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Steven J. Tambini, P.E.
Executive Director

Minutes
Water Quality Advisory Committee
July 14, 2022

Members & Alternates:

NYS DEC
Not Present
EPA
Kuo-Liang Lai
NJDEP
Frank Klapinski
Environmental
Maya van Rossum & Erik Silldorff
Regulated Community Industrial
Bart Ruiter
National Park Service
Peter Sharpe

DNREC
Bhanu Paudel
PADEP
Josh Lookenbill
Academia/Science
John Jackson
Local Watershed Organizations
Gail Farmer
Regulated Community Municipal
Jay Cruz (PWD)

Other Attendees:

Steve Tambini (DRBC)
John Yagecic (DRBC)
Namsoo Suk (DRBC)
Li Zheng (DRBC)
Karl Heinicke (DRBC)
Kate Schmidt (DRBC)
Sara Sayed (DRBC)
Michael Thompson (DRBC)
Fanghui Chen (DRBC)
Amy Shallcross (DRBC)
Bailey Adams (DRBC)
Beth Brown (DRBC)
Ron MacGillivray (DRBC)
Jake Bransky (DRBC)
Elaine Panuccio (DRBC)
Pam Bush (DRBC)
Sarah Beganskas (DRBC)
Kevin Pregent (DRBC)
Elba Deck (DRBC)
Patti Hausler (DRBC)
Kristen Bowman Kavanagh (DRBC)
Ken Warren (DRBC)
Thomas Amidon (DRBC)
Kelly Anderson (PWD)
Garret Kratina (PAFBC)
Dalia Ghobrial (Trenton)
Helen Pang (NJDEP)
Marco Alebus (NJDEP)
Jacob Metch (HDR Inc.)
Bill Brown (PADEP)
Michelle Moses (PADEP)
Sheila Eyler (USFWS)
Steve Seeberger (NJDEP)
Lisa Pfeifer (Pepco Holdings)
Alex Ridyard (Sage Services)
Preston Luitweiler (WRADRB)
Chris Curran (AECOM)
Caitlin Cavanagh (AECOM)
Verna Harrison (Verna Harrison Associates)
Jennifer Farmwald (NYCDEP)
Irene Fitzgerald (DELCORA)
Greg Cavallo (CES)
Kelly Geiger (Hamilton Twp. DWPC)
Karen Moore (NYCDEP)
Alissa Vanim (Aqua)
Don Hamilton (NPS)
Eloise Gibby (Greeley and Hansen)
Josh Ferguson (Greeley and Hansen)

Melanie Murphy (PWD)
Andy Thuman (HDR)
Paula Kulis (CDM Smith)
Kinman Leung (PWD)
Denise Hakowski (EPA)
James Ray (EPA)
Samantha O'Connor (PWD)
Colleen Walters (River Network)
Joe Duris (USGS)
Chris Ferdik (HRG)
Jessica O'Neill (Penn Future)
Christa Reeves (Musconetcong Watershed Association)
Carl DuPoldt (Green Building Solutions and Supplies)
Michael Dillon (Manko, Gold, Katcher & Fox)
Eliot Meyer (Hazen and Sawyer)
Eileen Althouse (CDM Smith)
Kimi Artita (CDM Smith)
Erik Silldorff (DRN)
Nick Pagon

Welcome and Call to Order

The meeting was called to order by Jay Cruz at approximately 9:35AM. Voting members were asked to introduce themselves.

Review of WQAC Minutes from June 14, 2022

Draft minutes from the June 14, 2022 meeting were distributed the previous day for review and comment. Voting on minutes was tabled until after a break to allow more time for participants to confer on comments. Minor corrections were made based on participant feedback. After the break, John Jackson moved that minutes be approved and Peter Sharpe seconded the motion. Gail Farmer abstained and all other members approved the amended minutes. The approved June 14, 2022 minutes are posted on the DRBC web site at https://www.nj.gov/drbc/library/documents/WQAC/061422/minutes.pdf

Vice Chair Discussion

John Yagecic presented a review of Resolutions and Policies and Procedures relating to the WQAC since 2003. In 2009, the WQAC adopted procedures that called for election of Chair and Vice-Chair, with the Vice-Chair rotating into the Chair Position the following year and election of a Vice Chair each year thereafter. Yagecic noted that other aspects of the 2009 procedures were now inconsistent with a March 2016 Resolution establishing positions and terms. Yagecic recommended that the procedures be updated by a committee member and brought back to the committee for consideration. John Jackson volunteered to prepare draft revisions of the 2009 procedures for WQAC consideration.

Analysis of Attainability progress update: Simulation Results

Tom Amidon and Dr. Sarah Beganskas presented simulation results for the analysis of attainability. Presentation slides (1 through 27) are posted on the DRBC web site at https://www.nj.gov/drbc/library/documents/WQAC/071422/DRBC_AnalysisAttainability_Update.pdf

Mr. Amidon reviewed the series of 2D and 3D baseline and test scenarios. This list was also made available to the participants. Model results for dissolved oxygen were presented as percentiles as well as a DO "stress index" – a tool developed by DRBC to compare model results that takes into account the theoretical increase in hypoxia stress to aquatic life at increasingly

lower dissolved oxygen levels. Channel deepening had minimal impact on DO in the modeled scenarios. A comparison of permitted vs. actual point discharge flow did show an observable difference, with permitted flow representing a more conservative assumption. Both permitted and actual flow scenarios showed substantial improvement in DO under reduced ammonia scenarios with point discharge ammonia concentrations set to 1.5 mg/L ammonia. A review of different percentiles of DO by river mile in the 2D model showed similar minor differences between permitted and actual flow conditions at the 1st, 5th, 10th, and 50th percentile of DO. Improvement in both DO and stress index was primarily associated with setting Tier 1 dischargers to 1.5 mg/L of ammonia nitrogen. Setting a uniform concentration for effluent DO and CBOD had minimal impact on DO and stress index. Assuming CSOs' ammonia and CBOD loads were reduced by 85% also showed minimal impact on DO and minor impact to stress index.

Mr. Amidon summarized model results so far as indicating that:

- Channel deepening (dredging) does not appear to have significantly affected dissolved oxygen
- Difference in baseline conditions based on permitted and actual effluent flows is due to the difference in loads, not the flows themselves
- Incremental DO improvements are observed with decreased effluent ammonia
- No apparent improvement in DO can be expected from reducing TN
- Wastewater treatment plants drive potential DO improvements
- Some DO sag will remain

Next steps include:

- Evaluating the impact of tributaries
- Evaluating the impact of individual dischargers using a capping methodology
- Select and refine candidate scenarios
    - Run in the 3D model
    - Characterize costs, benefits, and affordability
- Prepare documentation for Commissioners

Relationship between aquatic life use and dissolved oxygen: Progress Update

Thomas Amidon and Jake Branksy summarized DRBC's review of literature on the relationship between aquatic life use and dissolved oxygen, specifically with respect to Atlantic sturgeon. Presentation slides (28 through 59) are posted on the DRBC web site at https://www.nj.gov/drbc/library/documents/WQAC/071422/DRBC_AnalysisAttainability_Update.pdf

Mr. Bransky noted that the field of literature on Atlantic sturgeon DO requirements is limited. Although approximately 15 studies have been cited on the topic, only 5 of these are novel studies of Atlantic sturgeon, including Dr. Niklitschek's doctoral dissertation, which subsequently yielded three papers co-authored with Secor. Remaining studies included those on shortnose sturgeon and interpretations (or interpretations of interpretations) of the primary literature. Mr. Bransky then provided a brief synopsis of each of the novel Atlantic sturgeon studies as well

as the secondary literature in which DO thresholds have been derived, including reports by Niklitschek and Secor, EPA, ASFMC, The Nature Conservancy (TNC), the National Marine Fisheries Service (NMFS), and the Academy of Natural Sciences.

Mr. Amidon reviewed the conceptual model being used by DRBC to relate aquatic life use (i.e., fish propagation) to dissolved oxygen levels. The methodology defines a dissolved oxygen level below which is unsuitable for fish propagation, and an optimal threshold above which propagation is no longer sensitive to dissolved oxygen. Criteria to protect uses are typically established somewhere between the Unsuitable and Optimal thresholds, and Mr. Amidon reviewed several real-world examples that illustrate regulatory agencies assigning water quality criteria that are deemed protective.

Mr. Amidon reviewed both the experimental research and the bioenergetics model for Atlantic sturgeon developed by Niklitschek and Secor, captured in two peer-reviewed papers published in 2009. Individual graphs from these papers were reviewed in substantial detail, and Mr. Amidon provided DRBC's interpretation of these results. Dr. Erik Silldorff objected to the characterization and summary of the science, saying Mr. Amidon was misrepresenting the data, and that his interpretation was not the consensus of the biological community. Mr. Amidon resumed his presentation, characterizing the published opinions among Atlantic sturgeon researchers as well as scientists within the environmental community with regard to dissolved oxygen suitability thresholds for Atlantic sturgeon. Peter Sharpe recommended that DRBC contact the paper authors for interpretation, which Mr. Yagecic indicated DRBC would attempt to do.

Mr. Amidon concluded the presentation by reviewing the status of DRBC's "deeper dive" into DO thresholds to protect Atlantic sturgeon, and how this work relates to the DRBC's approach to evaluating uses for all eight DO-sensitive species as well as the Analysis of Attainability.

John Jackson pointed out that duration of exposure to conditions can play a significant role in any threshold. Jay Cruz shared that PWD had begun compiling and reviewing sturgeon monitoring information from the estuary. These reports include sampling by DNREC, academic researchers, and ERC, a consultant under contract to the Army Corps of Engineers for sturgeon relocation trawling during the rock blasting portion of the Delaware Navigation Channel Deepening Project.

Adjournment

Peter Sharpe moved to adjourn the meeting and Frank Klapinski seconded the motion. The meeting was adjourned at approximately 12:51 PM.