



Delaware River Basin Commission

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Steven J. Tambini, P.E.
Executive Director

Minutes

Water Quality Advisory Committee

November 15, 2022

Members & Alternates:

NYS DEC

Sarah Rickard

EPA

Greg Voigt

NJDEP

Frank Klapinski

Environmental

Maya van Rossum

Regulated Community Industrial

Bart Ruiters

National Park Service

Andy Weber

DNREC

Bhanu Paudel

PADEP

Josh Lookenbill

Academia/Science

Not Represented

Local Watershed Organizations

Not Represented

Regulated Community Municipal

Jay Cruz (PWD)

Other Attendees:

Steve Tambini (DRBC)

Sarah Beganskas (DRBC)

Elaine Panuccio (DRBC)

John Yagecic (DRBC)

Namsoo Suk (DRBC)

Jake Bransky (DRBC)

Li Zheng (DRBC)

Chad Pindar (DRBC)

Patrick Rago (DRBC)

Sara Sayed (DRBC)

Amy Shallcross (DRBC)

Beth Brown (DRBC)

Karl Heinicke (DRBC)

Kate Schmidt (DRBC)

Pam Bush (DRBC)

Chris McCann (DRBC)

Kristen Bowman Kavanagh (DRBC)

Thomas Amidon (DRBC)

Fanghui Chen (DRBC)

Michael Thompson (DRBC)

Kevin Pregent (DRBC)

Kelly Anderson (PWD)

Melanie Murphy (PWD)

Andy Thuman (HDR)

Garret Kratina (PAFBC)

Brent Gaylord (EPA)

Greg Voigt (EPA)

Nicole Lick (EPA)

Kristen Schlauderaff (PADEP)

Kathy Cook (League of Women Voters)

Skelly Holmbeck (WRADRB)

Erik Silldorff (DRN)

Donald Wyand (Eurofins)

Ben Lorson (PA Fish & Boat)

Helen Pang (NJDEP)

Bill Brown (PADEP)

Sheila Eyler (USFWS)

Michael Bott (DNREC)

Bryan Lennon (Wilmington)

Scott Northey (Chemours)

Nicole Brown (Suburban Consulting)

Kurt Cheng (PDE)

Marzooq Alebus (NJDEP)

Susan Rosenwinkel (NJDEP)

Biswarup Guha (NJDEP)

Stephen Williams (DNREC)

Preston Luitweiler (WRADRB)

Lisa Pfeifer (Pepco Holdings)

Scott Hinz (LimnoTech)	Eileen Murphy (NJ Audubon)
Paula Kulis (CDM Smith)	Leslie McGeorge (retired NJDEP)
Kinman Leung (PWD)	Brian Henning (NJDEP)
Denise Hakowski (EPA)	Jean Malafronte (Andris)
Katherine Bentley (EPA)	Therese Wilkerson (DRN)
Vincent DePaul (USGS)	Emma Bast (PennFuture)
Scott Schreiber (CCMUA)	Irene Fitzgerald (DELCORA)
James Ray (EPA)	Lavanya Ramasubramanian (DELCORA)
Sean McKelvey (PWD)	James McCreary (Burlington Board of Island Managers)
Greg Wacik (USACE)	Meg McGuire (Delaware Currents)
Brenda Gotanda (Manko, Gold, Katcher & Fox)	Charles Hurst (DELCORA)
Ken Warren (Warren Environmental Counsel)	Eileen Althouse (CDM Smith)
Jason Fry (CCMUA)	Josh Ferguson (Greeley and Hansen)
Greg Cavallo (CES)	Carl DuPoldt (Green Buildings Solutions)
Karen Moore (NYCDEP)	Jacob Metch (HDR Inc.)
Stuart Leigh (Trout Unlimited)	Jennifer Farmwald (NYCDEP)
	Justin Huratiak
	Louis Kleinman

Welcome and Call to Order

The meeting was called to order by Jay Cruz at approximately 9:38AM. Voting members were asked to introduce themselves.

Membership Update

John Yagecic indicated that DRBC was reviewing applications for open WQAC positions and that selections would be made shortly. In the meantime, current voting members would continue in their role.

Review of WQAC Minutes from September 13, 2022

Draft minutes from the September 13, 2022 meeting were distributed prior to the meeting for review and comment. Maya van Rossum and Jay Cruz both suggested that in several places the minutes failed to adequately capture the deliberative nature of the discussion and incorrectly implied that decisions had been reached.

Jay Cruz recommended that DRBC allow a longer review period in advance of future WQAC meetings so that revisions to minutes can be made prior to soliciting a vote. Maya van Rossum moved to table approval of the minutes to allow more time for review and edit. Jay Cruz seconded the motion and all voted unanimously in favor of tabling approval of the minutes until the next meeting.

Maya van Rossum recommended that DRBC make minutes available in a Google Docs version for shared group editing.

Analysis of Attainability Recap and Revised low DO metric

Dr. Sarah Beganskas provided a brief recap of the Draft Analysis of Attainability report evaluating options for characterizing dissolved oxygen (DO) at the low end of the distribution. Presentation slides are posted on the DRBC website at:

https://www.nj.gov/drbc/library/documents/WQAC/111522/2022-11-15_DU_WQAC.pdf

Dr. Beganskas highlighted an adjustment that DRBC made in the methodology for presenting modeled DO results in the Draft Analysis of Attainability report; this adjustment was made after the September WQAC meeting. The 3D eutrophication model WASP produces output in 4 dimensions (3 spatial dimensions and time), and these data are summarized in 2D plots. Spatial graphs, with River Mile (RM) on the x-axis, help to summarize and visualize model results along the channel of the Delaware Estuary. With one spatial dimension on the x-axis, there are several possible approaches to characterize the “slice” of model results at each RM:

- DRBC’s original approach was to combine every DO value at a given RM across space and time, and take a percentile (e.g., 2nd percentile) from that combined dataset.
- DRBC’s updated approach is to take a percentile value from the time-series in every cell at a given RM, then evaluate the range of values; the median value from each RM was deemed representative and was displayed in the AA report.

There is minimal difference between these two approaches in terms of the DO results displayed. Dr. Beganskas outlined two reasons DRBC decided to make this adjustment: 1. The updated approach is conceptually more meaningful and is better representative of the variability within each cross-section of the model. 2. The updated approach allows for display of a lower percentile that is not affected by noise (1st percentile instead of 2nd percentile).

Dr. Beganskas emphasized that no results or interpretations were changed as a result of this methodology adjustment. No metric or plot can represent every value produced by the model in four dimensions—the spatial plots presented to the WQAC and in the Draft Analysis of Attainability Report are meant to summarize and represent the model results.

Analysis of Attainability Recap/Discussion

Jay Cruz asked how DRBC would determine document contents were final and whether the public would have the opportunity to see DRBC’s responses to comments. Dr. Namsoo Suk indicated that the WQAC process was happening in accordance with [Resolution 2017-4](#). Dr. Suk indicated that final documents will be released for public comment within the rulemaking process. Maya van Rossum asked if the comments were due by the following week and Namsoo Suk extended the review period to the 2nd of December for the draft of Analysis of Attainability.

Update on Fish-DO Methodology and Status of Fish-DO Report

Tom Amidon provided a status update on the most recent draft of the document *Linking Aquatic Life Uses with Dissolved Oxygen Conditions* which had been released to the WQAC. DRBC consulted with the EPA and state coregulators prior to the current draft. The suitability gradient and seasonal considerations were discussed.

Three critical seasons and periods were noted:

- Critical propagation season: May 1- October 15
- Critical spawning/nursery period: May 1- June 30

- Critical growth/development period: July 1- October 15

Mr. Amidon showed the degree of suitability for fish propagation across several sensitive species. The thresholds for endangered sturgeon are included in the appendix of the report.

Follow-up on DO needs for juvenile Atlantic Sturgeon Author Coordination

In previous meetings, disagreement was evident regarding how results from research by Niklitschek and Secor should be interpreted in terms of DO levels supporting Atlantic Sturgeon. EPA staff interviewed Niklitschek and Secor and Greg Voigt of EPA reported back on results of that coordination. Greg Voigt's notes from that coordination are provided below as a synopsis:

- Considerable attention on determining the level of dissolved oxygen that is required for native species to successfully propagate within urban Delaware Estuary. General agreement that - of all the resident species - Atlantic sturgeon have some of the most stringent DO requirements, but some disagreement as to what those DO requirements actually are.
- At root of debate are two primary source research papers developed by Secor and Niklitschek in 2009. EPA has been asked to provide our perspective on how those papers should be interpreted/ how the information they present should be used in the context of criteria development.
- Additional context: in 2018, Stoklosa et al. finalized a technical report that was commissioned by DRBC, summarizing the DO requirements for key sensitive species in the Delaware Estuary. Regarding Atlantic sturgeon, that 2018 report identifies 6.3 mg/L or higher as necessary to support sturgeon spawning and rearing. The report referenced the Niklitschek and Secor papers as the basis for that value.
- In April 2022, EPA received petition from coalition of environmental groups requesting promulgation of revised water quality standards for the protection of fish propagation in the Delaware estuary. The petition specifically requested that DO criteria of 6.3 mg/L be included as part of EPA's rulemaking, citing the Niklitschek and Secor papers as the basis for that value. Note: we intend to provide a formal response to that petition by the end of the month.
- In March 2022, DRBC released draft report: 'Linking Aquatic Life Uses with Dissolved Oxygen Conditions in the Delaware River Estuary', which suggested a value lower than 6.3 (specifically 5.0 mg/L) would be sufficiently protective of sturgeon propagation. This led to debate on ensuing WQAC call.
- The papers at issue are among a small group of primary source studies that evaluate the effects of DO on growth of juvenile Atlantic sturgeon. First paper: evaluates the effect on sturgeon growth at various temperatures and DO concentrations. Second Paper: same authors develop a bioenergetics model using data gathered from the first paper and other information about sturgeon biology. From that model, authors conclude that instantaneous growth rate of juvenile Atlantic sturgeon at 20°C was not reduced due to DO when DO was at 60% saturation or higher. And, at 28°C the same model predicted that DO at 70% saturation or higher did not reduce growth rate. In fresh water at 20°C, 60% DO saturation is ~5.4 mg/L. At 28°C, 70% DO saturation is ~5.5 mg/L.
- After speaking with authors directly, EPA understands the experimental study (first paper) to only support the conclusion that growth rate decreases as DO saturation declines from 70% to 40%. The bioenergetics modeling study combines a variety of different types of information about sturgeon to predict a growth rate response to different temperatures and

DO saturations, allowing us to infer a saturation level between the experimental treatments (and therefore concentrations) that would be protective in the temperature conditions of the Delaware estuary.

- These are just two papers, there are other sources of information that EPA is evaluating as part of our review of the science. Example: in its critical habitat designation for Atlantic sturgeon, NMFS states that 6.0 mg/L is necessary for juvenile life stages. Note: A magnitude (e.g., 6.0 mg/L) without duration or frequency components is of limited utility in a WQS context.
- We are actively evaluating this information and other resources to inform our understanding of the science. Look forward to working collaboratively.

Preliminary Criteria Development Discussion and Next Steps

Tom Amidon described next steps in the project. The DRBC is initiating the revision of WQ standards. Revised WQ standards means:

1. Designated uses to be revised to include propagation within fish maintenance area (FMA)
2. Revised numeric dissolved oxygen criteria to support the revised uses.

DRBC expects revised criteria to express magnitude, duration, and frequencies of exceedance tied to specific seasons relevant to aquatic life use in the Delaware Estuary.

Namsou Suk reiterated the time extension on WQAC feedback on the draft Analysis of Attainability documents until 2nd of December to allow more time for input from WQAC, coregulators, and Tier 1 dischargers. Tom Amidon added that this extension does not alter the deadline for adoption of March 2025.

Frank Klapinski asked if there is an addendum to the Socio-economic Evaluation with a DO target for some wastewater treatment plants. John Yagecic explained Kleinfelder was tasked to provide the cost estimate for effluent DO for a subset of facilities and that a draft report can be expected soon.

Jay Cruz asked if regulators were able to determine the sample size during different experimental treatments in the Niklitschek and Secor research. Mr. Cruz said the study seemed to show 1 or 2 fish per treatment (at a given percentage of DO, given temperature, etc.) according to the text and wanted to establish how many fish overall were used in the experiments. Greg Voigt indicated that EPA's focus was on how the study should be interpreted. Greg Voigt said he would follow-up if any additional information was available.

Adjournment

Frank Klapinski motioned to adjourn the meeting and Greg Voigt seconded the motion. The meeting was adjourned at approximately 11:26 AM.