Long Island Sound Study Science and Technical Advisory Committee
Meeting minutes
19 June 2009 (Stony Brook, NY)

Welcome

NY STAC co-chair Larry Swanson called the meeting to order. Swanson welcomed everyone, introduced his CT Co-Chair, Charlie Yarish, and then requested any changes to the agenda.

Presentation: SWEM Evaluation

James O'Donnell gave a presentation on the evaluation of System-Wide Eutrophication Model (SWEM; see attached).

During the presentation, several questions arose. For example, Charles Yarish wanted to know if the evaluation indicates that more sampling is needed on the western part of the Sound. O'Donnell replied by stating that more sampling would help, and that to measure changes over time, the sampling would have to be done at least twice. Hans Dam pointed out the non-independence of d_i and p_i in the model, and O'Donnell responded that the data used to build the model were not the same data used to assess the skill of it. Curt Johnson asked whether one of the conclusions of the assessment was that tweaking vertical mixing to reduce dissolved oxygen (DO) was incorrect. O'Donnell answered in the affirmative, and pointed out that it was done *ad hoc*, but that the model developers had no way of knowing at the time what were reasonable estimates of vertical mixing.

After the presentation, James Fitzpatrick wanted to compliment O'Donnell and his colleagues for their work. He acknowledged that he and his colleagues had to play around with the vertical mixing parameters to get correct DO estimates. He was also curious about the ammonia skill values, though he understood that the assessment was primarily of DO. He finished by stating that he would like to evaluate whether and in which way the biology and physics should be fine-tuned.

Swanson wondered if any bad management decisions had been made based on the HydroQual model. O'Donnell insisted that he could not address the issue because it was not part of the mandate of the contract. He did mention that HydroQual's model produced critical discharge values and suggested that the first step to improve the model would have to be not distorting the biology, since that is as bad as distorting the vertical mixing.

Fitzpatrick observed that they had trouble overgrowing plankton because there may not be enough mixing in the western Sound. He believed that adjusting the vertical mixing should be stopped and the growth rate increased while looking at the model statistics spatially. O'Donnell said that they had done that, but have not looked at the East River. Someone wanted to know whether the doubling of the load was from point sources only or from rivers as well. O'Donnell replied that it was from point sources only.

Art Glowka stated that much money has been spent on SWEM, yet the model remains highly ineffective (e.g., riverine inputs are poorly modeled). O'Donnell agreed that some parts are not very well described by the model; however, he strongly believes in the usefulness of the model and encourages further developments.

Joe Salata noted that LISS is investing on the collection of water quality monitoring data and was wondering whether, given model results, permanent, continuous stations are needed. O'Donnell said he has thought about two fundamental questions: 1) should the monitoring program be continued?, and 2) should the program be improved? Regarding the first question, he feels that decadal variation can only be estimated with long-term data and is therefore important to continue the current monitoring for another 20 years. On the second question, O'Donnell pointed that the model highlights the importance of short-term variation. This variation can only be understood by gathering data on a continuous basis. Also, there are data that are currently unavailable that would be essential to incorporate into the model (e.g., plankton abundance).

Swanson wondered where the Mid-Atlantic Coastal Observing Regional Association (MACORA) fit in. O'Donnell responded by pointing out that MACORA's budget is ~$1.5 million, while a buoy's cost is ~$150,000. This is not sufficient to support enough infrastructure. However, it may be possible to lobby to establish a MACORA buoy on the Sound.

Mickey Weiss inquired whether the LISS was on track with its current nitrogen management (should LISS continue with its nitrogen removal program). He was hoping that the assessment and/or the model would be able to predict the result of different nitrogen removal scenarios. O'Donnell reminded the STAC that that was not part of the task, and stressed that water quality cannot be reliably estimated from the model. He stated that hypoxia has not changed over the last two decades, and that hypoxic events correlate with winds from a particular direction. James Fitzpatrick added that, although hypoxia may not have changed significantly as O'Donnell stated, the variation may still be ecologically relevant. Dam mentioned that a natural experiment occurred during the 1980-1990s, when a 10-fold increase in chlorophyll did not

result in dissolved oxygen improvements. O'Donnell also revealed that, because of decadal variation, 10-20% changes in nitrogen inputs would not be detected because mixing and wind forcing are not well understood and measurements are not precise enough.

Finally, Swanson wondered how LISS should use the model if O'Donnell and HydroQual improve its efficacy. O'Donnell believes that, in a manner similar to what IPCC does, LISS should use several models, compare them, and provide forecast with uncertainty estimates. He noted that there are now a number of models available and they all could be implemented in under $200,000. James Fitzpatrick suggested that to improve the model, boundary conditions, which are poorly estimated, need to be improved and monitored.

Dam asked if it was possible to use the model to make projections and test with future observations. O'Donnell believes that doing this would be prohibitively expensive (primarily because of people-time).

Sylvain DeGuise pondered about the variability in error and asked for ways to improve forecasting. O'Donnell emphasized the need for models that better predict the extent of hypoxia and that are able to correlate it to other variables.

Swanson recalled that ~$200,000 has been earmarked for work on the existing SWEM model. He wondered whether it would be better to use the monies to tweak the SWEM model, to go ahead as planned, or to follow O'Donnell's suggestions and evaluate different models *a la* IPCC.

Johan Varekamp shared that there is always a place for a simple vertical model. This would simplify SWEM and would help assess current deficiencies with SWEM.

Fitzpatrick agreed that a simple box model would help parameterize SWEM, but also added that there are a number of other phenomena that would not be introduced by a box model.

Dam worried that discussions are focusing on the model and not on the problems that need to be addressed (to create appropriate tools). He suggested the STAC first define questions and then assess what modeling tools are needed.

Chytalo offered that the $200,000 was from the nutrient work group, and thought the STAC should have reviewed that prior to the management meeting. Swanson affirmed that the management committee would be willing to change it if change is needed. Salata said that the STAC will work on what the RFPs should be. He added that the nutrient work group was

assigned the money before the TMDL revision was done, but it got delayed and the TMDL will be done before it.

Curt Johnson observed that O'Donnell and colleagues found inconsistencies in the SWEM model, but that there was never a prediction for the response to a 95% nutrient reduction. He suggested that is what should happen next. Salata believed that HydroQual had done that already. Fitzpatrick explained that they had, in fact, done so, but not with the new modifications. He mentioned that it is important to understand how the biology was adjusted in order for them to do it. Swanson stated that this is something the STAC should think about and get back to Salata and Tedesco.

Update on approved LISS FY09 Workplan and Budget

Salata handed out two sheets (see attached) and began by stating that, although the last two budget years had been good, $2 million were lost in the 08-09 budget. In the 2010 budget, there is a House mark-up of $15 million, but it still needs to pass. Karen Chytalo wondered whether that money was for LISA. Salata said there has been no approval for LISA. For the LISS, in the '09 budget, there was $300,000 for research and our cost is up to $2 million.

Sarah Deonarine then asked if the budget request deadline of 1 December, 2009 was the last call for everything. Salata indicated that it was.

Yarish inquired if there were any enhancement dollars from the feds that came in with the addition emphasis the government was putting into science and infrastructure. Salata was unsure but indicated that there was not. He then stated that there were some monies given to the states that were used for two sewage treatment plants. Salata also stated that the money they have is $3 million in the President's budget and an additional $600,000 from the National Estuary Program. Thomas Halavik stated that USFWS got $109,000 for the restoration of Long Beach. Yarish noted that it was important that everyone be aware of additional money coming into Long Island Sound. Chytalo said that New York was given $432 million for sewage and green infrastructure and that some of that was used to upgrade a sewage treatment plant on Long Island Sound.

Eelgrass Update

Kelly Streich provided a summary of the June 10 CT Eelgrass Workgroup meeting. At the meeting, Ron Rozsa discussed eelgrass status and trends. Tom Halavik updated the meeting attendees on progress made on mapping. Jamie Vaudrey discussed the findings of the report

and discussed the use of the LIS enhancement grant; she also went over grants that could be fund enhancement. At the meeting, the initial proposal was to monitor the range of nitrogen availability and the carbon:nitrogen ratio at two locations. This is being considered for an RFP. A discussion with The Nature Conservancy on their proposal was also undertaken. Halavik added that the mapping was supposed to be flown early to mid-week (22 June-24 June), but because of weather, it may not be flown until the end of July when there will be AM low tides.

Yarish mentioned that he was a participant at the workshop. He said that they are addressing ways to set water quality and sediment standards. Also, they are working to reformulate the proposal with CTDEP to work with other agencies and to, ultimately, restore habitat. He further suggested that, perhaps, the habitat may be too degraded for restoration, or that there may be no seed source for restoration.

Karen Chytalo gave a brief update on the NYS Eelgrass Taskforce. Chytalo mentioned that the Taskforce is looking at the major threats to eelgrass in NY's three ecosystems. The goal is to offer recommendations by 31 December 2009 (currently developing draft report). Funding ($325,000) was received from the NY Ocean and Great Lakes Ecosystem Conservation Council. Chytalo stated that before meeting as a Taskforce, an eelgrass expert meeting was convened in which research recommendations were generated. Currently, groundwater contributions to eelgrass are being investigated—specifically, water quality and temperature. So far, it has been found that good groundwater leads to good eelgrass beds in the field. Other contributions to eelgrass health, such as grazers and herbicides, are being examined. Field and lab work has also been undertaken to find areas for restoration. The Taskforce is also looking into the genetics of eelgrass, because some beds on the south shore of Long Island cannot handle different temperatures. Effects of runoff are also being pursued. Chytalo closed by declaring that although stressors are different in all three estuaries, the Taskforce is working to develop protection laws for all eelgrass. Chytalo was interested in circulating the draft report within the STAC, and Yarish volunteered to distribute it if it is sent to him.

Swanson was interested in knowing whether any money had been appropriated to do work beyond the final report. Chytalo answered in the negative. Glowka wondered whether the input of stakeholders was taken seriously, to which Chytalo responded that she found it invaluable, citing some discussions she has had with fishermen who indicated how critical eelgrass beds are for nursery habitats.

Adam Whelchel then gave an overview of The Nature Conservancy's (TNC) Eelgrass program. Whelchel started by saying that TNC was fortunate enough to get $500,000 for research to inform and to do restoration—sufficient money to focus on research, according to Whelchel.

The scope of the research project will be from the elbow of Cape Cod, MA to all of Long Island, including the south shore. Whelchel stated that they are now in the process of finalizing the workplan with NOAA. Two research areas will be targeted: 1) genetic diversity across the study range, and 2) multi-stressors (including light, temperature, substrate, and nutrients).

Yarish was curious as to how TNC plans to work with the States. Whelchel replied that that is the reason why he came to the meeting: to see if collaborative, complementary research efforts can be implemented. Paul Stacey shared that, once Rozsa retires, the ability of CTDEP to participate in studies of this kind will be greatly reduced. He said they will try to work with TNC despite the lack of expertise at the agency.

Glowka wondered how much effort is going to be spent analyzing why previous projects have failed to reestablish eelgrass beds. Whelchel believed that to be a good point and promised to look into it.

Swanson suggested that it was time to discuss the enhancement grant for eelgrass and asked Salata to share what he knew. Salata mentioned that $125,000 is reserved in the '09 budget for this project. He also stated that the next step is for the RFP topic to be selected. Swanson asked how the STAC can help select what the topic will be for the RFP. Yarish offered that Stacey should be the person to respond to that since CTDEP will be charged with deciding how particular dollars will be awarded. Salata interjected to state that, whatever the RFP ends up being, it should be related to water quality and how standards could be set up. Stacey agreed to consult Rozsa because he was unsure.

Curt Johnson asked whether Rozsa plans on providing the STAC with suggestions as to where it should be going. Stacey joked that he would be surprised if Ron left without his words of wisdom. Cornelia Schlenk then asked whether Stacey was going to be developing the RFP and if it was going to be CT-specific. Chytalo answered that the RFP would be circulated to other agencies to ensure that it complement other agencies' plans and that it does not have to be CT-specific. Yarish suggested that Chytalo, Stacey, the STAC, and TNC could form a subcommittee.

Anne McElroy wondered who the RFP was directed to and who was eligible to apply. Stacey believed CT was not in charge of the enhancement plan, and thought the LISS would be in charge. Salata then mentioned that anyone who is eligible to apply for LISS grants is eligible, but for-profits are not. He further noted that the money is in the bank, so time is not an issue if it is decided that a subcommittee be formed to decide RFP criteria. McElroy added that, if a lot of monitoring is required, then groups involved in extensive monitoring will have an advantage,

leaving out independent scientists. Chytalo agreed and noted that it is key for the RFP recommendations to be clear.

Swanson thought that CT got funded to take the lead and give some guidance and direction. Stacey indicated that the meetings may be organized by CTDEP, but that there needs to be a committee to ensure all interests are represented.

Biomass Harvesting Workshop

Julie Rose updated the LISS STAC on the progress made preparing for the Biomass Harvesting workshop to be held on 3-4 December, 2009. The goal of the workshop is to explore the potential application of extractive technologies such as seaweed aquaculture and shellfish cultivation and/or harvest for nutrient mitigation in the nearshore estuarine environment of Long Island Sound.

Outputs of the workshop will include: 1) increased awareness of alternatives for nutrient management on the part of federal/state/municipal agencies and managers, 2) an assessment of the local feasibility of this approach, including suggestions for pilot projects and locations, 3) the identification of opportunities for economic incentives for bioextraction through nitrogen credit trading or other practices, and 4) a synthesis report of speaker and panel recommendations for implementation of these technologies in the coastal environment.

A number of speakers have been confirmed including: Bela Buck (Alfred Wegener Institute), Stephen Cross (University of Victoria), Dale Kiefer (University of Southern California), Richard Langan (University of New Hampshire), Odd Lindahl (University of Gothenburg), Robin Miller (HydroQual, Inc.), Roger Newell (University of Maryland), Robert Rheault (East Coast Shellfish Growers Association), and Kurt Stephenson (Virginia Tech).

NY Bight Regional Research and Information Planning Effort of Sea Grant College Program

Jenna Castle and Sylvain DeGuise presented their results on the planning effort under way (see attached).

Yarish started the discussion by mentioning that the document list references the 1994 CCMP. He felt that document is a little dated, and that instead it would be better to look at the 2009 monitoring efforts and needs assessment. Castle agreed and said that a lot of documents were recommended by council members and the Region 1 group.

McElroy was curious as to how many respondents they got. Castle noted the total was 121, and that it was sent out to 300-400 stakeholders.

William Wise suggested that a report on ecosystem-based management from the Ocean and Great Lakes Ecosystem and Conservation Council be added to the document list.

Swanson asked what the real purpose of this is. DeGuise stated that a number of issues have been addressed nationally and many others have been addressed locally; however, no one has been good at addressing problems at the regional level. He said that the Sea Grant office is making an effort to identify what the problems and needs are to move towards an ecosystem-based management. DeGuise further commented that the goal was to identify what problems are best addressed at regional scale, so they tried to get documentation on what are guiding principles at the regional scale. They worked to cluster the goals into categories to evaluate priorities for Sea Grant and other stakeholders. The purpose of this presentation, DeGuise added, was to identify regional projects and to get diverse input.

Chytalo asked if the final product would be regional planning. DeGuise answered by saying that the goal is a priority planning guide. He emphasized that a lot of initiatives are state or federal, but not a lot of them "think regionally". DeGuise stated that Mid-Atlantic Regional Council on the Ocean MARCO goes from NY to VA and was a governors' initiative (based on what governors want to do). The idea is to identify actual priorities and then work with partners to identify funds for priorities.

Wise wanted to know if there is an opportunity for Sea Grant to take some money and run with it for its own research. DeGuise explained that each Sea Grant has put money to address regional issues. $300,000 was committed for issues that are region-based.

Schlenk felt that which issues are actually regional and not just local priorities should be better delineated. DeGuise answered that the goal was not to quantify the spatial scale of different issues, but to put into perspective and identify what are the most important regional-scale issues.

Sentinel Monitoring Program

Deonarine began by noting that Mark Parker was not able to participate because of travel restrictions. She said that NY and CT are still working on a monitoring plan, and that an agreement is in place with Sea Grant to facilitate bi-state discussions and to take the lead in writing the sentinel plan. Two awards were obtained. First, a Direct Technical Assistance

program will fund experts from EPA to aid in reviewing existing literature, in identifying major threats to the Sound, in providing recommendations as to what new monitoring needs to take place, and in identifying options for spreading management strategies to other estuaries. Second, staff from NEP, CTDEP, and ICLEI received a start-up grant to develop a climate adaptation plan. They will prepare a final report on what different tiers of government can do to successfully implement coastal adaptation strategies. Finally, Deonarine and a staff member from CTDEP will attend the Climate Ready Estuaries meeting in Washington, DC.

After the update, Swanson felt that a lot of money is being spent on planning efforts (e.g., NY Bight, sentinel sites). Yarish added that the Management Committee established as a priority to get the monitoring going, not to plan it for so long. He felt that each state took the allocated $75,000 to plan. Salata echoed Yarish's sentiment and pointed out that "site" was dropped from the sentinel monitoring planning, even though the original proposal was to choose locations that are recognizable or have had a history of monitoring. He believed that "site" needs to be kept, at the very least for political reasons. Penny Howell, on the other hand, though that the monitoring should be Sound-wide, otherwise it would be too localized.

Swanson offered that the program may have gone a little off-track, and that it may be time for some reevaluation. Weiss noted that Millstone (power plant site) has a unique dataset and was the original driver of the idea. Thus, he said, committing to a site is better than to diffuse effort and start building a long-term database. Cornelia reminded the STAC that at a previous meeting, this same discussion was had and that no conclusions were arrived at. Deonarine established that the current monitoring plan is Sound-wide, but that sites will be chosen as pilots. Yarish returned to the Millstone operation, saying that it is an example of a good long-term monitoring program and that the idea was to have a similar project on both sides of the Sound. Deonarine responded that the sentinel monitoring was supposed to be a STAC initiative, but that it fell to the states to lead the project. Chytalo mentioned that monitoring is very basin-dependent, and thus site selection is very important, which in turn leads to planning being essential. Salata suggested that a discussion to revisit program goals be included in the next management committee meeting agenda.

Later, Mark Hoover, on behalf of the STAC fellows, informed the STAC that they have been compiling lists of potential data sources and of monitoring variables (e.g., temperature). Their plan is to produce variable-specific reference sheets where all information on a variable (location of monitoring sites, frequency, links to data, etc) will be summarized.

Updates

Synthesis report. Yarish shared with the STAC the wiki page created for chapter participants, and asked chapter leaders to compel participants to upload updated outlines. In the last conference call, the sense was that the pace would need to be accelerated. He also stated that the outline on macrophytes is moving along. Schlenk wondered whether draft outlines for each section were completed. Yarish answered that they were all already up. Finally, Glowka questioned whether given all the uncertainties, there were any actual certainties regarding Long Island Sound. Dam and Yarish were quick to point out that there were many.

Needs assessment. Julie Rose is looking for input before she starts working on it. Yarish pointed out that the 2009 guide for RFP for research was not used. For the next RFP, an updated needs assessment needs to be clear in identifying research funding areas.

STAC fellows. Rose reported that there were no applicants for the CT STAC fellow. The extended deadline is now 10 July. From NY, two students applied (one from CUNY and one from SBU). DeGuise brought to the attention of the STAC that PIs did not allow students to apply because of the ad's clause stating that "PI will take care of responsibilities if fellow drops out". He suggested that it may be necessary to rethink the language to obtain more applications.

Future STAC Agenda Items

Larry Swanson asked for STAC agenda suggestions. Based on participants' input, future items will include: 1) revisiting the wording in the announcement of the LISS STAC fellowship (potential applicants are discouraged to apply by their advisors due to the following clause: "If an appointed Fellow no longer has student status or otherwise defaults in his/her responsibilities prior to the end of the fellowship period (in which case the Fellow's award will cease), that student's advisor is required to fulfill the responsibilities of the Fellow, without compensation, for the remainder of the award period", 2) continuing the discussion started at this meeting regarding SWEM modeling efforts, 3) discussing the sentinel site monitoring program, specifically whether determining particular sites is necessary, 4) an update on the biomass harvesting workshop, and 5) a discussion on how to integrate all ecosystem-based management programs in the Sound (this suggestion arose from the NY Bight Regional Research and Information Planning Effort presentation).

* For attachments, please contact the LISS office.