

**Water Quality Monitoring Work Group
TEAMS Online Meeting
Feb. 18, 2021 – Meeting Summary**



Attendance

Jim Ammerman (Chair)—Long Island Sound Study (LISS)/New England Interstate Water Pollution Control Commission (NEIWPC)
Anthony Caniano—Suffolk County Department of Health Services (SCDHS)
Carol DiPaolo and Michelle McAllister—Coalition to Save Hempstead Harbor
Michele Golden--New York State Dept of Environmental Conservation (NYSDEC)
Peter Linderoth—Save the Sound (STS)
David Lipsky—New York City Department of Environmental Protection (NYCDEP)
Matt Lyman—Connecticut Department of Energy and Environmental Protection (CTDEEP)
Jon Morrison—United States Geological Survey (USGS)
Katie O’Brien-Clayton—CTDEEP
Jim O’Donnell—U. Conn.
Evelyn Powers—Interstate Environmental Commission (IEC)
Beau Ranheim—NYCDEP
Paul Stacey—Footprints in the Water
Kelly Streich—CTDEEP
Mark Tedesco—EPA, LIS Office
Jamie Vaudrey—University of Connecticut

Agenda

Special meeting to review the FY21 Enhancement Preproposals, hereafter known as the “Proposals”.

Discussion—The Clean Waters and Sound Science proposals were discussed in numerical order, individuals connected to each proposal (if available) were invited to speak about it and then discussion was opened for comments from others. Participants were also encouraged to fill out the LISS FY21 Enhancement Package Review Questions and return them to Cayla Sullivan by March 1, and also transfer their ratings (and comments) to the Google Form “LISS Water Quality Monitoring Enhancement Preproposals” by the same date so that the work group responses can be collated. USGS released a list of their priority proposals after meeting and those rankings are included here.

Clean Waters

1. Enhanced assessment of fecal bacteria contamination from urban sediments, USGS. This proposal seeks to determine the importance fecal bacteria re-suspended from sediments in urban embayments, which is not typically considered an important source. Most thought that it

was more appropriate as a research project. Even though a USGS project, it was not included in the lists of USGS priority projects.

2. Transport of freshwater cyanobacteria toxins to marine shellfish populations in Greenwich, CT: An emerging human health concern in Long Island Sound, CTDEEP. This proposal seeks to better understand the transport of freshwater cyanobacterial toxins to coastal waters and their uptake by marine shellfish. It highlighted microcystin concentrations in Greenwich, CT. Though an important emerging problem, it was considered more appropriate for the research program.
3. Continuation of Probabilistic Sampling of Long Island Sound Embayments using National Coastal Condition Assessment Protocols, EPA. This has already been funded and was not further discussed. One potential concern is the slow reporting of past results.
4. Embayment Data Collection for Modeling, CTDEEP. Kelly Streich spoke for this project which is the third and final year of embayment data collection for modeling. There was some additional monitoring needed which added to the cost.
5. Expansion of Phase II Onsite Wastewater Treatment System Study, CTDEEP. Kelly also spoke to this proposal which is an expansion a just completed successful Onsite Wastewater Treatment Systems (OWTS) study. This would further extend it to the entire north shore of LIS.
6. Development of an NRCS Watershed Operations Plan to Leverage Funding for Implementation of BMPs in Connecticut, CTDEEP. This proposal would result in the development of a plan that could lead to significant new funding from NRCS. While potentially a good opportunity, some wondered whether it was more appropriate to the habitat category and perhaps as a Futures Fund proposal. The Environmental Justice Work Group also expressed an interest in this proposal.
7. Connecticut Watershed Model - Year 3 of 3, CTDEEP. This is large CTDEEP modeling project in its final year. It has a budget of \$1.7M.
8. Connecticut embayment tributary nitrogen removal: calibrating rates to geomorphology to improve parameterization of watershed loading models, UConn. Though effectively a small research project, several people supported this proposal as an important an important addition to the CTDEEP HSPF watershed model which is currently unconstrained in terms of tributary nitrogen removal.
9. New York State Asset Management Pilot Program Phase II, NYSDEC. Michele Golden spoke to this proposal which would build technical expertise so that New York State municipalities can effectively access quality asset management programs, it would build upon Phase I which will complete a guidance document this spring. There was discussion about whether this was required of municipalities, it currently is not required and is often not done, despite the fact that it is considered a best management practice. In order to address some of the obvious confusion around this issue, NYSDEC provided a 2-page explanation document after the meeting.
10. Base-flow sampling to enhance understanding of the groundwater discharge component of nitrogen loading, in coastal basins draining to Long Island Sound, USGS. This completes a current groundwater project and was ranked #2 of the seven USGS proposals that USGS ranked.
11. Emerging contaminants impacts on Long Island Sound model species, a bi-state consortium approach to risk assessment, CTSG. This was considered a very large (\$3.3M) research project on emerging contaminants LIS that was very broad and ill-defined. The topic is important but should be approached more systematically.
12. Trends in nitrogen loading from forested areas - A preliminary assessment for Long Island Sound, USGS. Jon Morrison spoke to this proposal which will investigate an apparent increase in increased in nitrogen input from forests for unexplained reasons. Several people though that

this could be important to land use and climate change studies. This proposal was ranked #4 by USGS of their seven ranked proposals.

13. Nutrient Bioextraction Product Application: Field Testing of Locally-Sourced Sugar Kelp (*Saccharina latissima*) Fertilizer Amendments in Long Island, NY, NYSDEC. Michele Golden spoke for this proposal and said it was priority for NYSDEC. Agricultural researchers from Cornell Cooperative Extension (CCE) will conduct the proposed research using locally-grown kelp fertilizer amendments on Long Island fields, a scaled-up version of previously funded trials. Questions were raised about the proposal addressing chemical but not microbial contaminants, where the funding was going (apparently to CCE not farmers). A comment was made the nitrogen input control is better than trying to extract it from the environment later. (Note: A new research project on benefits of kelp aquaculture including bioextraction in LIS waters was just funded.)
14. Nutrient Bioextraction: Refinement of Atlantic Ribbed Mussel (*Geukensia demissa*) Aquaculture Methods, NYSDEC. Ribbed mussels are good at nitrogen and microbial removal but they are not eaten by humans and have little market. They may work better in uncertified waters than oysters because they have no human appeal, though they might be used as livestock feed. This proposal would refine aquaculture methods for ribbed mussels to provide a more regular supply than currently available.
15. Economics of Nutrient Bioextraction: Phase 2 of Economic Feasibility Market Study for Nutrient Bioextraction Activities in the Long Island Sound, NYSDEC. This proposal would extend a currently-funded but as yet un-started high-level marketing study with a specific focus on the species, products, and markets with the greatest potential. Since the prior study has not yet started this proposal seems premature.
16. Pathogen monitoring program to mitigate shellfish harvesting water closures adjacent to Wading River and Baiting Hollow Creek, Suffolk County, New York, IEC. Evelyn Powers spoke to this proposal in which IEC would implement a pathogen monitoring survey in two sites on the north shore of eastern Long Island where recently increasing pathogens have closed shellfish harvesting. This project, in an area the NYSDEC has designated as a priority, seeks to upgrade shellfish harvesting waters using new microbial-source-tracking technologies which could be more widely applied.
17. Modeling the Seasonal Dynamics and Long-Term Trends in the Sources and Delivery of Total Nitrogen to Long Island Sound from New England Watersheds, USGS. This proposed project would model seasonal nitrogen loads for the period 1995-2019 for the New England watershed of LIS. It would use dynamic Sparrow modeling based on previous steady-state Sparrow modeling and calibrated by monitoring sites within the watershed. There was support for this proposal and its ability to incorporate future climate change though there was debate about the importance of seasonality. This proposal was ranked #3 by USGS of their seven ranked proposals.
18. Major Long Island Sound Tributary Sampling, USGS/CTDEEP. This proposal is for the third year of a three-year tributary monitoring project, it would also add a long-term monitoring station in the Lower Housatonic River. At least one member of the work group noted that this was an important project. This proposal was ranked #1 by USGS of their seven ranked proposals.
19. Using high resolution sensor data to quantify contribution of nonpoint sources of nitrogen to Long Island Sound via comparison of nitrogen-to-streamflow relationships during hydrologic events, USGS. Jon Morrison addressed this proposal and its novel method for using the existing stream water quality monitoring stations to distinguish agricultural from septic nitrogen input.

- Others noted that this project fit well with related USGS groundwater studies, like #10. This proposal was ranked #5 by USGS of their seven ranked proposals.
20. Using high resolution sensor data to inform monitoring and modeling framework to assess the impacts of land use and climate change on nutrient inputs to Long Island Sound at the hydrological event scale, USGS. Proposal withdrawn by USGS.
 21. Monitoring bacterial contamination in embayments using qPCR, USGS. This proposal would monitor bacterial contamination in urban eastern LIS embayments with qPCR. The approved EPA method to be used, https://www.epa.gov/sites/production/files/2015-08/documents/method_1609-1-enterococcus-iac_2015_3.pdf, has several advantages over traditional methods, including faster analysis, better prediction of illness in swimmers, and use in microbial-source-tracking. This proposal was ranked #7 by USGS of their seven ranked proposals. The Environmental Justice Work Group also expressed an interest in this proposal.
 22. Improving monitoring needed to assess the risk of climate change impacts on episodic acidification in Long Island Sound river mouths, USGS. Proposal withdrawn by USGS.
 23. Development of a Nonpoint Source & Stormwater Tracking Tool – Phase 2 Part 2, NEIWPC. This proposal will continue the current development of the Nonpoint Source & Stormwater Tracking Tool, a key piece of addressing the nonpoint source component of the nitrogen loading ecosystem target. While Phase 2 Part 1 is underway, it is not yet complete. It should be completed before this proposed project is started.
 24. Monitoring occurrence of biotoxins using Solid Phase Adsorption Toxin Tracking (SPATT) Technology, USGS. This proposal is to apply a passive adsorption method used elsewhere to measure saxitoxin and perhaps other HAB toxins in LIS. It could be potentially used for early warning of toxin accumulation in shellfish tissue, though there was some concern expressed about sample timing and an adequate signal/noise ratio for detection. This proposal was ranked #6 by USGS of their seven ranked proposals.

Sound Science

42. Repair and modification of the RV John Dempsey, CTDEEP. Matt Lyman described this proposal as needed modifications of the Dempsey to improve its usability prior to replacing it, which is likely in the next decade. Others supported this proposal as needed improvements.
43. Recapitalization of Moored Instruments and Autonomous Hypoxia Mapping, UConn. This proposal is to replace moored instruments which were damaged during overly long deployments during COVID-19. A separate proposal component is preliminary glider surveys to evaluate their potential use for monitoring of hypoxia extent and duration; as well as to better define the 3mg/l dissolved oxygen contours.
44. Introducing Open Science Tools into Long Island Sound Water Quality-A Demonstration Project, NEIWPC. This is a proposal to bring Open Science tools into the LISS through a water quality pilot study using IEC and/or UWS data. Open Science tools including the use of open source R suite of software and the GitHub development platform. A number of NEPs are already using these tools and EPA is also implementing them in connection with WQX. Funding might not be needed if instead LISS can find an ORISE Fellow with a background in these methods.