Long Island Watershed Program (LIWP) - Newsletter
2025 Summary of Partnerships

As the Long Island Nitrogen Action Plan (LINAP) marks a decade of action and the initiation of the Long Island Watershed Program kicks off the next ten years of implementation priorities, 2025 offers a meaningful moment to look back on the progress achieved in reducing nitrogen pollution and strengthening water quality across Long Island. Join us as we spotlight key accomplishments from our partners and look ahead to the initiatives shaping the next chapter of this work. Read contributions from:

- New York State Department of Environmental Conservation
- Long Island Regional Planning Council
- Nassau County
- Suffolk County
- Nutrient Bioextraction
- Stony Brook University Center for Clean Water Technology
- Long Island Sound Partnership
- South Shore Estuary Reserve
- Peconic Estuary Partnership

Department of Environmental Conservation

In 2025, the New York State Department of Environmental Conservation (DEC) formally adopted the Long Island Watershed Action Agenda (Action Agenda), a 10-year strategic plan to safeguard and restore Long Island's surface, coastal, and groundwater resources.
The Action Agenda expands on the achievements of the Long Island Nitrogen Action Plan (LINAP), which since its inception in 2016 has allocated over $1.6 billion toward more than 300 nitrogen-reduction projects in Nassau and Suffolk counties. But unlike LINAP — which focused primarily on nitrogen pollution — the Action Agenda adopts a comprehensive, watershed-wide approach. It is organized around 4 main goals: clean water, healthy habitats, sustainable groundwater resources, and inspired and engaged public. With this holistic, ecosystem-based approach, the Action Agenda positions Long Island to address not only nutrient pollution, but also challenges such as water quantity, marine debris, habitat degradation, and contaminants of emerging concerns.

Overall, the Long Island Watershed Action Agenda charts a bold, forward-looking path combining science, collaboration, and long-term vision to protect the region's water resources, ecosystems, and communities now and into the future. To learn more about the Long Island Watershed Program and the Action Agenda, visit the program webpage here.

In 2025, DEC also released the Permeable Reactive Barrier (PRB) Project Roadmap, a guidance document designed to support the site evaluation, design, implementation, and maintenance and monitoring of PRBs to reduce nitrogen in Long Island's groundwater, known as legacy nitrogen. PRBs are a passive treatment technology that use reactive materials such as woodchips or other carbon sources to intercept and remove nitrogen from groundwater before it reaches bays, estuaries, and other sensitive surface waters. The Roadmap outlines steps users can take to determine when and where PRBs may be appropriate, provides design and siting considerations, and highlights the need for maintenance and monitoring of PRBs. The document serves as a practical resource for municipalities, engineers, environmental organizations, and community partners interested in exploring PRBs as part of local nitrogen-reduction strategies. By offering clear planning steps, regulatory guidance, monitoring recommendations, and cost considerations, the Roadmap helps bridge the gap between concept and implementation. As nitrogen reduction remains a central focus of watershed restoration efforts, PRBs can be a valuable addition to Long Island's toolkit—particularly for sites where source reduction has been achieved but legacy nitrogen still remains in the system.

2025 also marked the third year for the Long Island Garden Rewards Program, a collaborative effort with the Long Island Regional Planning Council (LIRPC), NEIWPCC, and the Long Island Sound Partnership. This program reimburses property owners up to $500 to undertake small-scale water improvement or conservation projects on their properties, including rain garden installations, native plant plantings, and the use of rain barrels. The three eligible practices all play a key role in reducing stormwater runoff and fertilizer usage. Rain gardens reduce and treat runoff by slowing the flow and allowing water to percolate through the garden's roots and soil. Rain barrels capture stormwater, reducing runoff, and promoting water conservation. Native plants can require less fertilizer, and can treat stormwater as well through their long, deep root systems. This program encourages Long Islanders to take action on their property and protect Long Island waterbodies. To date, more than 500 participants have received reimbursements! 2026 is set to be an even more successful year with additional funding for the program provided by the South Shore Estuary Reserve.

A newly constructed rain garden diverts stormwater to infiltrate into the ground. Photo by Long Island Garden Rewards Program participant Lucas Argyros.

Long Island Regional Planning Council

One of the many highlights of 2025 was the continued development of the Nitrogen Smart Communities (NSC), a voluntary program initiated by LINAP to promote local action and awareness to reduce nitrogen from all sources within municipalities on Long Island. By participating in the program, communities will better understand their unique sources of nitrogen and commit to implementing reduction activities based on those priorities. The two pilot municipalities, the Town of Smithtown and the Town of North Hempstead, are successfully progressing through the series of steps to earn tiered levels of certification.

The Town of Smithtown earned bronze level certification in 2025, validating the municipality's commitment to enlisting the community's long-term support and participation of the NSC program. The Town of North Hempstead is also on their way to earning bronze status. Communities will benefit from participating in the NSC by being acknowledged as one of the foremost leaders for cleaner water on Long Island and creating a deeper engagement with residents who care about the future of Long Island. DEC secured funding for the pilot program from the Long Island Sound Partnership. To learn more about the program visit Nitrogen Smart Communities.

Nitrogen Smart Communities program logo. Photo Credit: LIRPC.

2025 also marked the sixth year of the Long Island Water Quality Challenge (LIWQC). The LIWQC encourages project-based learning in Science, Technology, Engineering, Arts, and Mathematics (STEAM) in Long Island schools and helps students in grades 6-12 develop a greater understanding of the importance of protecting Long Island's crucial water resources – with a specific focus on reducing or eliminating nitrogen pollution. Fourteen student teams competed to create innovative green infrastructure designs to reduce nitrogen pollution caused by stormwater runoff on school grounds. Four winning schools were selected, with three of the teams accepting a grant up to $2,500 to implement or partially implement the winning project design. To read more about the winning projects, check out the June newsletter.

William Floyd High School 2025 Long Island Water Quality Challenge Winners. Photo Credit LIRPC.

The Hempstead Bay Water Quality Monitoring Program, now in its sixth year, continues to provide essential, science-based data to guide restoration of one of Long Island's most ecologically and economically important coastal ecosystems. Led by DEC, Hofstra University, the Town of Hempstead, and the LIRPC, the program tracks nitrogen pollution, water quality trends, and atmospheric nitrogen deposition, while recently expanding to monitor ocean acidification. Data from monthly sampling and continuous sensors across the bay establish a baseline to evaluate the impacts of major infrastructure upgrades, such as the South Shore Water Reclamation Facility improvements and the Bay Park Conveyance Project, and long-term environmental changes caused by development, storms, and climate change. By combining decades of historical data with new, high-frequency measurements, the program informs adaptive management, supports sustainable fisheries and recreation, and ensures Hempstead Bay's ecological and economic resilience for the future. To learn more about the monitoring program, check out the August newsletter featuring an interview with Dr. Steve Raciti, the project lead and Associate Professor of Biology at Hofstra University.

The LIRPC also partnered with the Town of Hempstead to prepare an aquaculture license/lease feasibility study for Hempstead Bay. The study, which began at the end of 2022, has now been completed and provides essential information for the Town to consider and adopt a lease/license program. A well-planned and implemented aquaculture program is part of the Town's broader efforts to improve water quality. All final feasibility study documents have been posted to the Town of Hempstead's feasibility study website and are available to the public for viewing.

In 2025, the LIRPC continued its collaboration with Save the Sound to develop training modules for Long Island water quality data generators on how to use QuickDrops, a new community science data platform launched in the spring of 2025. QuickDrops, developed in partnership with Harbor Watch, the Maritime Aquarium at Norwalk, The Commons, and the University of Connecticut, makes community-collected water quality data easily accessible to regulators, advocates, academics, and agency experts, supporting more regional, science-driven decision-making. The platform offers robust data storage, download, visualization, and sharing options, while also streamlining uploads to the EPA Water Quality Exchange. Nitrogen, in its various forms, is among the first datasets being entered, centralizing information to help regulators make data-driven decisions for protecting and restoring coastal waters. Training sessions for data collectors will continue through 2026.

A key contributor to nitrogen pollution on Long Island is the overuse of fertilizers on lawns, yet many homeowners continue to heavily fertilize despite the environmental impacts. To better understand homeowner attitudes and behaviors, the LIRPC issued a Request for Proposals for a public opinion poll on lawn and garden fertilization. The resulting Siena Research Institute surveyed 1,002 homeowners across Nassau and Suffolk counties and revealed a clear gap between awareness and action: while three out of four homeowners recognize that improper fertilizer use can harm the environment, nearly two-thirds still fertilize their lawns, and more than 90% believe a green lawn boosts property value. The poll also found that 65% of homeowners fertilize their lawns, 76% are concerned about environmental impacts, and nearly 70% support restrictions on fertilizer use. These findings underscore the importance of targeted public education and messaging to help homeowners adopt more sustainable practices and support Long Island's nitrogen reduction efforts.

Photo credit: Long Island Regional Planning Council.

This year LIRPC also launched a groundbreaking initiative to improve the environmental health of Lake Ronkonkoma. With $300,000 in funding from the DEC, the Lake Ronkonkoma Lakekeeper Pilot Position has been established as a two-year demonstration project. The Lakekeeper will play a vital role in monitoring water quality, identifying improvement projects, securing grant funding, and engaging the community through initiatives like the Lake Steward Internship Program. Additional responsibilities include creating a State of the Lake report, launching unified stormwater mapping using GIS, and addressing public concerns about water pollution. This full-time position, supervised by Dr. Christopher Gobler of the School of Marine and Atmospheric Sciences, aims to preserve and improve the environmental quality of Lake Ronkonkoma. The pilot program serves as a model for other communities, highlighting the importance of dedicated environmental oversight in maintaining local ecosystems.

Nassau County

Last year was a milestone year for Nassau County, achieving significant progress across multiple initiatives aimed at reducing nitrogen pollution and enhancing wastewater treatment systems including the expansion of the Septic Environmental Program to Improve Cleanliness (SEPTIC) Program. The program provides funding to eligible residents, small businesses, and non-profit organizations to replace conventional cesspools or septic systems with Innovative Alternative Onsite Wastewater Treatment Systems (I/A OWTS). The program is administered by Nassau County Soil and Water Conservation District (NCSWCD) and funded by the New York State Septic Replacement Program and numerous federal sources. In 2025, the program also received a grant from the South Shore Estuary Reserve to install systems on the South Shore and in Point Lookout. To date, there have been 195 successful installations with an increasing number of residents participating!

The Bay Park Conveyance Project, a collaborative effort between DEC and Nassau County Department of Public Works, made significant progress this past year. This groundbreaking project will convey treated wastewater from the South Shore Water Reclamation Facility (SSWRF), which currently discharges into Reynolds Channel, to the Cedar Creek Water Pollution Control Plant ocean outfall pipe. To date, over 90 percent of the construction is complete and is designed to divert 75 million gallons per day (MGD) of treated wastewater, reducing nitrogen loading in Reynolds Channel and the Western Bays by up to 90 percent! The results of the project will spur the ecological recovery of the Western Bays marshlands which will protect coastal communities from storm surge and sea-level rise. The project is expected to be fully operational by 2027.

The County is also working on the consolidation of the Long Beach Water Pollution Control Plant. The project to convert the Long Beach Water Pollution Control Plant (WPCP) to a pump station and reroute Long Beach's wastewater – with an average flow of 5 MGD and current peak flow of about 16 MGD – to the newly upgraded SSWRF is underway. The wastewater will be treated more effectively at SSWRF before being sent to Cedar Creek Wastewater WPCP and discharged into the ocean. Part of the initiative is also to enhance the resiliency and environmental health of the Hassocks Wetlands by revitalizing crucial marshlands, which will diminish the impact of storm surges. The project is well underway and will be completed in 2026.

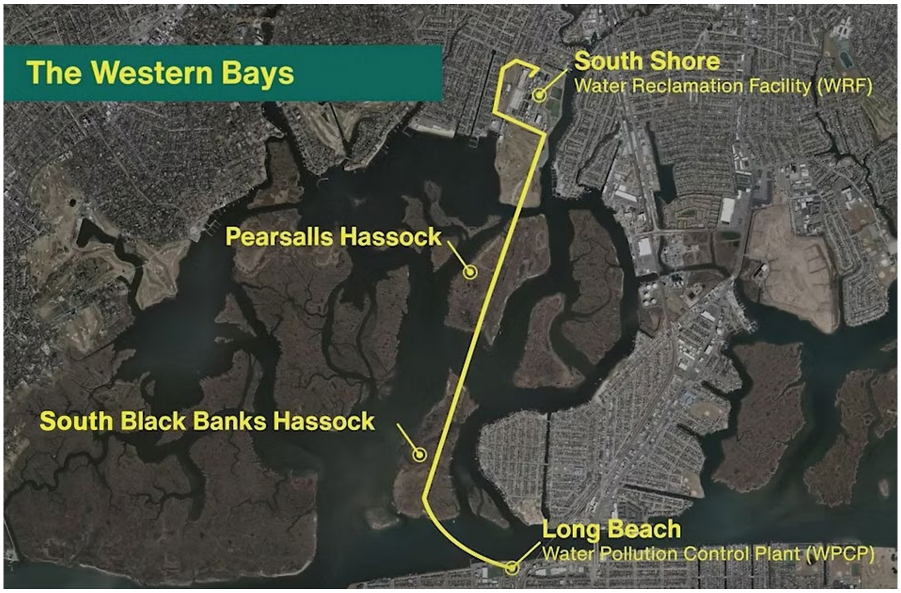

Photo credit: Nassau County.

Point Lookout is one of the few areas on Nassau County's south shore that remains unsewered, relying on outdated cesspools and septic systems. This past year, a sewering feasibility study neared completion and is the first step in ushering in a new era of public wastewater treatment for the 800 homes and businesses in Point Lookout.

These initiatives signify the County's commitment to safeguarding our waters and ensuring a sustainable future for Nassau County.

Suffolk County

This year marked a major milestone for water quality in Suffolk County with the implementation of the Suffolk County Water Quality Restoration Act, which establishes a County Wastewater Management District to unify all county-operated sewer districts and a dedicated 1/8-cent sales tax to fund sewer area expansions and cesspool or septic system upgrades. Since taking effect on March 1, 2025, the tax has already generated over $40 million and is projected to raise $2.6 billion over the next 35 years, creating a long-term, stable revenue stream to reverse decades of nitrogen pollution impacting groundwater, bays, and estuaries.

The Act also created the Suffolk County Water Quality Restoration Fund, overseen by a 21-member Board of Trustees representing municipalities, environmental organizations, industry, and state and county officials. This fall, the Board unanimously approved its first Implementation Plan, which provides a countywide framework for identifying and ranking eligible clean water projects to ensure that sales tax investments deliver the greatest environmental benefit. Thirty projects—representing more than $3.5 billion in potential investments—were evaluated using rigorous scoring criteria, including surface and ground-water priority ranking, nitrogen-reduction goals, water reuse and treatment, level of design completeness, and funding secured. The Implementation Plan was officially approved by the Legislature and County Executive.

Photo credit: The Nature Conservancy.

Suffolk County also made substantial progress with sewer expansion through the [Suffolk County Coastal Resiliency Initiative (SCCRI)](), supported by federal and state funding. Once complete, SCCRI will eliminate more than 5,000 cesspools and septic systems, improving water quality, strengthening wetlands, boosting economic development, and advancing coastal protection. This represents the largest expansion of sewer infrastructure in the County in nearly 50 years!

Key SCCRI milestones just this year include near-completion of sewers in the Carlls River Watershed, serving North Babylon and West Babylon, and the Forge River Watershed. Significant advancement was also made on the $26 million Kings Park Downtown Sewer Project, a cornerstone of the hamlet's revitalization, while the Huntington Station Hub Sewer Project broke ground in February and will connect 224 parcels to support ongoing redevelopment.

Beyond these projects, the Town of Brookhaven accepted $20 million of American Rescue Plan Act (ARPA) funds from Suffolk County Executive Ed Romaine, for the creation of a new sewer district for the Mastic Beach Neighborhood Road Revitalization Area, a transformational step toward revitalizing the downtown area. These sewering projects play a vital role in protecting Long Island's vulnerable coastlines by ensuring reliable sewage treatment and returning cleaner water to the environment.

And the County has no plans to stop here. Additional sewer extension projects are currently in development, advancing the next generation of clean water infrastructure.

In areas of Suffolk County where sewers are not a viable solution, the County has successfully advanced the use of Innovative and Alternative Onsite Wastewater Treatment Systems (I/A OWTS) through its Septic Improvement Program (SIP) and the State Septic System Replacement Program. The two programs administered by the County offers grants of up to $30,000 from State and County funding sources for homeowners to replace cesspools or septic systems with advanced I/A OWTS. Recent County and State Legislation allow for an increased amount of funding per grant, and when effective, will allow eligible applicants to receive up to $45,000 for their septic upgrade project. Rebates from the Towns of Southampton, East Hampton, and Shelter Island provide additional funding for eligible residents in those towns. To meet the demand for applications in 2025 (averaging 110 each month), efforts were made to streamline the program and to expand grant-funded IA OWTS installations. These improvements included electronic issuances of grant contracts, combining the County and New York State grants to the same contract, and additional staffing. To date over 7,000 IA OWTS have been installed.

And still further, the County is finalizing a comprehensive Sewage Treatment Plant (STP) Capacity Study, conducting rigorous sampling of 24 private STPs to determine whether they have the ability to serve additional parcels. Four plants will undergo further feasibility studies to assess construction costs and conceptual designs for connecting adjacent unsewered areas. Private STPs with available capacity offer a unique opportunity to advance water quality goals while facilitating targeted economic development. The study's findings, which will guide future sewer expansion decisions, are expected later this year.

Suffolk County continues to make a significant investment in Long Island, ensuring safe drinking water and healthier ecosystems for future generations.

Nutrient Bioextraction

The Nutrient Bioextraction Initiative made significant progress this year in researching nutrient removal rates achieved by cultivating and harvesting seaweed and shellfish and investigating methods to scale up nutrient bioextraction. This information will lay the foundation for a bioextraction industry that provides economic and environmental benefits for New York's coastal waters and communities. The Initiative recently welcomed a new Nutrient Bioextraction Assistant, who will develop outreach and communication materials to raise awareness and engagement in bioextraction efforts.

To understand the feasibility of a bioextraction industry and inform research gaps, a study titled *Economic Feasibility of Commercial Nutrient Bioextraction in Long Island Sound* was conducted by SUNY Farmingdale to identify the most effective shellfish and seaweeds for bioextraction, the most profitable market opportunities after harvest, and the logistical and legal barriers to establishing a bioextraction industry in New York and Connecticut. The full report can be found in the NEIWPCC Resource Library, and a summary of main findings will be made available to the public later this year.

Ribbed mussels were identified by the economic feasibility study as a high-ranking shellfish species for bioextraction, though they currently lack commercial viability as they are not desired for human consumption. A pilot study was completed this year by Cornell Cooperative Extension of Suffolk County (CCE), NEIWPCC, and DEC to investigate their nutrient extraction potential and suitability as animal feed. The study found that a theoretical one-acre farm could remove an estimated 54.98 kg (121.2 lbs) of nitrogen and 318.61 kg (702.4 lbs) of carbon at harvest, suggesting ribbed mussel farming could be an effective in-water nutrient management strategy. The study also found that ribbed mussels have potential suitability as animal feed, highlighting a prospective market for these mussels. The full report for this pilot study can also be found in the NEIWPCC Resource Library. In a second study titled *Refinement of Atlantic Ribbed Mussel (Geukensia demissa) Aquaculture Methods*, CCE investigated a variety of standard shellfish hatchery techniques to condition and spawn ribbed mussels so they can be sustainably sourced for a future bioextraction industry. The study found high success rates with the Bin-Silo method for ribbed mussel spawning. The final report for this study will be released later this year.


Adult ribbed mussels used for spawning trials conducted by Cornell Cooperative Extension of Suffolk County. Photo Credit: Kimarie Yap, NEIWPCC/NYSDEC Bioextraction Coordinator.

2025 was an exciting year for bioextraction research in partnership with SUNY Stony Brook. Three projects are ongoing, with the *Long-Term Quantification of Nitrogen Bioextraction and Carbon Capture by Seaweed and Bivalve Aquaculture in Long Island Sound* study nearing completion. This study is quantifying the nitrogen and carbon capture by year-round cultivation and harvest of seaweeds and oysters in the East River, Oyster Bay, Northport Harbor, and

Mount Sinai Harbor in New York. The project completed its second year with a final report expected to be released this spring. A second project titled *Investigating the Long-Term Storage of Viable Sugar Kelp Spores and Use of Cultivated Sugar Kelp for Seaweed Turfgrass Fertilizer Amendment Study* investigated nutrient removal rates of sugar kelp cultivated from gametophyte cultures. Preliminary results indicate that this method resulted in higher yield, and thus higher nitrogen uptake, compared to the traditional seed-sourcing method. Lastly, a third project titled *Assessment of Wild Harvest of Seaweeds as a Tool to Bioextract Nutrients from Coastal Waters* started scouting sites for removal of nuisance seaweed blooms and will investigate this method's potential as a nitrogen management strategy.

Sugar kelp with reproductive tissue harvested in June 2025 from East River by SUNY Maritime College and SUNY Stony Brook. Photo Credit: Mike Doall, SUNY Stony Brook

Looking ahead, 2026 will continue to build on the momentum of these Nutrient Bioextraction projects. A Phase two to the *Economic Feasibility of Commercial Nutrient Bioextraction in Long Island Sound* project will be initiated to create an Action Plan to address bottlenecks identified in the earlier study, in support of a commercial bioextraction industry. CCE will begin a Phase two study for the project *Refinement of Atlantic Ribbed Mussel (Geukensia demissa) Aquaculture Methods* to continue refining ribbed mussel aquaculture techniques, focused on increasing survival rates of spawned ribbed mussels. SUNY Stony Brook's *Long-Term Quantification of Nitrogen Bioextraction and Carbon Capture by Seaweed and Bivalve*

Aquaculture in Long Island Sound study will continue monitoring work for two more years to understand the long-term effects of bioextraction on water quality.

Stony Brook University's New York State Center for Clean Water Technology

Stony Brook University's New York State Center for Clean Water Technology (the Center) had a highly productive year in 2025. Supported by the New York State Environmental Protection Fund and administered by the DEC, with additional funding from the New York State Department of Health, the Center continues to advance innovative solutions to Long Island's water quality challenges. Under the leadership of Director Dr. Chris Gobler, the Center made substantial progress in wastewater nitrogen and phosphorus management and emerging contaminants research.

Wastewater Nitrogen Management

Conventional Retrofits
The Center developed and installed a new full-scale prototype of a "conventional retrofit" at the Center's Wastewater Research and innovation Facility (WRIF). The prototype was designed by Watershed Manager Tom Varley. This low-cost, minimally disruptive approach introduces floating moving bed bioreactor (MBBR) pods into existing septic tanks for nitrification, paired with a woodchip biofilter for denitrification. By reusing existing infrastructure, the system significantly reduces costs and property impacts while requiring minimal additional operation and maintenance.

Testing in summer and fall 2025 produced effluent meeting drinking water standards for nitrogen (10 mg/L). The retrofit has the potential to upgrade more than 100,000 conventional systems in Suffolk County. The project was selected as one of four winners of Stony Brook University's Brook and Beyond Challenge, and a provisional patent application has been filed.



Conventional retrofit at the Test Center. Photo credits: Tom Varley.

FlexTreat™ Biofilter System
In April 2024, the Center received a U.S. patent for the FlexTreat Biofilter™ system, designed by Associate Director of Engineering and Construction Frank Russo, P.E. FlexTreat™ is a

prefabricated, plug-and-play, continuous-flow nitrogen-removing system using readily available media and woodchips, with flexible controls to accommodate varying wastewater conditions. After three years of testing the system at the Center's WRIF, FlexTreat™ has consistently met or exceeded the Suffolk County effluent target of 19 mg/l total nitrogen. System refinements continue to reduce costs and maintenance while improving performance. Construction of Prototype II was completed in June 2025, and performance testing is underway, with plans to seek Suffolk County Department of Health Services (SCDHS) approval and global certification.

NYS Center for Clean Water Technology, Wastewater Research and Innovation Facility; Flex-Treat Prototype 1. Photo Credit: The Center.

Nitrogen-Removing Biofilters (NRBs)

Under the direction of Associate Director Dr. Stuart Waugh, the Center's non-proprietary NRB designs have been installed at more than two dozen sites. Recent testing showed nitrogen removal rates of 85–90%, outperforming traditional onsite systems. NRBs use local materials and labor, have few moving parts, and are the only IA systems in Suffolk County demonstrated to remove pharmaceuticals, personal care products, and emerging contaminants. Both lined and woodchip-box NRBs have received provisional approval from SCDHS.

Five gravity-dosed NRBs will be installed in sensitive Suffolk County Parks through a Water Quality Protection and Restoration Program (WQPRP) grant (subject to appropriation by the

Suffolk County Legislature). These systems require no electricity and have achieved average effluent nitrogen levels of approximately 11 mg/L at similar installations at the Shinnecock Indian Nation.

The Center also received more than $500,000 from the 2025 Long Island Sound Futures Fund to install ten woodchip-box NRBs in the Long Island Sound watershed of Suffolk County. Design and permitting are complete, and installations are expected in 2026.

Woodchip Box Polishing Units
The Center wrote an engineering report, approved by SCDHS, which enabled the use of woodchip box polishing units ancillary to approved IA systems. Initial testing shows combined systems can meet drinking water standards for nitrogen. The Center has secured Community Preservation Fund (CPF) funding from the towns of East Hampton and Southampton to pay for these woodchip boxes.

Failed Denites
The Center has received a WQPRP grant (subject to Suffolk County Legislature appropriation) to evaluate the feasibility of retrofitting failed modified subsurface sewage disposal systems, also known as "failed denites." In the 1980s, these systems allowed excess development density in unsewered areas. The first denite demo system worked well, but none of the next 450 that were installed were found to perform. DEC banned the system, but the legacy problem remains.

This project will evaluate the feasibility of retrofits with superior nitrogen-removing biofilters, as well as other IA systems. Three sites will be selected for evaluation with the goal of constructing at least one retrofit in 2026.

Additional Nitrogen Initiative
A Guidance Document for Recirculating Gravel Filters (RGFs) and Vegetated RGFs (sometimes characterized as constructed wetlands) was finalized during the year. Installation of a recirculating gravel filter (RGF) at Pollack Krasner House was completed during the first week of April. RGFs are onsite wastewater treatment systems which operate by vertical flow, where wastewater is pumped from a recirculation tank to a gravel filter from which it percolates downward by gravity through gravel media.

The Center fully supports DEC and Suffolk County in efforts to reuse Sewage Treatment Plant effluent and will work to explore the potential for reuse on Stony Brook campus ballfields and properties.

The Center also worked with DEC and Suffolk County to complete a roadmap for Permeable Reactive Barriers (PRBs). Site characterization work led to a $300,000 Community Preservation Fund grant for PRB installation at Mill Pond, with additional sites under evaluation.

Research also continued on bioextraction using seaweed-based fertilizers and urine nutrient recovery using zeolite.

Wastewater Phosphorus Initiatives
As the Long Island Watershed Program and its Action Agenda expand to focus on pollutants beyond just nitrogen, the Center increased its focus on phosphorus, a key contaminant impairing many freshwater bodies in Suffolk County, including Lake Ronkonkoma. Led by Dr. Xinwei Mao, Associate Director of Phosphorus Initiatives, the Center team aims to develop affordable, reliable, and effective onsite wastewater treatment technologies to remove phosphorus utilizing multiple approaches including adsorption, precipitation and electro-chemical reactions.

In 2026, the Center plans to install multiple phosphorus removal systems to test real-world performance and impacts on groundwater and surface waters, including installations in the Lake Ronkonkoma watershed and at a county park site, supporting broader watershed restoration and wastewater management efforts.

Emerging Contaminants
Led by Associate Director for Emerging Contaminants Research, Dr. Lokesh Padhye, the Center conducts an emerging contaminant (EC) program, evaluating pollutants such as 1,4-dioxane, PFAS, and other ECs in wastewater, groundwater, drinking water, surface water, and aquatic ecosystems.

Biochar is a charcoal-like substance made by heating organic matter, like wood or agricultural waste, in a high-temperature, low-oxygen process called pyrolysis. This process prevents the material from burning completely, leaving behind a carbon-rich solid. Because its carbon structure resists decomposition, biochar can lock away carbon for thousands of years, making it a powerful tool for carbon sequestration. In addition, biochar has the capacity to absorb various contaminants from water including some forms of nitrogen and phosphorus and PFAS. The Center is planning on installing and utilizing biochar production units to advance a renewable/sustainable solution to water quality challenges in Suffolk County. The units will convert Long Island feedstocks such as invasive bamboo, waste wood, kelp, and oyster shells into high-performance carbon sorbents for removing nutrients and ECs from drinking water, groundwater, and wastewater. Phase 1 in 2026 will focus on bench-scale testing, with the goal of scaling up production in 2027 for real-world treatment applications across the County.

Long Island Sound Partnership

The Long Island Sound Partnership (LIS Partnership) celebrated its 40th anniversary with a new name (formerly Long Island Sound Study)! The Long Island Sound Study was originally created in 1985 when Congress enacted legislation to conduct a single study to research, monitor, and assess water quality on the Long Island Sound. Today, the LIS Partnership reflects a mission of coordination and implementation that includes numerous projects such as nitrogen management, habitat restoration, public education, research, and water monitoring.

New Long Island Sound Partnership Logo. Photo Credit: Long Island Sound Partnership.

In conjunction with the new name, the LIS Partnership released an updated Comprehensive Conservation and Management Plan (CCMP), providing a ten-year roadmap to further restore and protect the Long Island Sound. The 2025 plan consists of four goals: clean water and healthy watersheds, thriving habitats and abundant wildlife, sustainable and resilient communities, and an informed and engaged public. Just a few of the projects to be implemented include replacing or upgrading 11,500 septic systems and cesspools with advanced systems that reduce nutrient pollution entering the Sound, restoring 1,000 acres of coastal Long Island Sound habitat by 2030, and achieving and maintaining permanent protection of 35% of Long Island Sound watershed by 2030. The full CCMP can be read here.

The Long Island Sound reached a major milestone in water quality this year, with hypoxia, or low oxygen in bottom waters, at its lowest since the Long Island Sound Partnership began tracking the levels in 1987! That means fewer areas of the Sound were uninhabitable for fish, shellfish, and other aquatic animals.

This year also marked the first test of a new Long Island Sound Hypoxia Forecasting Model. Developed in collaboration with scientists from the U.S. Environmental Protection Agency, the hypoxia forecast model draws on more than 30 years of water quality monitoring data to predict when and where hypoxic conditions are likely to occur in Long Island Sound throughout the summer months. Tools like the Hypoxia Forecasting Model and the newly launched Hypoxia Toolkit, a collection of educational resources, maps, and animations, help scientists, managers, and residents better understand what's happening beneath the surface and what actions make a difference. Learn more about hypoxia in Long Island Sound and explore the Hypoxia Toolkit here.

The Long Island Sound Public Perceptions Research Study was released in August 2025, timed to help guide actions in the updated CCMP. The survey polled over 3,700 of the nearly 9 million residents of the Long Island Sound watershed, with the majority considering the Long Island Sound as an asset to the quality of life and economy of the region. The survey was conducted by Connecticut Sea Grant on behalf of the LIS Partnership. The survey report shares residents' perceptions on outdoor activities, environmental behaviors, stewardship practices, and more.

In the survey, top-of-mind impressions of Long Island Sound are overwhelmingly positive. Asked for three adjectives to describe the Sound, survey respondents offered words like “beautiful,” “fun, “peaceful,” and “relaxing,” along with activity words like “fishing” and “swimming. Phot credit: Long Island Sound Partnership.

In 2025 fourteen Long Island Sound communities were awarded over $900,000 through the second round of the Long Island Sound Resilience Planning Support Program. The program is aimed at supporting communities by identifying and developing resilience and sustainability-focused goals. The program is a collaboration of New York Sea Grant (NYSG), Connecticut Sea Grant (CTSG), and the LIS Partnership. The awarded projects include community resilience plans, shoreline adaptation plans, natural resource inventories, watershed management plans, stormwater remediation strategies and design plans. A list of the 2025 recipients can be found here.

This past year the Long Island Sound Community Impact Fund (LISCIF) awarded sixteen grant recipients from various organizations, Tribal Nations, and institution across the Long Island Sound region. The LISCIF is a grant program formed by a partnership between Restore America’s Estuaries (RAE), the U.S. Environmental Protection Agency, and the LIS Partnership. LISCIF provides technical and financial assistance to environmentally distressed communities to address environmental health impacts and to improve the quality and accessibility of the Long Island Sound. Restore Americas Estuaries also announced the continuation of the LISCIF annual grant competition for an additional three years, providing $1.2 million annually for each round. A full list of grant recipients can be viewed here.

And as one of the longest running community science projects, the annual River Herring & American Eel Survey continued in 2025. Volunteers arrived assisted scientists in tracking track crucial habitat restoration efforts, connectivity needs, and assess fish passage performance. This information is vital to improve access and restore local populations of these ecologically important fish. Seatuck Environmental Association leads the Survey, in collaboration with the LIS Partnership. To get involved or learn more about the Survey visit here.

The LIS Partnership continues to improve and protect the Long Island Sound through the important projects that have taken place in 2025 and the ambitious actions to be implemented over the next ten years.

South Shore Estuary Reserve

The South Shore Estuary Reserve (Reserve) had much to celebrate this year, having released more funding in a single year than in the previous decade. For the first time since 2019, the Reserve launched a Local Assistance Grant opportunity, announced during World Ocean Week. A total of $1.5 million was made available to municipalities, non-profits, state and federally recognized tribes, academic institutions, and Soil and Water Conservation Districts.

Funding priority was given to projects that improve water quality, including marine debris education, prevention, and removal, enhance coastal resilience through nature-based solutions, advance habitat restoration, support Seagrass Action Plan implementation, and strengthen citizen science efforts.

The program received 18 applications requesting more than $10 million. After a careful and competitive review, eight projects were selected for funding, totaling $2.3 million. These projects span the entire Reserve from the Town of Hempstead to the Village of Southampton and represent every eligible applicant type as well as all priority issue areas.
Grants were awarded to the following organizations:

- Nassau Soil and Water Conservation District ($236,000): Septic system upgrade at a public park.
- Stony Brook University ($819,900): Eelgrass restoration, common garden experiment aimed at heat tolerance.
- Citizens Campaign for the Environment ($238,000): Marine debris removal and outreach.
- Suffolk County ($275,000): Salt marsh restoration.
- Town of Oyster Bay ($244,000): Ocean to bay habitat restoration.
- Seatuck Environmental Association ($70,000): Diamondback terrapin monitoring and habitat assessment.
- NY Sea Grant ($50,000): Community science photo stand project expansion.

- Village of Southampton ($506,000): Diadromous fish passage and stream habitat restoration.

This year’s awards build on the momentum of the eight projects announced at the 2024 Stewardship Awards Ceremony, for which staff have been diligently securing contracts and issuing calls for proposals.

The South Shore Estuary Reserve Council Stewardship Award recognizes citizens and organizations that have made significant contributions to preserve and protect the South Shore Estuary’s unique natural environment and maritime traditions. In 2025, SSER honored Tara Schneider-Moran from the Town of Hempstead and Veolia Environmental Services. Tara Schneider-Moran is being recognized for her leadership and partnership fostering marine debris initiatives, emergency response planning for marine life strandings, and her role as the Technical Advisory Committee Chair for the South Shore Estuary Reserve, demonstrating that a single person can spur positive change in protecting and restoring the estuary. Veolia, the wastewater treatment operator in Nassau County, has initiated upgrades, such as an immensely successful water-reuse initiative which they engaged in without state mandates. They also have implemented sophisticated nitrogen reduction technologies at the Bay Park Sewage Treatment Facility. By taking the step to go above and beyond existing environmental standards, Veolia inspires other corporations to do the same.

Tara Schneider-Moran, Senior Conservation Biologist with the Town of Hempstead, and Veolia Environmental Services — this year’s recipients of the Long Island South Shore Estuary Reserve Stewardship Awards! The annual awards ceremony was hosted by the NYS Department of State (DOS) and Citizens Campaign for the Environment. Photo Credit: South Shore Estuary Reserve.

In addition, the SSER Implementation Plan is now in its final stage of development, marking an important step in translating actions within the Comprehensive Management Plan (CMP) into measurable, on-the-ground priorities. As part of this update, the Reserve is working with partner agencies and organizations on determining progress made toward implementing CMP actions since 2022, as well as on projects currently underway or proposed initiatives that could advance if additional funding were available. This collaborative review will allow the Reserve to document accomplishments, identify remaining gaps and emerging needs, and ensure that future investments are strategically aligned with priority goals. The Implementation Plan will serve as a key reference for future Local Assistance Grant opportunities, helping to direct funding toward projects that deliver the greatest environmental benefit and support the long-term health and resilience of the South Shore Estuary.

Peconic Estuary Partnership

The Peconic Estuary Partnership (PEP) advanced several habitat restoration projects this year at Indian Island County Park and Meetinghouse Creek. The completed Indian Island Wetland Restoration project restores a tidal wetland enhancing water quality, supporting wildlife habitats, and increasing coastal resilience. At Meetinghouse Creek, PEP will construct a 1.2-acre stormwater wetland that filters pollutants, mitigates flooding, and improves water quality, helping to restore the Creek, an impaired waterbody identified by DEC.

Meetinghouse Creek forms part of the "Meetinghouse and Terry Creek and Tributaries" segment of the Peconic Estuary. The waterbody segment was listed as impaired for dissolved oxygen, nutrients, and pathogens on NYSDEC's list of impaired waterbodies. The 2.61 acre Town of Riverhead property is bordered by the Aquebogue Cemetery to the west and private property to the east and south, including the Crescent Duck Farm downstream of the site. Photo credit: Peconic Estuary Partnership.

Additional stormwater management improvement projects included the Goose Creek Discharge Elimination project, which prevents direct stormwater discharge into Goose Creek through updated infrastructure. Progress continues on the Sag Harbor Stormwater Control Project, which enhances water quality in Sag Harbor Cove by installing green infrastructure to filter pollutants and manage runoff effectively.

Through the Homeowner Rewards Program, PEP continued to reimburse homeowners in the Peconic Estuary watershed for the cost of removing turf and pavements, and adding green infrastructure such as rain barrels, rain gardens and native plant gardens. In 2025, 23 gardens were completed, totaling 3580 square feet, and 7 rain barrels were installed.

The C.H.A.N.G.E.S Shoreline Protection Project **(C**reating **H**abitat, **A**cidification reduction, **N**itrogen bio-extraction, **G**uarding our shorelines, **E**rosion control, **S**equestering carbon) continued this year. Funded with $600,000 from the Bipartisan Infrastructure Law, C.H.A.N.G.E.S is a comprehensive effort by PEP to enhance ecological resilience in the Peconic Estuary. Targeting sites across Shelter Island, North Haven, and Sag Harbor, suitable sites were selected for continuing work. The project focuses on addressing challenges like coastal erosion, sea-level rise, and water quality degradation. It employs innovative methods such as creating blue carbon ecosystems, restoring coastal habitats, and cultivating kelp, oysters, and seagrasses. These initiatives aim to reduce ocean acidification, extract nitrogen, sequester carbon, and improve shoreline protection against storms.

Another exciting development in 2025 was the continued success of PEP's eelgrass restoration project. In collaboration with the Peterson Lab, PEP harvested adult eelgrass shoots from Shinnecock Bay and planted them in restoration sites. This project, supported by a Restore America's Estuaries Coastal Watershed Grant, aims to protect eelgrass habitats threatened by climate change and rising water temperatures, with the goal of developing a model restoration technique that can be applied throughout the northeast.

This year PEP continued with their second year of their Mini-Grant Funding Opportunity, which invited organizations to apply for funding to implement projects that align with PEP's Comprehensive Conservation Management Plan (CCMP). The completed projects included:

- The Perfect Earth Project for their work on reducing nutrient pollution through residential outreach and nature-based land care education.
- The Accabonac Protection Committee for their efforts in enhancing water quality communications in the Accabonac Watershed.
- The Citizen Science Learning Center for their "Adopt-a-pond Water Quality Monitoring and Pond Keepers Educational Programming."

Applications for the third year of Mini Grant funding will be announced in January 2026!

Additionally, PEP hosted two conferences this year in conjunction with New York Sea Grant (NYSG). On June 5, 2025, the Peconic Estuary Shoreline Summit highlighted key findings from the PEP-NYSG Shoreline Adaptation Groups' workshops, interviews, and research. The Peconic Estuary Bay Scallop Symposium, held on July 16, 2025, included updates on the research and response to the post-fishery collapse, as well as a panel discussion addressing industry, regulations, and scientific developments as it relates to the bay scallop fishery and the Peconic Estuary.

As PEP heads into 2026, the Partnership is excited to build upon the successes of 2025, strengthening efforts to restore, protect, and manage the Peconic Estuary for the benefit of the environment and the communities that rely on it.