



Long Island Nitrogen Action Plan (LINAP) Newsletter

August 2017

Visit NYSDEC's [LINAP webpage](#) for more information about LINAP, past newsletters, documents, and more.

This issue's topics:

- Fertilizer Management Workgroup
- *ClearWaters* Magazine LINAP Issue
- EPA Nutrient Sensor Challenges

Fertilizer Management Workgroup Update

The Fertilizer Management Workgroup was established to develop measures that could help reduce nitrogen loading from commercial, municipal, and residential fertilizer use. In June 2017, a second set of meetings were conducted with key industries including golf courses, landscapers, fertilizer manufacturers, and agriculture. The purpose of the meetings was to review the results of the [fertilizer workgroup questionnaires](#), which addressed topics including: fertilizer formulations and application, fertilizer regulations, nutrient recycling, management measures to reduce fertilizer requirements, and the use of native plants to reduce fertilizer. The meetings also provided a forum to review initiatives taken by each industry to reduce fertilizer nitrogen use. Notes taken during each meeting have been compiled and posted on the [LINAP Workgroups webpage](#). The groups will meet again in the fall to determine which fertilizer management strategies might be valuable in some or all watersheds to achieve nitrogen load reductions.

Technical Resources Webpage Updated

Links to several technical documents related to fertilizer have been added to the [LINAP Technical Resources webpage](#). The most recently added documents are marked as **NEW**.

ClearWaters Magazine LINAP Issue

The summer 2017 issue of the New York Water Environment Association's (NYWEA) *ClearWaters* magazine was dedicated to LINAP. Articles by DEC, Long Island Regional Planning Council, Nassau and Suffolk counties, consultants and researchers covered topics such as the LINAP structure, completed and ongoing projects, and new technology. Several of the articles are available for download on [NYWEA's website](#), or a complete copy of the magazine can be ordered.

Environmental Protection Agency Nutrient Sensor Challenges

Advanced Septic System Nitrogen Sensor Challenge

In June, the U.S. Environmental Protection Agency (EPA), in partnership with the NYS Department of Health, the Massachusetts Department of Environmental Protection, The Nature Conservancy, Barnstable County (MA) and Suffolk County (NY), awarded seven small business and university teams for their design entries in Phase I of EPA's Advanced Septic System Nitrogen Sensor Challenge. Teams were asked to develop sensors for use in Innovative/Alternative Onsite Wastewater Treatment Systems (I/A OWTS) to monitor their long-term performance in reducing nitrogen discharged to groundwater.

Awards were given to the following technology innovators:



1. 1st Place – awarded to Drs. Baikun Li and Yu Lei and their University of Connecticut team for a wireless milli-electrode sensor that would be low-cost and provide continuous real-time measurements of ammonium, nitrate, and flow rate.
2. 2nd Place – awarded to Jason Khoo and his Stanford University team for a low-cost microfluidic total nitrogen sensor that minimizes user involvement, power consumption, and reagent volumes.
3. 3rd Place – awarded to William Powers and his PixController, Inc. team in Export, Pennsylvania for a sensor that uses near infrared spectroscopy to measure total nitrogen.
4. Honorable Mention – received by four innovators:
 - *Julien Fils and his Florida-based team for an autonomous in situ 'Septicprobe,' which incorporates up to nine chemical sensors based on electrochemical detection of nitrate, nitrite, and ammonium, with the potential to add total organic carbon.*
 - *Zach LaVallee and his team at Emonix, Inc. in Madison, Wisconsin for a cloud-based, cost-efficient monitoring system that uses ion selective electrodes and a novel calibration algorithm to monitor nitrate, ammonium, and effluent flow rate.*

- *Malynda Cappelle, CEO of Atlas Regeneration Technologies in El Paso, Texas proposed a novel design for an ion exchange sensor system to measure nitrate and ammonia and log historical data and send text/email messages to users in case of system failure.*
- *Bretton Holmes and Cliff Edwards from Phoenix, Arizona for an advanced microfluidic sensor design for measuring ammonia, nitrate, and nitrite at a reasonable cost.*

EPA and its partners will collaborate again on Phase II of the Challenge to find the best performing nitrogen sensor package to be installed in I/A OWTS. The teams will be asked to conduct laboratory and field testing and evaluate the effectiveness of low-cost sensor technologies. Successful sensors will be installed in 200 I/A OWTS in 2019. Real-time monitoring can evaluate the long-term effectiveness of I/A OWTS and help accelerate their deployment to reduce nitrogen discharges to our ground and surface waters.

Learn more about this and other projects on EPA's [2017 Regional/State Innovation Projects webpage](#).

Nutrient Sensor Action Challenge

EPA in partnership with the United States Geological Survey, the US Department of Agriculture, the National Institute of Standards and Technology, the National Oceanic and Atmospheric Administration, and Alliance for Coastal Technologies launched the [Nutrient Sensor Action Challenge](#) to monitor nutrient pollution and assemble a data management system.

The Nutrient Sensor Action Challenge expands on the 2014 [Nutrient Sensor Challenge](#), which helped develop affordable, high-performing, continuous nutrient sensors and analyzers. In this challenge, teams will be asked to prove successful strategies for incorporating continuous nutrient sensors into existing water monitoring efforts. The Challenge encourages partnerships with sensor manufacturers and others to pilot the nutrient sensors and demonstrate how the data could be used to help state and local decision makers manage nutrient pollution.

Stage 1 of the Nutrient Sensor Action Challenge closes on **September 20, 2017**. Direct any requests for clarifications and additional information about this challenge to: NutrientSensorActionChallenge@erg.com.