



Long Island Sound Study
Water Quality Monitoring Workgroup Conference Call
Meeting Minutes

Wednesday, October 11, 2017, 10:30 AM-noon

Participants:

Jim Ammerman (Chair)—Long Island Sound Study (LISS)/New England Interstate Water Pollution Control Commission (NEIWPCC)

Nicholas Cholewka—New York City Department of Environment Protection (NYCDEP)
Charles DeQuillfeldt—New York State Department of Environmental Conservation (NYSDEC)

Richard Friesner—NEIWPCC
Lorraine Holdridge—NYSDEC

Peter Linderoth—Save the Sound (STS)

Kamazima Lwiza—Stony Brook University (SBU)

Matt Lyman—Connecticut Department of Energy and Environmental Protection (CT DEEP)
John Morrison—United States Geological Survey (USGS)

Katie O'Brien-Clayton—CT DEEP

Jim O'Donnell—University of Connecticut (U Conn)

Leah O'Neill—United States Environmental Protection Agency (USEPA)

Evelyn Powers—Interstate Environmental Commission (IEC)/NEIWPCC

Beau Ranheim—NYCDEP

Mark Tedesco—USEPA

Advance Agenda (the week prior to the meeting a 15-page handout with summary information from the 2017 hypoxia monitoring season and the relevant enhancement pre-proposals was distributed, the morning of the meeting an additional 2-page summary of the 2017 bottom dissolved oxygen at the Execution Rocks and Western Long Island Sound Buoys along with the relevant climatology was sent):

1. Monitoring results—I (Jim Ammerman) will briefly introduce the 2017 summer monitoring results and then ask for further details from those involved and questions from others.

2. Pre-proposals—The purpose is not to review them in detail but to allow questions and discussion, I will introduce each one and ask those involved to provide additional details and take questions. I will also provide additional information for those pre-proposals that are not represented on the workgroup.
3. Other topics to be discussed as needed, if you have additional agenda items in advance please let me know.

Meeting Discussion:

4. Summer monitoring results summary (as of October 11th)—Based on CT DEEP data alone, the area of hypoxia in Long Island Sound (LIS) reached a maximum of 70 square miles in mid-July, compared with the nearly 200 square mile maximum in mid-August of 2016. Some of the 2017 hypoxia in mid-July occurred in the coastal area between Bridgeport and New Haven, an area that Matt Lyman noted is relatively shallow and prone to hypoxia. A second peak of hypoxic area occurred in mid-August, though it reached on 44 square miles. This hypoxia was concentrated in western LIS and did not include the Bridgeport-New Haven region, though that area still had low oxygen concentrations. The August hypoxia in the western Sound was more intense than in July, as shown by the CT DEEP, IEC, and LISICOS buoy data. Beau Ranheim noted similar patterns in the NYCDEP monitoring results. The bottom oxygen concentrations at all three western-most buoys in LIS (Execution Rocks, Western LIS, and ARTG) were hypoxic or near-hypoxic (ARTG) in both mid-July and mid-August, with a non-hypoxic period in between and a quick recovery after (Western LIS), presumably due to increased mixing. A similar pattern was seen at Execution Rocks in 2016.
5. Discussion of Water Quality Monitoring-related enhancement pre-proposals—Mark Tedesco explained the concept behind the pre-proposals, they are proposed enhancements to the LIS monitoring program. Those who submit pre-proposals of interest to the LISS may be asked to submit full proposals for consideration by the Management Committee for support. The purpose of the workgroup discussion is to inform of workgroup of proposed projects and facilitate questions. A number of workgroup members had pending pre-proposals and provided overviews.
 - a. Development of Benthic Macroinvertebrate Sampling Methodology and Tools to Assess Embayment Health (CT DEEP)—This project would prepare an RFP for an outside group to evaluate current benthic biological indices or develop a new one for LIS in order to assess the health of LIS embayments. The project would develop sampling methods, collect macroinvertebrate and water quality data from 30 embayments, and analyze the information with the chosen index. Current benthic measurement in LIS include EPA's National Coastal Condition Assessment which samples every 5 years but generally not in embayments. Matt Lyman (CT DEEP) noted that this proposed project was similar to current CT DEEP efforts in freshwater and would provide benthic response information to management actions.
 - b. Development of a LIS Phytoplankton Index of Biotic Integrity (CT DEEP)—CT DEEP has collected phytoplankton samples at 10 stations across its LIS water quality sampling grid since 2007. They are then identified and enumerated by the Marine Science Department at the University of Connecticut. This project would develop an RFP for an outside contractor to develop a LIS-specific Phytoplankton Index of Biotic Integrity similar to others elsewhere. Such an index could be useful in long-term management of LIS.
 - c. Groundwater Budgets and Travel Times for the Connecticut Coast of LIS (CT DEEP/USGS)—This project would develop estimates of groundwater discharge

and travel times to LIS from coastal areas of Connecticut. It would develop a regional model and then focus more specifically on two primary tier watersheds to build on previous work by Jamie Vaudrey. John Morrison (USGS) noted that USGS is already doing related groundwater modeling on Long Island and has some support for this effort from the USGS regional office. Kamazima Lwiza (SBU) and Lorraine Holdridge (NYSDEC) both asked questions about how this study would connect with related embayment and groundwater work on Long Island, such as harmful algal bloom studies by Chris Gobler and the Long Island Nitrogen Action Plan (LINAP).

- d. Development of LIS Hypoxic Volume Calculations and Increased GIS Analysis (CT DEEP)—This proposal will use the 25-year CT DEEP hypoxia monitoring data set and have a GIS contractor develop a semi-automated method for determining the volume of hypoxia in LIS in addition to the area. Such a determination is made for Chesapeake Bay and some other seasonally hypoxic systems and may have management benefits. In addition, an app will be developed that allows users to “swim” through the Sound to get information about the Sound and hypoxia. Mark Tedesco (USEPA) asked about the management importance of the hypoxic volume and suggested that Jim O’Donnell had previously said that the volume generally tracks the area. Matt Lyman (CT DEEP) noted that the pycnocline can vary, changing the volume of hypoxia. Another question was asked about whether IEC measures continuous vertical profiles of dissolved oxygen, which would allow the data to be used for calculations of hypoxic volume.
- e. Replacement of Lower Connecticut River Salinity Monitoring Equipment (USGS/CT DEEP)—John Morrison (USGS) noted that the equipment is old and cannot be serviced after 2019 for lack of parts. The new equipment also has increased built in capability for measurements of dissolved oxygen, turbidity, and colored dissolved organic matter. Since the LISS already supports the operating expenses for these measurements, Mark Tedesco (USEPA) asked whether these expenses would increase. John Morrison replied that they would not, unless nitrate or other additional sensors were added.
- f. Unified Water Study: Nitrogen Impacts on LIS Embayments (STS)—This proposal would provide 2019 funding for the Unified Water Study (UWS) of STS. The UWS was started in 2016 with support from the Long Island Sound Funders Collaborative. Peter Linderoth (STS) noted that 11 different citizens groups participated in the UWS in 2017 and more are interested for the future. STS provides common protocols for Tier 1 and Tier 2 (more extensive) sampling programs, as well as training and QAPP support, an equipment loan program, and a data entry template. Lorraine Holdridge (NYSDEC) expressed interest in the program for embayments in New York State, and Mark Tedesco (USEPA) discussed the funding history and the expansion of the program with time.
- g. Enhancements for the Long Island Sound Integrated Coastal Observing System (U Conn)—This proposal would support additional sensors at some of the LISICOS buoys in LIS, replace some aging buoy hardware, and cover some of the operations and maintenance. These would include nitrate and several other sensors at the ARTG buoy, and nitrate sensors at both the Execution Rocks buoy and the Central LIS buoy. Buoy infrastructure for the Execution Rocks buoy would also be replaced. Jim Ammerman mentioned the past challenges with maintaining the chlorophyll a sensor at the Western LIS buoy, and Jim O’Donnell discussed the personnel costs involved. Both Kamazima Lwiza and

- Mark Tedesco emphasized the importance of the chlorophyll a sensor and discussed the manpower costs for it relative to nitrate sensors.
- h. Summer 2019 Hypoxia Monitoring for Far Western LIS (IEC)—IEC is requesting support for its long-term hypoxia monitoring program in Western LIS for the summer of 2019. This program conducts 12 weekly survey at 22 stations and has time-series data going back 27 years. Industrial Economics Incorporated is currently analyzing this IEC time-series data and recently received QAPP approval. IEC would ultimately like this monitoring program to become part of the base LISS program in the future.
 - i. A LIS Model and Data Sharing System (U Conn)—This proposal seeks support for building a LIS data system using NOAA's Environmental Research Division's Data Access Program or ERDDAP. This platform is used by a variety of Federal agencies and allows data sharing among different groups, development of presentations based on the data, and output of model results and predictions. It works with a variety of programs or scripts used by scientists to transfer data. Much of the cost would be in the initial development of the data system. Kamazima Lwiza was enthusiastic but had some technical questions, Mark Tedesco asked about whether those collecting the data could enter it into the database and Jim O'Donnell replied that a system would have to be worked out.