



RHODE ISLAND ENVIRONMENTAL MONITORING COLLABORATIVE

2013 Spring Meeting

May 14 2013

Narragansett Bay Commission
1 Service Road
Providence, RI 02905

In Attendance:

Q Kellogg, RIEMC Chair
S. Kiernan, RIDEM Office of Water Resources, RIEMC Vice-Chair
T. Uva, Narragansett Bay Commission, RIEMC Vice-Chair
T. Kutcher, Save the Bay (in place of Marci Cole-Ekberg)
C. LaBash, URI Environmental Data Center
J. Boyd, RI CRMC
K. Crawley, RI Water Resources Board
J. King, URI Graduate School of Oceanography
J. Swift, URI Coastal Institute
D. Murray, Brown University
R. Stenkalis, Narragansett Bay Estuarine Research Reserve

Guests:

W. Prell, Brown University

Part I: Review of Monitoring programs for summer of 2013

Uva: The Narragansett Bay Commission (NBC) will continue its field monitoring program as before. Its field program will continue to monitor:

- N compounds
- Phytoplankton
- Large Rivers
- Phytoplankton (collected at Bullocks reach)
- Operation of two Narragansett Bay Fixed-Site Monitoring Buoys (NBFSMN)
- Underwater video monitoring
- Shellfish monitoring
- Assessing effects of CSO abatement on areas A and B

Boyd: The Coastal Resources Management Council (CRMC) is emphasizing monitoring of shoreline change, particularly along RI's south shore. CRMC now provides on its web site shoreline change maps prepared by J. Boothroyd et al. that enable the long-term assessment of

shoreline change from 1939-2004. There is a great deal of public and municipal interest in shoreline change given the effects of Hurricane Sandy in 2012.

The Army Corps of Engineers (ACOE) flew LIDAR surveys post-Sandy along all of southern RI shoreline. CRMC is now in the process of developing the RI Shoreline Change Special Area Management Plan. Boothroyd has noted that, based on his long-term beach monitoring profiles, the RI barrier system was eroded back to the 1978 scarp by Hurricane Sandy.

Dr. Boothroyd is now an emeritus professor and his faculty position may not be filled by URI. That leaves unresolved the question of who will continue to perform south shore glacial and shoreline monitoring. CRMC feels it is imperative to maintain a robust beach profile monitoring program. With maintenance of a sufficient number of transects, Boothroyd's simple modified Emery method provides a credible estimate of beach 'volume' amounts and change.

Labash: The URI Environmental Data Center is in contact with NOAA to collect post-Sandy aerial imagery with FY 2013 Sandy Recovery Act funds. Dr. Boothroyd has noted that post storm assessments need to be done immediately after a storm before towns and others start moving sand off the roads. This quickly diminishes the accuracy of estimates as to how much sand was moved off the shore by the storm.

Kiernan: all of DEM's planned monitoring activities for 2013 are proceeding forward. The NBFSMN was deployed last week. This year, northern RI will be targeted by DEM's rotating river basin assessment, specifically the Blackstone, the 10 mile, and the Branch Rivers. The Woonasquatucket River will not be monitored this year. DEM OWR is losing its IT staffperson; this will slow DEM's work on data management, with significant uncertainties as to her replacement.

Gibson: Given his recent involvement he is not sure where RIEMC stands with regard to its work on fisheries monitoring. He provided a brief summary of the fishery independent and fishery dependent monitoring programs that DEM's Division of Marine Fisheries relies upon. DMF's vessel the R/V *Chafee* is at sea every month conducting in partnership with URI's Graduate School of Oceanography's long-running Fish Trawl, a survey that has been conducted since 1979 and will continue into the future. It utilizes an otter trawl and detailed data are collected on every organism brought on board by the trawl. This trawl survey contributes data to fish age and growth studies, species abundance, and contributes to regional coast-wide stock assessments. It is now being supplemented by a new fish pot survey to collect data on species not caught consistently by the fish trawl.

Additionally, the Division of Fish and Wildlife conducts sein studies from June to October annually. There are 18 stations throughout Narragansett Bay, and 3-5 stations in the coastal ponds. Sampling occurs monthly. Other fishery independent monitoring programs include:

- Bottom surveys of shellfish resources in the summer
- Suction sampling of steamer clam beds
- Menhaden monitoring (via air since 2008)
- Lobster settlement index survey

Key fishery dependent surveys include:

- Marine recreation fishing informational program. This is a NMFS-run east coast survey. Individual states can pay for increased survey collections. This program relies upon phone intercept and shoreline intercept interviews.
- Fisheries port fish sampling for age and growth samples of important commercial and recreational fish species.
- Electronic seafood dealer reporting requirements which track quantities and value of landings. This program helps to monitor annual quota limits attainment.
- Lobster ventless trap survey: may not continue if the Bays, Rivers, and Watersheds Coordination Team does not provide support for it in 2013. This survey has taken place annually since 2006.
- The previous fishing vessel observers program has been discontinued due to the loss of \$100K of federal funding 1.5 years ago.
- Ichthyoplankton monitoring also was discontinued. Although of scientific value, it was unclear how this program contributed to RI fisheries management.

DMF has struggled to maintain monitoring efforts despite the loss of federal funds, and declines in commercial license receipt revenues, and RI general revenue support. All fisheries monitoring data is available from staff except for certain types of proprietary commercial fisheries data. There is currently no on-line access to the data, but interested individuals could work with individual DMF staff to acquire the data.

Questions:

Kutcher: Where is DMF sampling steamers in Narr. Bay? Gibson: mainly around Conimicut Point, but also anywhere steamers are known to exist, such as Prudence Island. DMF's Jeff Mercer is designing a steamer survey as currently data collection is somewhat ad hoc.

Torgan: Is there monitoring of river herring? Gibson: the beach seine and trawl surveys track them and the data are compared to fish-way counts. There has been an observed increase in river herring abundance over last 3 years.

Boyd: Is fisheries monitoring able to track changes in marine finfish, shellfish, and crustaceans due to climate change? Gibson: strong climate change signals in the fisheries data are evident. For example, although total fish biomass in Narragansett Bay has not changed significantly since the late 1970's, constituent species have changed fundamentally with pelagic species replacing demersal species. This likely indicates the effect of rising water temperatures on Narragansett Bay habitat quality.

King: His laboratory is conducting sediment coring operations in Greenwich Bay and Gordon Pond as part of a regional paleo-climate reference for the last 15,000 years. The idea is to assess sediments in a freshwater body within the Greenwich Bay watershed (Gordon Pond) and compare it with coring data from Greenwich Bay.

Kutcher: Save the Bay has participated in Level II assessments of eelgrass. In the salt ponds, they are conducting selected scallop surveys to assess impacts of recent shellfish restoration efforts. Save the Bay's Dave Prescott and Tom Kutcher are also conducting human pathogen source surveys to identify illegal sanitary connections to stormwater conveyance structures.

Ladewig: ESS Group works with DEM to implement its programs river water quality monitoring, cyanobacteria surveys, and wadeable stream biological monitoring. It also works with local lake associations, other small NGO's, and with the Providence Water Supply Board.

Stenkalis: The Narragansett Bay National Estuarine Research Reserve (NBNERR) will continue its System-Wide Monitoring Program (SWMP), which monitors key parameters in meteorology, water quality, and biotic functions (chlorophyll a, nutrients, and eelgrass). It will also continue its Long-Term Monitoring Program (LTMP) which provides data to improve understanding of short- and long-term ecological changes occurring in Reserve land and water resources and throughout Narragansett Bay.

NBNERR also is conducting Tier II sampling of eelgrass beds around Prudence Island and will continue to partner with other programs such as Save the Bay for additional Tier II eelgrass monitoring in Narragansett Bay. This Tier II data will be combined with NBNERR's comprehensive salt marsh monitoring at Prudence Island as part of the national sentinel site network. Parameters collected on salt marshes include surface elevation and species composition. NBNERR is also working with CRMC on marine invasives in salt marshes. Finally, it is conducting a number of smaller projects such as shoreline invertebrate surveys with a focus on green crabs.

Unfortunately NBNERR's federal funding is in jeopardy in FY 2014. NBNERR monitoring capacity could be diminished as a result.

NBNERR's 2012 SAV mapping will be posted on-line by June '13; all collected data posted on their web site.

Comments:

Kiernan: DEM is updating its wetlands monitoring strategy; will include an update to salt marsh monitoring protocol. All wetland monitoring protocols will be delineated in the strategy.

Stenkalis: NBNERR retains its Dataflow systems to conduct real-time boat based water quality surveys. This is a good tool for responding to major storm events. At this time no funding is available to utilize the dataflow system regularly, but it is ready to be utilized for future monitoring of storm events or spills. Streamflow chlorophyll data is calibrated against lab assessments of grab samples

Comments:

Uva: NBC continues to take a dataflow water quality survey weekly collecting data on chlorophyll and DO levels. This data is mapped and available on-line. NBC would be happy to partner with NBNERR for future efforts using Dataflow systems.

Green: URI Watershed Watch (WW) is launching its 26th year of monitoring in 2013 and since 1988 has generated over 31,000 water quality reports. There have been 17 families participating in Watershed Watch for over 20 years and there have been 250-400 volunteers contributing at any one time. The first water collection efforts for 2013 are this week and weekend. The volunteers will be monitoring weekly from now until October. Data is collected from 260 sites across the state, evenly divided among ponds, streams, and saltwater.

Watershed Watch is also working on cyanobacteria surveys with DEM. It has received a 2 year grant from URI Coastal Institute to develop a database, starting with Block Island data. It has

hired a programmer and is working on the project with assistance from the EPA Atlantic Ecology Division Lab.

River and saltwater weekly or biweekly
Samples provided to WW monthly
Data posted on website once available.
7,000 chlorophyll filters analyzed by WW last year.

USDA unfortunately has ended funding for the New Regional Water Program, and other regional water program nationally; last funds being this summer. WW's USDA grant ends this August.

Chuck LaBash:

URI Environmental Data Center (EDC) continues work on Post-Sandy imagery and analysis; Has received URI Coastal Institute support to conduct a project to map high water marks in RI from Sandy which will entail surveying for marks/indications of Sandy's high water surges. Data will be incorporated into a GIS database.

URI EDC is working with the Napatree Point Conservancy on shoreline change monitoring.

URI EDC is working with USGS and DEM on setting up a hydrography dataset; currently stalled by lack of funding, but it will go forward. Conflating 1:240000 scale to 1:5000 higher resolution in a pilot study.

NOAA's Office of Coasts Survey wants to conduct a hydrodynamic modeling project in select Rhode Island bays. Labash suggested that a representative of RI should contact this office to emphasize that it is a priority for RI. They will likely require match for federal funding.

Kiernan: The leaders of URI's Coastal Hypoxia Research Project should talk to them so they are up to date on latest work they're doing.

JK: Interactions with Office of Coasts Survey has to be handled carefully. RI needs to make an organized response. Our goal should be to develop a bay observing system as part of NOAA's observing system. RI shouldn't try to "tell them" what they should be doing in RI. Also don't want this to be a 'one-time' program, but an effort that leads to permanent investment by NOAA, equivalent to a NOAA PORTS system. How should we align this project with NERACOOS, CHRP, or related projects?

Murray: Brown is upgrading the insomniacs DO website to include the "daytrippers" data along with the insomniacs data. DO strike force will be in operation this summer, targeting specific events based upon NBFSMN data. There are 5 surveys planned targeting neap tides in the summer. But no survey is planned for this September because the neap tide that month will be relatively weak. That plan could change depending how summer goes in terms of number and severity of hypoxic events. The team will respond to a bad season if it unfolds. It takes about a month to 5 weeks to compile, analyze, and post the season's data. 75 stations are monitored using 3 boats. Depth profiles will be taken as before.

This may be the last year for the daytrippers unless additional funding is found.

King: how much \$ does the daytrippers program need annually?

Prell: \$30,000 is required annually to cover just Brown Univ's costs; Would need another \$12,000 to support the work done by Deacutis. So the total annual cost is \$40-50,000.

The program's costs center not on just the survey labor. Other major costs include boat-time and operating costs, data analysis and communications.

Deacutis: need to complete a data quality assurance plan to fulfill the requirements tied to EPA support for the DO surveys. Deacutis will be working with Brown Univ. to fulfill this EPA requirement.

Deacutis: NBEP will not be collecting aerial macroalgae surveys in Narragansett Bay this summer. A multi-year, 2007-2011 compilation report is in the works, with a final report due out this summer. Efforts will be made to ensure full access to the macroalgae data.

Deacutis will be transferring to DEM this summer.

King: Will Dr. Carol Thornber continue her similar macroalgae research? Deacutis: There is no funding available to her currently. Deacutis feels there is sufficient variability (or responsiveness of macroalgae extent to changing inter-annual conditions?) in the macroalgae data for macroalgae to serve as an indicator of environmental health in Narragansett Bay. The variability of observe extent is very high so a long-term database is required. Green algae in particular seem to be very sensitive to changes in nutrient loading.

Walker: EPA ORD's Atlantic Ecology Division is in 2nd year of its *signature project*. It has a strong focus on improved conduct and utilization of Bay and Bay watershed monitoring.

Modeling to look at Northeastern lakes work; intensified stratified sampling for watershed IC. Will be done again this summer

They are conducting intensive benthic sampling in Greenwich Bay.

They are focusing on development of better monitoring methods, particularly with regard to light attenuation for bio-optical modeling and changes in key isotope ratios in fish otoliths.

Cathy Weygand continues her salt marsh surveys.

They are also studying shellfish filtration and benthic nitrification and de-nitrification processes in efforts to assess important aspects of the "functional recovery" of the Narragansett Bay benthos and water quality as nitrogen loads are reduced. Continued collaboration with GSO's Bethany Jenkins regarding enhanced microbial gene expression of N fixation given that researchers have previously identified shifts in the benthic fluxes under hypoxic conditions from those dominated by de-nitrification to those dominated by nitrification.

Overall, they are developing important distinctions (and linkages) between monitoring "conditions" and "systemic functions", and working to model aspects of it in partnership with the URI CRRP Program.

King: What is the status of P. Donaghue's proposal? (*Was not funded.-Colt*)

Torgan:

Narragansett Bay and the Salt Ponds of RI require comprehensive research and monitoring and thus he appreciates the RIEMC's efforts to fulfill these needs.

The Nature Conservancy-RI is monitoring and assessing the ecosystems services generated by oyster restoration efforts in the salt ponds and elsewhere. It is also assessing which future restoration sites in RI present the highest chances for success, culminating in development of a "Suitability Model". TNC-RI's work is part of a 4 state, networked effort. In Long Island, they are surveying the regional distribution of eelgrass and comparing the data to information on

land-based inputs of N and overall watershed state (degradation). TNC-RI is also providing support to the daytrippers dissolved oxygen surveys.

TNC-RI is supporting EPA Region I's Southern New England Coastal Waters Restoration Partnership (SNECWRP) by conducting a "meta-analysis" of historical monitoring efforts. FY 2014 federal funding of about \$2 million is in the President's budget for the SNECWRP, which is miraculous. The new program will focus on Ecosystem response; nitrogen attenuation by shellfish

TNC-RI is interested in monitoring the recovery of River Herring runs in RI, given recent efforts to restore migratory passages on RI's rivers. It is also monitoring the outputs of a study of River Herring bycatch in the mid-water trawl Atlantic Herring and Mackerel fisheries being conducted by the Massachusetts Division of Marine Fisheries, the UMass/Dartmouth School for Marine Science and Technology (SMAST), and other partners. The ultimate goal of this research is to set up a rapid mapping effort to identify immediately where river herring are being caught in these fisheries in order to direct fishing effort away from these schools. TNC-RI would like to combine RI DMF data on river herring runs with offshore marine monitoring programs of River Herring bycatch.

Torgan noted that a major international conference on stock assessment science will take place October 2013 at the NMFS Narragansett Fisheries Laboratory.

Crawley: The RI Water Resources Board has been working closely with USGS for over 35 years studying the hydrology and hydrogeology of Rhode Island's freshwaters. They have focused for the past decade on hydrologic modeling the Blackstone River Valley watershed Pawcatuck-Wood Rivers watersheds. They have also developed comprehensive water use and availability for all of RI's river basins. The long-term goal of this work is determining safe and sustainable yields for freshwater supplies for human use.

As with DEM, the WRB is seeing reductions in USGS support for RI Stream Gage Network, large river quality monitoring, groundwater level observations.

Gross groundwater yields from surficial deposits and till areas are of critical importance in determining safe yields for South County's freshwater resources, surficial and ground.

Under the 2011 Water Use and Efficiency Act, the WRB collects annual data from water suppliers on water consumption and demand. The WRB will use a BRWCT grant in FY 2014 to develop an on-line database for this data. Key questions addressed: how much water is being consumed by different classes of consumers and different water suppliers, and where are we consuming these supplies?

USGS, DOH, WRB working together on a 5 year compilation by USGS of estimated water use nationally.

Working with DEM on "Stream Stats", a stream statistics package for flooding first; GIS format conversion

Focus on the Chipuxet Basin; projects coming online over next year or so. URI project in fall to bring pawcatucket model 'live'. Seek better basin scale management.

Looking at artificial recharge and storage basin potential

Finishing up work on major Big River monitoring and assessment efforts. Working with USGS, the WRB has been looking closely at the relationship between groundwater pumping in the Big River basin and the ensuing impacts on wetlands. A data report has been published and a second on the modeling effort is about to be published by USGS.

Paris: The RI Department of Health Beach Monitoring Program will continue its efforts in 2013. The Beach Monitoring Program will not actively sample urban beaches in upper Narragansett Bay in 2013. Some urban beach water quality sampling will be conducted by Save the Bay (with samples processed in the DOH laboratory) at Sabins Point and Bold Point in 2013. The Beach Monitoring Program will submit a technical report to EPA by October 2013 summarizing the results of its 3-year study of 3 upper Narragansett Bay beaches (Rose Larisa Memorial Park and Bold Point Park in East Providence, and Gaspee Point in Warwick.) and which will serve as a basis for discussions with the municipalities about possibly reopening these urban beaches.

If in the future an urban beach is re-opened for public swimming, the relevant municipality would have to develop and implement a standard beach water quality monitoring plan. Licensing requirements for reopened beaches will require monitoring. The additional costs of reopening previously closed urban beaches may make it challenging for municipalities to reopen upper Bay beaches.

Uva: It will be important to monitor improvements in pathogen levels given the completion of Phase II of the CSO Abatement Project. Monitoring data already indicates some improvement in pathogen counts in the upper Bay.

Uva: Should RI encourage towns to reopen previously closed urban beaches by underwriting the standard water quality monitoring needs they would have to fulfill?

Paris: In 2013, the DOH Beach Monitoring Program will continue to survey and sample discharge points on all the beaches and will increase sampling efforts in South County beaches. It will also partner with DEM in assessing post-Sandy recovery projects.

The Beach Program also will conduct a review of state beaches to ensure all are properly categorized in terms of risk to acceptable swimming water quality. This type of review was last done in 2006. A few previously categorized, "high-risk" beaches will be categorized as lower risk. All high-risk beaches are sampled 4 times weekly throughout the summer. Lower risk beaches are monitored on a less frequent, monthly or semi-monthly basis. The re-categorization effort may lead to a greater focus on Tiverton and Little Compton beaches. Regardless of any beach re-categorizations, nearly all RI saltwater swimming beaches are sampled at least 4 times monthly in the summer.

The Beach Program will continue to process samples taken by the local Surfriders Chapter and by local beach facilities. All processed data is made available on-line by the Beach Program.

EPA will provide funding for the Beach Monitoring Program for this year with reductions due to the FY 2013 sequestration impacts. Fortunately, it appears as if there will also be EPA funding for beach monitoring provided in FY 2014 federal budget.

Could beach monitoring be coordinated with NBC and DEM efforts in pathogen and shellfish bed monitoring?

Part II: Completion of the RIEMC 2012 Summary Report

Kellogg: Summary Report for GA. Is it just for GA?
Want to demonstrate the 'value' of the data; how it is utilized.

Kiernan: greater urgency about financing issues.

Want to add LiDAR work as a 2012 accomplishment; also eelgrass mapping
Sidebar stories on response to Sandy; and on NBC water quality analysis.

Could we incorporate fisheries monitoring into this report.
Can only focus on major new initiatives.

Please email ideas on major accomplishments.

Report should lay groundwork for FY15 budget cycle and mid-year FY14 adjustments
Sequestration impacts are only now coming to light.

King: mediocre response of researchers to post-Sandy response. We're not paying attention to science needed to be done to improve mitigation, resilience, and storm recovery.

Do we need a para. Or two on emergency response monitoring and research?

Boyd: discussing this topic as part of shoreline change SAMP implementation
Will have priorities fleshed out within 1 year

Green: need response planning for spills, floods, and storms

Kiernan: need science to understand long-term changes along shoreline

Swift: the URI Coastal Institute has a memorandum of understanding with DEM to undertake rapid monitoring in response to an event.

There is a monitoring plan gap for 'coastal destruction' (we do have for infrastructure damage along shoreline)

Kiernan: Monitoring accomplishments for 2012 Summary Report are due to Kiernan by Friday. Hopefully she will have a full final draft of the report to circulate for RIEMC review by next week.

Funding:

Areas of critical funding shortfalls highlighted in red.

SRF support for NBFSMN is going to go down as SRF overall funding goes down

Stream gage, GW observations, Large river monitoring: USGS increased cost-share from 50% to 75% in FY13. USGS trying to recover funding by Fed FY15.

Stream gage on Pawcatuck cut off by USGS.

We cannot keep current system going at level funding.

GW wells critical for drought management. Why important for real-time data avail.
Should we be monitoring GW in GB to assess submarine water inputs into GB.

Green: how do we engage with watershed councils to write letters of support to maintain USGS led monitoring programs.

Possible change to RI gage downgradient from Woonsocket WWTF; its in a very shallow area.

Non-wadeable sections of rivers really have to be handled by USGS for WQ monitoring.

Green: Judge threw out a Hg contamination settlement, and in doing so the judge asked the environmental community for recommendations for projects to funded by a new settlement agreement. Could the RIEMC suggest a fish tissue contaminant program be funded?

Kiernan: will check with D. Chopy on status of coming up with recommendations. There is already a 'bank' of environmental projects ready to go for applying penalty and fine funds. Court determines what projects are applicable. Chopy should be briefed about monitoring projects that could go into bank.

Uva: we need to prioritize GW as a monitoring priority: quantity as well as quality.

Boyd: there has never been followup to the original Greenwich Bay groundwater seeps assessment originally done by D. Urish in ?????. Very high dissolved inorganic nitrogen concentrations were observed by that study.

Kutcher: shouldn't we add saltwater fish toxic contamination? Why isn't RWU an institutional member on the RIEMC?

Kiernan: we need a more complete description of the overall monitoring work being done, but eg. Adding GW, saltwater fish tissues, and fisheries monitoring.

JS: RIEMC and others should be careful not to appear to be "perpetually unsatisfied" to the legislators.

Uva: we already have the basis in the reporting for a strategy.

Kiernan: a full list of priorities; and a separate list of unmet needs.

Murray: what about pharmaceuticals and emerging contaminants. Shouldn't report say something?

Uva: have done some work with plant inputs. EPA researching this question.

Murray: than this is worth putting into it. Triclocane (sic) of importance here possibly.

Swift: should we target CVS and Caremark for funding support?

Crawley: what are some key emerging environmental monitoring needs?

King: More attention to fisheries monitoring needs would help the RIEMC to emphasize the economic development benefits of better environmental monitoring.

Uva: once RIEMC 2012 Summary Report has been completed, someone should develop a presentation of its findings and arrange for its wide distribution. Advocacy groups should be solicited for support using the Report. He suggested the possibility of having the BRWCT's Public Advisory Committee revived to help with this education effort.

Uva: the RIEMC and monitoring programs generally don't get together enough simply to share and discuss monitoring findings. Should we schedule a "results discussion" meeting for the fall? For example, the NBC has already reduced by 56% N discharges since levels in 2003. Fields Point WWTF discharges reached 3.5 ppm TN in April 2013.

Colt: we will set up a "doodle poll" for fall '13 meeting date and time.

Kiernan: statewide wq assessment for 2014. thus this summer connie cary will be issuing a call for data.

JSwift: looking to a monitoring public awarness workshop. Working with RINHS on a documentary of bio-blitz for PBS. More to come.

THANKS TO Q for all her work