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NJ Water Monitoring Council

Measuring What Counts for Clean & Plentiful Water

January 22, 2020
MEETING MINUTES

Member Attendees

NJDEP – *DWM&S*: Leslie McGeorge, Alena Baldwin-Brown, Bruce Friedman, Bob Schuster, Brian Henning, Deborah Kratzer, Vic Poretti *DWS&G*: Jeff Hoffman, Ray Bousenberry *DSR:* Nick Procopio, Rob Newby
NJDOH – Doug Haltmeier, Loel Muetter
NJDMAVA –
USGS – Bob Reiser, Heather Heckathorn, Pam Reilly
DRBC – John Yagecic
EPA R2 – Phil Cocuzza, Rachel Graham
IEC – Evelyn Powers
NJ Pinelands Commission –
NJ Water Supply Authority – Heather Desko, Angela (Gorczyca) Mostwill
Rutgers (Coop Extension Service) –
Rutgers (IMCS) –
Rutgers (Env. Bioengineering) –
Montclair University – Meiyin Wu
Monmouth University/Urban Coast Institute –
Stockton University – Christine Thompson
NJ Sea Grant Consortium – Pete Rowe
Meadowlands Environmental Research Institute – Cheryl Yao
NOAA –
Monmouth County Health Dept. – Dave Sorensen
Barnegat Bay Partnership –
The Watershed Institute – Erin Stretz
Musconetcong Watershed Association – Nancy Lawler
Raritan Headwaters Association – Mara Tippett
Great Swamp Watershed Association –
American Littoral Society –
NJ Harbor Dischargers –
Brick Township MUA – Will Ruocco

Guest Speaker/Discussion Leaders

Dean Bryson – DEP/BFBM
Michele Putman – DEP/WRM

Other Attendees

John Abatemarco -DEP/BFBM
Jodie Battaglia – DEP/DWM&S
Stephanie Beck – DEP/BFBM
Walt Beland – DEP/CEHA
Kevin Biallas – DEP/DWM&S

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Yaritza Acosta Caraballo – Montclair State University
Blanca Chevrestt – DEP/DPF
Michelle DiBlasio – The Nature Conservancy
Tin-Ta Hsu – Montclair State University
Catherine Jedrzejczyk – DEP/DWS&G
Brianna King – DEP/BFBM
Frank Klapinski – DEP/DWM&S
Brianna King – DEP/BFBM
Jenna Krug – DEP/BFBM
Leigh Lager – DEP/BFBM
Vincent Mina – DEP/BFBM
Briana Morgan - DEP/BFBM
Paul Morton – DEP/DWM&S
Harold Nebling – DEP/DWM&S
Christa Reeves – Musconetcong Watershed Association
Sheri Shifren - DEP/DWM&S
Rachel White - DEP/DWM&S

- **Council Business (**Copies of the agenda and minutes will be available on the Council's webpage, under "Meeting Information" - **http://www.state.nj.us/dep/wms/wmccmeetinginfo.html)**
- Draft Minutes from the 09/18/19 Council meeting were distributed; they will be finalized after additional reviews by presenters and the Steering Committee.
- The next meeting will be May 27 at USGS [Note: this meeting has now been rescheduled as a virtual Teams meeting]. The topic recommended by the Council for this meeting is PFAS water monitoring.
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<u>Session – Harmful Algal Blooms: Building Monitoring, Testing and Data Management Capacity/Partnerships</u>

A. ***Introduction and Governor's HAB Initiative*** – Leslie McGeorge (DEP/BFBM) provided an update on NJ HAB response and HAB monitoring - related activities since the September Council meeting and introduced Assistant Commissioner Michele Putnam (DEP/Water Resource Management). Michele shared details regarding the Governor's 2019 HAB Initiative including the three types of funding that being made available for HAB prevention and mitigation, the steps being taken to improve HAB-related communication regarding HABs, as well as ways to enhance science and build capacity to respond, monitor and test for HABs – which was the main focus of this meeting.

B. ***Building Monitoring, Testing and Data Management Capacity/Partnerships***
<u>Monitoring</u>
Field Sampling/Screening/Meters -Vic Poretti (DEP/BFBM) briefly summarized the comprehensive HAB response monitoring that has occurred from 2017-2019, with a significant increase is sampling and HAB reports occurring in 2019. He then led a discussion to solicit capacity building/partnership suggestions which included:

- Need for a sharing with partners an SOP on HAB sampling including:
  - sampling procedures
  - minimum sampling requirements
  - methods for surveillance (photographs)
  - methods for reporting
  - methods for follow-up
  - keeping track of habitat type
- SOP should also consider
  - Sampling at more than one spot
  - Various depths
  - Time of day
- Needs for updated training materials (hard copy as well as online),and training sessions

- Providing equipment to partners, as possible, to assist with sampling or to augment equipment partners already have. Also providing specs of equipment DEP uses for partners that may be able to/wish to purchase their own equipment – may want comparable equipment
    - The Watershed Institute offered to assist in identifying possible partners
        - Interns, Colleges, High Schools, Other Watershed Associations?
    - Additional partners (beyond those from TWI) could also include MERI and Watershed Ambassadors, NJ Sea Grant Consortium
    - Establish a Lake Volunteer Monitoring Program, like NY's, as mechanism for additional partners
- Partner Functions:
    - Assist in filling gaps on week day basis, as well as weekends/holidays
    - Assist in refining screening tools
        - NJ Sea Grant Consortium, Musconetcong WA, Montclair State Univ and The Watershed Institute interested
    - Assist in evaluating existing data set
        - E.g., Montclair State Univ already looking at Lake Hopatcong cell count data
    - Assist in reviewing strip test effectiveness
- County Environmental Health Act (CEHA) Agencies:
    - Explore language currently in CEHA contracts regarding responding to algal blooms
    - Explore development of additional CEHA funding for HABs
        - Develop source of funding through CEHA to support county HAB work
        - Additional funding or equipment could be mechanism to encourage more counties to participate or current participating counties to do more
    - Conduct training on HAB sample collection and response specifically for CEHA
    - Consider making HAB reporting a component of the DOH minimum practice standards as part of what they must report to State HD

Remote Sensing/Continuous Monitoring – Bob Schuster (DEP/BFBM) summarized the current remote sensing capabilities as well as the continuous monitoring tools that DEP possesses in addition to monitoring that had occurred during summer 2019. He led a discussion to solicit capacity building/partnership suggestions which included:

- Consider use of drones/aircraft/satellite to assist in targeting sampling; will make sampling more cost-efficient
- Leverage work that has been done in the marine water environment – where appropriate – to the freshwater environment
- Need to develop capability to get more HAB data at the low cell count range (low bloom density)
- Need to collectively look at available satellite information:
    - Validate algorithms
    - Direct in-water sampling to potential "hot spot" bloom locations
    - Fill nutrient data need gap
- Continue correlation of phycocyanin numbers with toxins/species
- Deploy more buoys (partner with USGS?) for continuous, real time data in waterbodies vulnerable to HABs, and maybe ones that are not for comparison
- DRBC looking for information on buoy response to HABs near drinking water intakes as part of the Delaware Valley Early Warning System (EWS). The EWS is the communications backbone in the Delaware River Basin that notifies drinking water intakes about upstream water quality issues. When a HAB occurs, water quality managers can enter the event into the Early Warning System so that downstream water utilities can take action such as perform additional testing, modify treatment, or shift source water. Events can be reported via telephone at 1-866-844-0850 or via web with the assistance of an EWS subscriber such as state first responder or DRBC.
- Continue to analyze the continuous monitoring data from the buoys deployed during the 2019 summer

- Work with USGS to develop pre-proposals for buoy projects
- Need to address lack of data regarding cyanotoxin and cyanobacterial transport downstream

Lab Testing

Dean Bryson (DEP/BFBM) and Rob Newby (DEP/DSR) summarized lab testing and analysis capabilities and led a discussion to solicit capacity building/partnership suggestions which included:

- Need to develop and share a SOP for cell counts among partners to improve comparability of results
- Current testing limitations
    - Lab standard kit doesn't include anatoxin
    - Sample prep (freeze/thaw, 2 mls vs 15 ml, etc.)
    - Lack of sufficient DEP staff for cell counts/IDs as well as toxin analysis
    - Lack of trained partners (both cell counts/IDs as well as toxin analysis)
    - Lack of sufficient equipment (DEP and partners)
- Additional questions/issues
    - Should qPCR be used more as a predictor of potential toxin production?
        - Only measuring DNA, not cells themselves
        - Develop DEP and other capacity for qPCR HAB work
    - Should cell counts be reported as both natural units and cells/ml?
        - Should multipliers be used with natural units and how calculated?
    - Need a systematic process for analysis of samples for toxins
    - Holding times for sample analyses?
        - 1 month if frozen within 24 hrs from collection (?)
    - Anatoxin analysis SOP issue – EPA method
        - preserve in field vs lab?
- Possible solutions
    - Consider use of qPCR as a screening tool for toxins (much quicker - ~1.5 hrs)
        - DOH is awaiting this instrumentation. DEP – BMWM and DSR have.
        - Montclair State Univ has a protocol and is willing to share
    - Consider using Flocam as general screening tool
        - Requires image library
            - Montclair State Univ has an existing library and willing to share
        - Expensive to purchase
        - Can't pick up very small species
    - Consider providing cyanoscopes and/or fluoroscence meters to more partners so they can provide images and phycocyanin readings to DEP
    - Use additional partners
        - Montclair State Univ is pursuing DEP OQA microcystin ELISA lab certification
        - Montclair State Univ has developed LCMS/MS – can share methods
        - NJ Water Supply Authority willing to help with cell counts (with training)

Research

Leslie McGeorge and Bob Reiser led a discussion regarding current and potential HAB-related research, including:

- USGS announced $719,000 in Directed Cooperative Matching Funds made available for Water Science Centers and cooperators through a competitive process. The RFP process is requesting pre-proposals for HABs projects submitted by March 20th.
    - Priority is given to projects focusing on 1) Innovations in monitoring 2) Research on factors resulting in toxin production 3) Improvements in near-real-time modeling and forecasting toxin producing blooms
- Current USGS HAB related research projects
    - Remote sensing being used to map real-time and historical blooms

        - A Delaware River Basin Study of blooms over space and time
        - Montclair State Univ also exploring
    - Predictive modeling and early warning systems
        - NowCast System – cells counts and microcystins
        - probability of toxins exceeding thresholds at water intakes
- In 2020, USGS plans to focus on:
    - Innovations in monitoring -rapid deployment systems, web app for data dissemination & analytics
    - Passive samplers (inexpensive, indicates occurrence of toxins over a period of time)
        - SPATTS can collect up to 32 cyanotoxins,)
    - Fate and Transport of cyanobacteria and toxins
    - DNA advances- tools for early detection
- Need to consider Climate Change as part of research efforts
- As part of DEP-led HAB Strategy Research Committee - Evaluate field monitoring techniques:
    - Develop SOP for Fluorosense meter use
    - Review 2019 database for correlation of RFU: cell count of 20K or less
    - Use CyAN and LandSat as screening tool for applicable lakes
    - Continue lake flyovers for 2020
- Continue qPCR work on CyanoHAB samples
- Continue testing cell counting procedures
- Continue Cell ID techniques
- Explore Additional Advisory Tiers for HAB Strategy based on DSR research and BFBM analyses of cell counts and toxin results

Data Sharing

Paul Morton, Leigh Lager and Vince Mina described what HAB data are currently available, including ways to access it. In addition, they discussed new/enhanced data sharing mechanisms that are in preparation (e.g., development of BFBM HABs database, interactive map and reporting system for 2020, etc.) and led a discussion regarding ways to enhance data sharing, which included:

- Making BFBM HABs database available upon request when completed
- Development of the NJ freshwater beach notification system – included HABs as well as E Coli-related beach advisories/closures
- Continue use of Water Quality Data Exchange system
- Making all USGS-collected data for Lake Hopatcong available
    - Some already available via NWIS
    - Remaining data to be available via future USGS data release
- Development of a common format for acquisition of partners' HAB monitoring data
    - NJ Water Supply Authority, Montclair State Univ, and Brick Twp MUA interested

- **Topic for Next Meeting**
  Monitoring for PFAS

- **Next Meeting**
  May 27, 2020 - virtual Teams Meeting