in their waters, there are many areas of overlapping need. NEIWPCC is exploring several ways to support our states, including by facilitating further discussions for environmental officials, hosting webinar presentations, compiling a resource database, and/or leading a regional education and outreach effort.

Some of the initiatives happening in NEIWPCC member states include:

- ▶ The United States Geological Survey is conducting both targeted, local research and long-term trend monitoring to investigate chloride and specific conductivity levels in Connecticut surface waters.
- ▶ The University of Rhode Island conducted a study to assess saltwater intrusion into drinking water wells.
- ▶ The Massachusetts Department of Transportation is testing out new technology on their trucks to reduce road salt use.
- ▶ New Hampshire has a robust Green Snowpro certification program, which teaches municipalities best practices for snow and ice management. Connecticut has begun hosting similar trainings.
- ▶ The Sustainable Winter Management program (SWiM), by WIT Advisors, will educate landowners and property managers in Long Creek, Maine about salt contamination.
- ▶ New York recently passed the Randy Preston Road Salt Reduction Act, establishing the Adirondack Road Salt Reduction Task Force that will research road salt alternatives to be implemented in a three-year pilot program.
- ▶ The Vermont Department of Environmental Conservation is using continuous stream data to investigate the potential for TMDL plans to improve water quality in a chloride-polluted stream.

# Eliminating Systemic Racism in the Environmental Field

**N**EIWPCC recognizes that we cannot achieve the vision of advancing clean and sustainable water until all of the communities in the Northeast have equitable access to these resources, and diverse minority populations have representation in our environmental workforce. Therefore, NEIWPCC and our program partners have joined together to address the issues of environmental justice, and diversity, equity and inclusion (DEI) in the organization and industry.

The Long Island Sound Study's Citizen Advisory Committee and Science and Technical Advisory Committee held a joint meeting in the fall of 2020 about equitable public access to the Sound's shores. The Peconic Estuary Partnership is inviting community members to join their new workgroup for Inclusion and Environmental Justice. The Lake Champlain Basin Program is conducting a needs assessment to improve diversity, equity, and inclusion in their program and partner watershed organizations. The Narragansett Bay Estuary Program is undertaking a similar assessment and held a DEI training for staff. The Hudson River Estuary Program also held a virtual DEI workshop.

NEIWPCC has developed a DEI confirmation statement that was unanimously approved by our executive committee and our commissioners. This statement has been provided to all NEIWPCC employees to ensure understanding and support. Training programs are provided throughout the year on various diversity and inclusion

topics. These programs extend to staff who support NEIWPCC program partners.

These small, preliminary steps are only the beginning in addressing the ways that systemic racism prevents NEIWPCC from advancing clean water in the Northeast. 🌈

## Diversity, Equity, and Inclusion Commitment Statement

NEIWPCC is committed to fostering, cultivating, and preserving a culture of diversity, equity and inclusion.

Our people are the most valuable asset we have. The collective sum of the individual differences, life experiences, knowledge, inventiveness, innovation, self-expression, unique capabilities, and talent that our employees invest in their work represents a significant part of not only our culture, but our reputation and achievement as well.

We embrace and encourage our employees' differences in age, color, disability, ethnicity, family or marital status, gender identity or expression, language, national origin, physical and mental ability, political affiliation, race, religion, sexual orientation, socio-economic status, veteran status, and all other characteristics that make our employees unique.

NEIWPCC's diversity initiatives are embedded in all our policies and practices which include (but are not limited to) talent acquisition, professional development and training, compensation and benefits, and a work environment that supports our mission, strategy, and core values.

A key component of NEIWPCC's mission is recognizing communities with lower socio-economic status and those with larger minority populations who disproportionately contend with serious water quality issues and threats to their access to clean and safe water. Our work in service of underserved and underrepresented groups is a key aspect of our priorities. NEIWPCC understands that we are not achieving our mission and realizing our vision until all of our communities have access to clean and safe water.

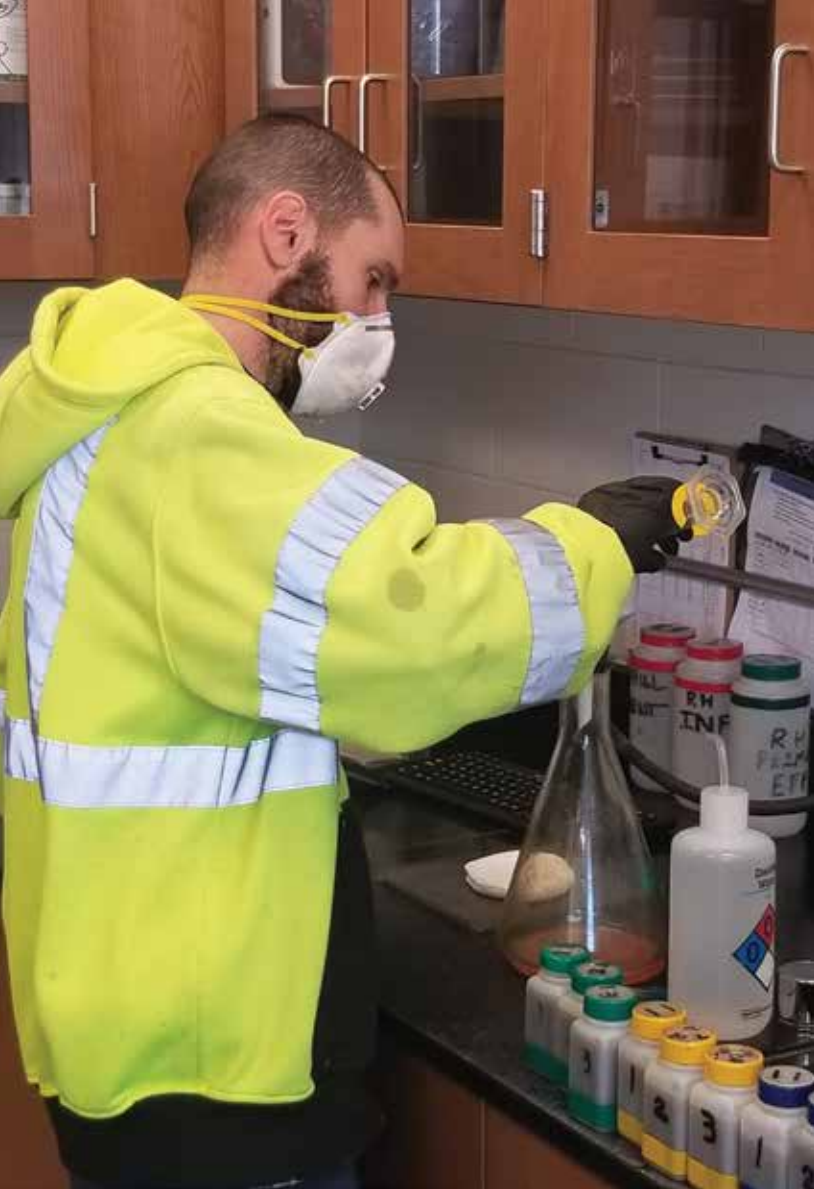
In addition, our strategic plan is the foundation for us to continue to build a more diverse and inclusive water quality workforce and to draw upon our organizational values to strengthen culture and create a sense of community for staff in support of our workforce development objective. NEIWPCC is committed to continued progress in this arena.

All employees of NEIWPCC have a responsibility to treat others with dignity and respect at all times. All employees are expected to exhibit conduct that reflects inclusion. All employees are also required to attend and complete annual diversity awareness training to enhance their knowledge to fulfill this responsibility.

NEIWPCC is an organization comprised of many people with diverse backgrounds, education, experiences and ideas who come together and strive to make our vision a reality: Clean and Sustainable Water throughout the Northeast.

Dr. Jacqueline Echols, board president of the South River Watershed Alliance, presented a webinar on environmental justice under water quality programs as part of NEIWPCC's National 303(d)/TMDL Webinar Series on March 29, 2021. The webinar recording is available on NEIWPCC's website.





**GREGGORY BISI**, Plant Operator II, Metropolitan District Commission-Rocky Hill (Connecticut)

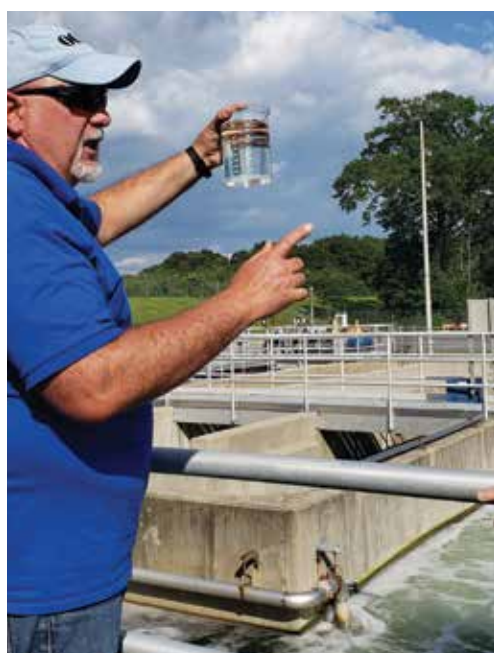
# NEIWPCC Thanks

*Clean water is essential and so*



**CRYSTAL COOPER**,  
Senior  
Wastewater  
Operator,  
Portland Water  
District  
(Maine)

**JIM LAMB**,  
Operator and  
**DEREK ALBERTSON**,  
Superintendent,  
Montville  
Water Pollution  
Control Authority  
(Connecticut)



**SCOTT GOODINSON**,  
Superintendent, Narragansett WRRF,  
(Rhode Island)

**MATTHEW SERRANO**, Crew  
Leader I/Operator III, Metropolitan  
District Commission-Rocky Hill  
(Connecticut)

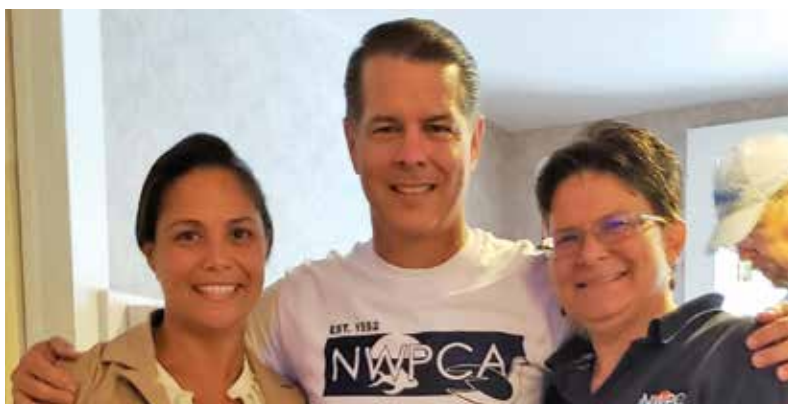


**HARDY CUMMINGS**,  
Greater Augusta Utility District  
(Maine)



# Water Operators!

*are water and wastewater workers*



**NORA LOUGH**, Biologist, Narragansett Bay Commission; **PETER CONNELL**, President, Rhode Island Clean Water Association; **JANINE BURKE-WELLS**, Executive Director, North East Biosolids & Residuals Association and former Superintendent, Warwick Sewer Authority (Rhode Island)



**STEVE VURNAKES**,  
Distribution  
Operator,  
Greater Augusta  
Utility District  
(Maine)



**BRIAN FORTIN**,  
Lead Operator,  
Bennett  
Environmental  
Associates, LLC  
(Massachusetts)



**RYAN STARKEY**,  
Operator II,  
Warwick  
Sewer  
Authority  
(Rhode  
Island)



**MATTHEW ONDRA**,  
Laboratory  
Manager,  
Rockland  
Pollution  
Control  
Facility  
(Maine)



York Sewer Department: **KIM JOYCE, THERESA TUCKER, TOM CARDONA, TIM HASKELL, PHIL TUCKER, TERRY BLANCHARD, KEVIN EATON, TRAVIS PELLETIER, JORDAN STEVES, TONY COTE, JUSTIN BARNETT** (Maine)



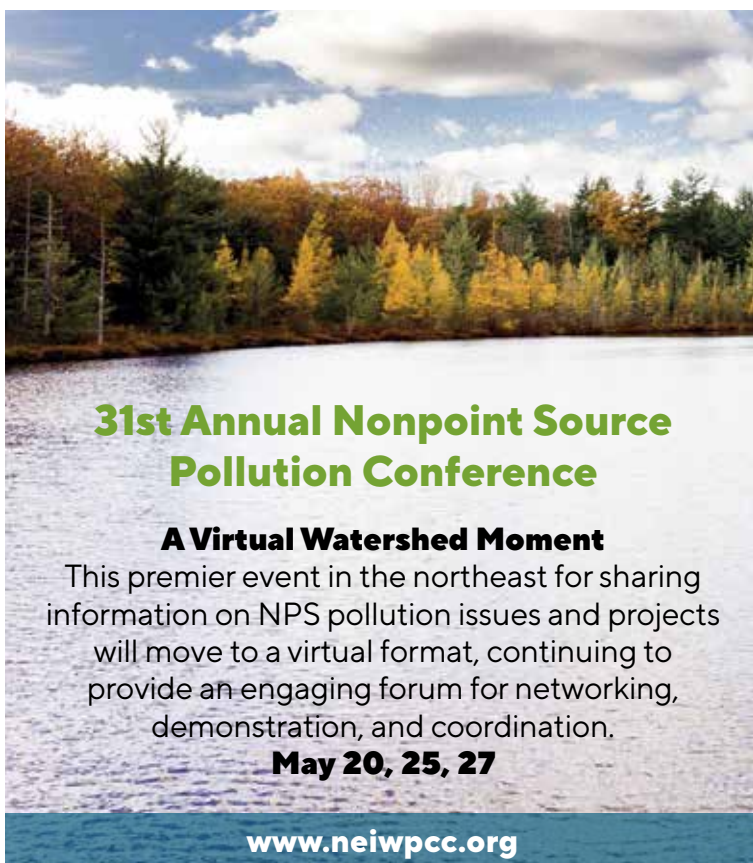


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The Missisquoi Bay algal bloom photo on page 4 is from the Québec Ministère du Développement durable, de l'Environnement et de la Lutte contre les changements climatiques. The four photos of children on pages 6 and 7 are from the New York State Department of Environmental Conservation.

## EVENTS

A banner image for the 31st Annual Nonpoint Source Pollution Conference. It shows a calm body of water in the foreground, with a dense forest of trees in autumn colors (yellows, oranges, and greens) in the background under a blue sky with white clouds.

**31st Annual Nonpoint Source  
Pollution Conference**

**A Virtual Watershed Moment**

This premier event in the northeast for sharing information on NPS pollution issues and projects will move to a virtual format, continuing to provide an engaging forum for networking, demonstration, and coordination.

**May 20, 25, 27**

[www.neiwpcc.org](http://www.neiwpcc.org)

**Water Environment Federation Residuals and Biosolids** (virtual)  
Innovative topics, peer-to-peer networking opportunities, and informative sessions from forward-thinking leaders in the water sector.

**May 11-13** • [www.wef.org](http://www.wef.org)

**NEWEA 2021 Spring Meeting and Exhibit** (virtual)  
Annual three-day technical meeting for water quality professionals in the wastewater industry.

**Date TBD** • [www.newea.org](http://www.newea.org)

**NYWEA 2021 Spring Technical Conference and Exhibition** (virtual)

**June 15-17** • [www.nywea.org](http://www.nywea.org)

**WEF Stormwater Summit** (virtual)

Innovative topics, peer-to-peer networking opportunities, and informative sessions from forward-thinking leaders in the water sector.

**June 22-23** • [www.wef.org](http://www.wef.org)

**American Water Works Association, Membrane Technology Conference and Exposition**

Explore how the latest developments in membrane technology can enhance water reliability and quality.

**July 19-22**, West Palm Beach, Florida • [www.awwa.org](http://www.awwa.org)

