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NJ Water Monitoring Council

Measuring What Counts for Clean & Plentiful Water

**September 23, 2015
MEETING MINUTES**

Member Attendees

NJDEP – *WM&S*: Leslie McGeorge, Alena Baldwin-Brown, Brian Henning, Helen Pang, Vic Poretti, Bob Schuster *OS* – Sandra Goodrow, Nick Procopio *C&LUP* – Danielle Donkersloot

NJDOH –

USGS – Bob Reiser, Heather Heckathorn, Tom Imbrigotta, Pam Reilly

USGS (retired) –

DRBC – Tom Fikslin

EPA R2 – Darvene Adams

IEC – Evelyn Powers

NJ Pinelands Commission –

NJ Water Supply Authority – Heather Desko

Rutgers (Coop Extension Service) – Lisa Galloway Evrard

Rutgers (IMCS) –

Rutgers (Env. Bioengineering) – Eric Vowinkel

Montclair University – Meiyin Wu

Monmouth University/Urban Coast Institute – Jim Nickels

Stockton College –

Meadowlands Environmental Research Institute –

NOAA –

Monmouth County Health Dept – David Sorenson

Barnegat Bay Partnership – Stan Hales

Stony Brook-Millstone Watershed Association –

Musconetcong Watershed Association –

Raritan Headwaters Association – Angela Gorczyca

Great Swamp Watershed Association –

NJ Harbor Dischargers – Ashley Slagle

Brick Township MUA – William Ruocco

Guest Speakers/Discussion Leaders

TinChun Chu– Seton Hall University

Lesley D’Anglada – EPA HQ OST/OW (via Webex)

Larry Feinson – USGS NJWSC

Patricia Gardner - NJDEP/DWM&S

Jennifer Graham – USGS (via Webex)

Scott Kisbaugh – NYDEC (via Webex)

Lee Lee – Montclair University

John Yagecic - DRBC

Other Attendees

Dan Bello – NJDEP/State Park Service

Dennis Bereznyak - NJDEP/DWM&S

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Kevin Berry - NJDEP/DWM&S
Linda Bonnett – NJDEP/DWS&G
Dean Bryson – NJDEP/DWM&S
Kathleen Burkhard – NJDEP/DWS&G
Helen Grebe – EPA Region 2
Mike Haberland – Rutgers University
Sarah Helble – NJ Water Supply Authority
Robin Jazxhi – IEC
Sandy Krietzman – NJDEP/DWS&G
Virginia Loftin - NJDEP/DWM&S
Gigi Mallepalle – NJDEP/DWM&S
Jack Pflaumer – NJDEP/DWM&S
Alexandra Rossi – Montclair University
Namsoo Suk – DRBC
Anne Witt – NJDEP/DWM&S

- **Council Business** (Copies of the agenda, minutes and many of the information updates and presentations will be available on the Council’s webpage, under “Meeting Information” - <http://www.state.nj.us/dep/wms/wmccmeetinginfo.html>)
- Minutes from the 05/23/15 Council meeting were approved.
- Updated 2016 Schedule for NJWMC meetings is: January 21 at USGS NJWSC; May 19 at Stony Brook Millstone Watershed Association; September 21 at DRBC. Suggested Technical Theme for the January meeting is Contaminants of Emerging Concern, including Microplastics (DEP/DSREH and Monmouth University offered to present). Suggested Technical Theme for the May meeting is Wetlands Monitoring. Suggested wetlands presenters/presentations include DEP/DPF, MAWCA, PDE, NWCA, and a citizen science program with 3 schools.
- Information Updates, Presentations and Announcements:
 1. Membership Updates – **New Member:** Heather Heckathorn has joined the Council as a USGS NJWSC representative. **Replacement Member:** Jeff Hoffman (DEP/NJGWS) has replaced Karl Muessig on both the full Council as well as the Steering Committee. **Resignation:** Tali MacArthur (DEP/DWM&S) left DEP in June.
 2. Announcements – 1. Alena Baldwin-Brown announced that a number of enhancements have been made to the Council website to increase both user experience as well as functionality. Suggestions for any additional enhancements are welcomed. 2. Alena also announced that the annual update to the NJ Continuous Monitoring Inventory is now complete; a revised spreadsheet and maps will be posted accordingly. 3. Pam Reilly announced that USGS NJWSC has new publications available including a field guide to freshwater cyanobacteria & HABs, pre- and post-Hurricane Sandy estuarine bed-sediment quality data, chemical and ancillary data for bed sediment/Young of the Year bluefish tissue/mussel tissue in bays & estuaries post-Hurricane Sandy, and new Flood Inundation maps for the HoHoKus Brook. These are available online at: <http://pubs.er.usgs.gov/>. 4. John Yagecic announced the development of dashboards related to both water quality and flow in the Delaware River Basin. DRBC is looking for collaboration on the flow dashboard. The dashboards are animated, updated daily, and provide near real-time conditions. They can be accessed at: <http://drbc.net/Sky/flows.htm> and <http://drbc.net/Sky/waterq.htm>.
 3. National Water Monitoring Information from the National Water Quality Monitoring Council (NWQMC - <http://acwi.gov/monitoring/>) – Leslie McGeorge and Danielle Donkersloot provided information from the May NWQMC meeting, including: a. an update on National Water Quality Portal progress and the status of development of a 1-5 year Portal Vision; b. information from the Effective Science Communication NWQMC webinar, featuring UMD’s Integration & Application Network which contains symbol, image and conceptual diagram libraries that are free to use (<http://ian.umces.edu>); c. an announcement that the abstract submission deadline for the 2016 National Water Monitoring Conference had been extended until October 2. Council members/organizations who already submitted abstracts include USGS NJWSC, DRBC, Rutgers and DEP

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(DWM&S and C&LUP). A NJWMC-related abstract was also submitted. Abstract notifications are expected in January 2016; d. a listing of and links to the draft NWQMC meeting minutes and HABs-related presentations on the NWQMC's website; and e. an update on the Citizen Science/Volunteer Monitoring and Communications activities, including the development of a Volunteer Monitoring Charter, as well as a request for NJWMC members to consider getting involved by submitting articles for the NWQMC newsletter, participating in webinars, as well as joining any of the workgroups.

4. *NJ Long Term Monitoring and Assessment Strategy Update* – Pat Gardner (DEP/DWM&S) provided an update on the ongoing work related to updating NJ's Long Term Water Monitoring and Assessment Strategy. This included a summary of the August 18 meeting with the NJWMC, plans for incorporating information from that meeting into the document, as well as Council assistance in identifying ways to enhance data exchange, as well as partnering opportunities to help fill some of the identified gaps and enhancements.

➤ **Session – Cyanobacterial Harmful Algal Blooms (HABs), Cyanotoxins, and Other HABs**

A. *Cyanobacterial Blooms: Tastes, Odors and Toxins* – Jennifer Graham (USGS)

Jennifer Graham provided an overview of cyanobacterial harmful algal blooms (HABs) including definitions, causes, why they are unique/harmful, regulations, and which HABs produce toxins and taste and odor. She also shared USGS guidance and capabilities for cyanobacterial HAB collection and analyses as well as frequency of occurrence, spatiotemporal patterns for cyanobacterial HABs, and environmental influences that can both contribute to occurrence as well as assist in prediction and potential response/management scenarios (including use of continuous monitors).

B. *EPA's Activities Related to Cyanotoxins* – Lesley D'Anglada (EPA HQ)

Lesley D'Anglada shared EPA's activities related to cyanotoxins including an overview of HABs and cyanotoxins, routes of exposure and adverse health effects, and public health guidelines related to both recreational as well as drinking water-related exposure. In addition, she detailed both EPA Office of Water and EPA Office of Research & Development activities associated with both types of exposures including the development of drinking water health advisories (there are no federal regulations for cyanotoxins in the US) for both microcystins and cylindrospermopsin. She also mentioned the cyanobacterial HABs website (www.epa.gov/cyanohabs) which contains information on causes/prevention/mitigation, human health & ecological effects, detection methods, available policies & guidelines, past & ongoing research, as well as links to other states' HABs programs. Other activities include: 3x/year inland HABs webinars; a monthly HABs newsletter published on the website above; a fact sheet for drinking water operators (available at: http://water.epa.gov/scitech/swguidance/standards/criteria/nutrients/upload/cyanobacteria_factsheet.pdf); recommendations for public water systems to manage cyanotoxins in drinking water (available at: <http://www2.epa.gov/nutrient-policy-data/recommendations-public-water-systems-manage-cyanotoxins-drinking-water>); a compilation of cost data associated with the impacts & control of nutrient pollution; a contaminant cyanotoxins candidate listing for consideration for future regulation under the Safe Drinking Water Act; cyanotoxin-related work under the National Aquatic Resource Surveys; as well as a 5 year project to develop a Cyanobacteria Assessment Network (EPA, NOAA, NASA & USGS) to provide monitoring information regarding freshwater algal blooms using satellite data, and development of additional analytical methods for cyanotoxins. Many human health-related research needs have also been identified.

C. *New York's HABs Programs: In with the Old, Out with the New* – Scott Kishbaugh (NYDEC)

Scott Kishbaugh summarized NY State's HABs program. NY has had a significant number of HABs – in 2013, the State had 50 lab confirmed toxic algae warnings, and in 2014, 93 waterbodies reported blooms (74 of which were confirmed). This resulted in support for hiring a dedicated HAB coordinator in 2015 to manage several elements of the program. The HABs program revolves around surveillance, with the key components being: monitoring, data analyses, outreach/reporting, data integration, research, and program administration/oversight. Surveillance and monitoring are conducted by two programs (citizens lake assessment program, and lake classification & inventory), several types of partnerships (county & other state agencies, academia, the NY Federation of Lake Associations, and individual lakes themselves), as well as the

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public. Outreach/reporting has many avenues including emails, web notification (<http://www.dec.ny.gov/chemical/77118.html>), listservs, press releases, signage, as well as social media (Facebook, Flickr, twitter, YouTube). In addition, NYDEC has an online reporting form (http://www.dec.ny.gov/docs/water_pdf/algaereportform.pdf) for bloom reports. Based on all of the HAB-related data it has collected, the program has identified a number of potential modifications, as well as research-related issues that it continues to explore.

D. NJ CyanoHAB Workgroup & Fact Sheet/Lake Network Monitoring Results – Leslie McGeorge and Vic Poretti (for Tom Miller) (DEP/DWM&S)

Leslie McGeorge and Vic Poretti shared information about DEP's CyanoHAB monitoring activities. Leslie described a multi-program/agency HAB workgroup that has been formed, and a fact sheet that has been developed related to CyanoHABs in NJ. The workgroup includes representatives from the Division of Science, Research & Environmental Health, DWM&S, the Division of Water Supply and Geosciences, Division of Fish and Wildlife, and the NJ Dept. of Health. The fact sheet (developed by the workgroup) provides general information on cyanobacteria, cyanotoxins, and associated health concerns. The fact sheet is available at: <http://www.state.nj.us/dep/wms/bfbm/HABsFactSheet2015.pdf>. Vic provided a summary of the monitoring capacity building activities in freshwater lakes that the Bureau of Freshwater and Biological Monitoring (BFBM) has been developing – both monitoring and analytical capabilities. Both Leslie & Vic indicated that they are exploring additional outreach mechanisms for CyanoHABs information.

E. NJ Pilot Lakes Studies: Cyanobacterial Toxin Monitoring – Vic Poretti (DEP/DWM&S)

Vic Poretti summarized two pilot studies: one conducted jointly between BFBM, State Parks Service, and one with Rutgers Cooperative Extension of Burlington/Camden Counties. An overlapping objective of both studies was to develop a cost-effective HAB risk screening means for lake stewards/agencies. The objective of the study with Rutgers was to develop monitoring designs that best assess the recreational risk associated with HABs by monitoring freshwater lakes with known recurring blooms using various available new techniques. Vic shared study designs and preliminary results for a lake in Burlington and a pond in Camden County as well as for 13 State Parks with freshwater bathing beaches.

F. HABs in NJ Freshwater Lakes: Monitoring, Detection & Management – Meiyin Wu & Lee Lee (Montclair University) & Tin-Chun Chu (Seton Hall University)

Meiyin Wu, Lee Lee and Tin-Chun Chu discussed work that is being done at both Montclair and Seton Hall Universities related to monitoring, detection and management of HABs in freshwater lakes in northern NJ. This work has been done to try to use cyanobacteria as an indicator of HAB-causing species. To date, the work has been on developing a rapid method for cyanobacteria identification using PCR. In addition, work is in progress to develop both a rapid and cost-effective ID method to detect cyanobacteria and cyanotoxins using a flow cytometer. Tests have been done using methods and equipment such as ultrasound (damages cell structure) and cyanophage (controls algae) to control HABs. The ultimate end goal of this work is to develop a technology for accurate rapid HAB testing in the field and then use cyanophage to control cyanobacterial-causing blooms.

G. Chlorophyll Monitoring – Passaic River and Barnegat Bay – Larry Feinson (USGS NJWSC)

Larry Feinson shared USGS chlorophyll-related monitoring that's been occurring in both the Passaic River and Barnegat Bay (chlorophyll being a major component of algae). Larry provided descriptions for both of the sites (i.e., why they were good locations for this type of monitoring), the type of measurements being used at each site (i.e., enumeration vs. fluorescent), types of sensors being used (freshwater vs salt water – AlgaeGuard vs. Fluoroprobe), the operating principle of using multiple excitation wavelengths to determine various algal classes, as well as some initial analyses using the data that were collected trying to correlate measured data vs. associated algal biovolumes. Additional work is still needed.

H. Cyanobacterial HAB Work in Monmouth County Coastal Lakes – Dave Sorensen (MCHD)

Dave Sorensen described the HABs that had been observed and the cyanobacterial HAB-related monitoring that has been happening in Monmouth County's coastal lakes during summer 2015. Of particular note were Deal

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Lake and Loch Arbor Village and beach. Dave shared information regarding both the bloom events as well as sample results. As a result, Monmouth County Health Department updated its algae monitoring webpage and issued an advisory (<http://visitmonmouth.com/page.aspx?ID=1932>). In addition, the algae monitoring webpage will now be moved to the Monmouth County Health Department's homepage during bathing beach season. Other Monmouth County lakes that presented HAB blooms later in 2015 included Alberta Lake and Sylvan Lake (Alberta Lake flows into Sylvan). Both of these lakes also had advisories that were not only posted on the web but, this time, there were also physical postings at the lakes. As of September, Sylvan Lake was still posted with an advisory and was still being monitored weekly.

I. Marine Water HAB Monitoring – Bob Schuster (DEP/DWM&S)

Bob Schuster summarized the marine water-related general HAB monitoring overseen by the Bureau of Marine Water Monitoring (BMWM). In the marine environment, a variety of types of HABs can affect human health via toxins accumulated in fish and shellfish as well as respiratory distress and skin irritation from recreational exposure. In addition, there can be ecological HAB effects resulting from low DO. BMWM primarily uses aircraft remote sensing for chlorophyll a (followed up by targeted sampling when indicated), as well as data from Slocum glider deployments to identify algal blooms. Bob showcased examples of information from the remote sensing as well as the glider deployments. This information allows the state to respond more quickly to marine water-related blooms, better target areas for phytoplankton identification, monitor the status/intensity/location of algal blooms, and alert officials and the public of the potential effects related to a bloom. All of the remote sensing information is available online at:

<http://www.state.nj.us/dep/wms/bmw/remotesensing.htm>. The glider data can be accessed at:
<http://marine.rutgers.edu/cool/auvs/index.php?pid=45> and
<http://marine.rutgers.edu/cool/auvs/index.php?pid=37>.

➤ **Action Items**

- Investigate possibility of holding future NJWMC meetings at the Stony Brook- Millstone Watershed Association's new Environmental Center [Note: May 19 meeting will be held at this facility] – *Leslie & Alena*

➤ **Technical Topic for Next Meeting**

Contaminants of Emerging Concern, including microplastics

➤ **Next Meeting**

January 21 (snow date: February 4) at USGS NJ Water Science Center