Delaware River Basin Commission
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Steven J. Tambini, P.E.
Executive Director

Minutes
Water Quality Advisory Committee
September 13, 2022

Members & Alternates:

NYS DEC
Sarah Rickard
EPA
Kuo-Liang Lai
NJDEP
Frank Klapinski
Environmental
Maya van Rossum
Regulated Community Industrial
Bart Ruiter
National Park Service
Peter Sharpe
DNREC
Bhanu Paudel
PADEP
Josh Lookenbill
Academia/Science
John Jackson
Local Watershed Organizations
Erin Landis
Regulated Community Municipal
Jay Cruz (PWD)

Other Attendees:

Steve Tambini (DRBC)
Sarah Beganskas (DRBC)
John Yagecic (DRBC)
Namsoo Suk (DRBC)
Jake Bransky (DRBC)
Li Zheng (DRBC)
Chad Pindar (DRBC)
Kate Schmidt (DRBC)
Sara Sayed (DRBC)
Amy Shallcross (DRBC)
Beth Brown (DRBC)
Pam Bush (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)
Scott Hinz (LimnoTech)
Paula Kulis (CDM Smith)
Kinman Leung (PWD)
Denise Hakowski (EPA)
Garret Kratina (PAFBC)
Brent Gaylord (EPA)
Kristen Schlauderaff (PADEP)
Dustin Shull (PADEP)
Carl Cerco (USACE retired, Expert Panel)
Bob Chant (Rutgers, Expert Panel)
Vic Bierman (LimnoTech)
Steve Chapra (Tufts University, Expert Panel)
Tim Wool (Expert Panel)
Erik Silldorff (DRN)
Helen Pang (NJDEP)
Bill Brown (PADEP)
Sheila Eyler (USFWS)
Michael Bott (DNREC)
Bryan Lennon (Wilmington)
Biswarup Guha (NJDEP)
Scott Northey (Chemours)
Kurt Cheng (PDE)
Steve Seeberger (NJDEP)
Marzooq Alebus (NJDEP)
Alex Ridyard (Sage Services)
Preston Luitweiler (WRADRB)
Tom Schevtchuk (CDM Smith)
Eileen Murphy (NJ Audubon)

Katherine Bentley (EPA)
Greg Voigt (EPA)
Samantha O'Connor (PWD)
Adam Hendricks (PWD)
Vince DePaul (USGS)
Len Gipson (CCMUA)
Scott Schreiber (CCMUA)
Oleg Zonis (CCMUA)
James Ray (EPA)
Wayne Jackson(EPA)
Carol Collier (ANSDU)
Sean McKelvey (PWD)
Brenda Gotanda (Manko, Gold, Katcher & Fox)
Ken Warren (Warren Environmental Counsel)
Jason Fry (CCMUA)
Leslie McGeorge (retired NJDEP)
Chris Ferdik (HRG)
Jean Malafronte (Andris)
Therese Wilkerson (DRN)
Jessica O'Neill (PennFuture)
Abby Jones (PennFuture)
Emma Bast (PennFuture)
Irene Fitzgerald (DELCORA)
Michael DiSantis (DELCORA)
Lavanya Ramasubramanian (DELCORA)
Greg Cavallo (CES)
Karen Moore (NYCDEP)
Jennifer Farmwald (NYCDEP)
Meg McGuire (Delaware Currents)
Charles Hurst (DELCORA)
Eloise Gibby (Greeley and Hansen)
Eileen Althouse (CDM Smith)
Kimi Artita (CDM Smith)

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 August 18, 2022

Draft minutes from two previous meetings (July 14, 2022 and August 18, 2022) were distributed prior to the meeting for review and comment.

John Jackson moved that the July 14, 2022 minutes be accepted and Kuo-Liang Lai seconded the motion. All voted in favor and the July 2022 minutes were adopted.

Frank Klapinski moved that the August 18, 2022 minutes be accepted and Peter Sharpe seconded the motion. All voted in favor and the August 2022 minutes were adopted.

Analysis of Attainability Preview

Thomas Amidon and Sarah Beganskas presented a preview of the analysis of attainability. The presentation is posted on the DRBC website at https://www.nj.gov/drbc/library/documents/WQAC/091322/AnalysisAttainability_preview_drbc.pdf

The following is a summary of presentations made by DRBC and does not reflect a determination by the WQAC.

Dr. Beganskas presented modeling performed since the August WQAC presentation that identified subcategories of wastewater facilities based on their impact to dissolved oxygen (DO) within the Fish Maintenance Area (FMA). Class A' facilities are those that have direct impact on low DO within the FMA. DO concentration in the FMA is most sensitive to the ammonia levels in

discharges from Class A' facilities. Class A facilities have an *indirect* impact on low DO in FMA, and FMA DO is less sensitive to the ammonia level in discharges from Class A facilities. "Indirect" in this context means that Class A facilities' primary impact is located outside of the FMA. Class B facilities have no measurable impact on low DO in the FMA.
Class A' facilities included:

- PWD Northeast
- Camden County MUA
- PWD Southeast
- PWD Southwest
- GCUA
- DELCORA
- City of Wilmington

Class A facilities included:

- Hamilton TWP WPCF
- Lower Bucks County JMA

Class B facilities included:

- Morrisville Borough Municipal Authority
- Trenton Sewer Utility
- Willingboro Water Pollution Control Plant
- Cinnaminson Sewerage Authority
- City of Millville Sewage Treatment Authority
- All other wastewater facilities

Mr. Amidon presented a series of effluent scenarios and their resultant impacts on DO in the estuary compared to the baseline condition. Systemwide characterization of costs and dissolved oxygen improvements were presented for various effluent ammonia levels. The wastewater condition that will result in the highest attainable dissolved oxygen (HADO) condition occurs when the 7 Class A' facilities discharge 1.5 mg/L ammonia and the 2 Class A facilities discharge 5 mg/L ammonia. Based on these wastewater effluent levels, an estimate of the HADO condition was prepared that accounted for: CSO reductions (based on implementation of LTCPs); effluent DO set to 4 mg/L; seasonally variable wastewater concentrations; and a 10% reserve capacity for future growth. The HADO condition is expected to support both maintenance and propagation; it would increase the minimum DO from 2.2 to 4.5 mg/L and result in significant DO increases overall.

John Yagecic provided a brief review of affordability assessment efforts. DRBC computed metrics from relevant guidance documents published by EPA and the American Water Works Association (AWWA) using costs estimated for Tier 1 facilities at 10, 5, 1.5 mg/L Ammonia & 4 mg/L TN from the Kleinfelder report. Scenarios AA04 and AA08 did not result in any change to the affordability burden category beyond that associated with the baseline current condition.

Namsoo Suk summarized the progress on the project to date. Pre-rulemaking studies have been completed as required under Resolution No. 2017-4. A 3D eutrophication model incorporating

state-of-the-art hydrodynamic, water quality, and loading approaches has been developed, calibrated, and successfully utilized to evaluate potential dissolved oxygen improvement scenarios. Extensive analyses have been performed to identify management scenarios that will achieve the highest attainable DO (HADO) condition. Planning level capital and operations costs have been developed. Key affordability indicators to characterize the burden to individual discharger service areas have been developed

Dr. Suk reviewed the draft findings of the analysis of attainability.

- Factors that can most improve DO in the FMA include "summer" ammonia loads from specific domestic wastewater treatment plants.
- Factors that can slightly improve DO in the FMA include combined sewer overflows and the dissolved oxygen concentration in treated effluent from the largest discharges.
- Other factors that cannot measurably improve DO in the FMA include nutrient (carbon, nitrogen, and phosphorus) loads from tributaries (non-tidal inputs) including upstream Delaware River at Trenton and Schuylkill River, carbon, "winter" ammonia, and direct stormwater and runoff into the Estuary. Discharge of nitrate instead of ammonia does not change the phytoplankton dynamics and maintains same level of DO. Other point source discharge loads (from plants other than those specifically mentioned above) do not measurably improve DO.

Ammonia reductions are recommended for 9 out of the 67 discharges to the Delaware Estuary. Recommendations include reductions to an ammonia level of < 1.5 mg/L for the 3 Philadelphia Water Department treatment plants, DELCORA, Camden County MUA, Gloucester County UA, and the City of Wilmington. Similarly, ammonia reductions to a levels < 5 mg/L or 1.5 mg/L are recommended for Lower Bucks County JMUA and Hamilton Township. Minimum effluent dissolved oxygen levels of > 4 mg/L or 5 mg/L will likely be recommended for the 6 largest discharges (those >50 MGD). An amendment to the cost and feasibility study is being prepared to estimate costs for DO levels for these 6 plants. Implementation of CSO long term control plans (LTCPs) is assumed.

The total estimated annualized costs (annualized present worth cost + annual O&M) for the recommended wastewater improvements is $153M /year in 2019 dollars, reflecting a total present worth cost of $2.6 B in 2019 dollars. These costs include capital costs as well as operation and maintenance at the 9 impacted plants. These costs do not include costs to achieve 4 mg/L (or higher) DO in the discharge effluent, which will be updated following further engineering feasibility and cost analyses. Estimated costs do not change the burden category for either the Household Affordability (HA) or Residential Indicator (RI) affordability burden metrics for the impacted service areas. Additional state and federal programs can impact, support, and mitigate affordability. Water quality improvements are expected to provide other socio-economic benefits outside the scope of the Resolution No. 2017-4 studies, and the Commission is expected to accept input on these benefits during the rulemaking phase.

Under design conditions, the minimum DO in the FMA should improve by about 2.3 mg/L with significant DO improvements both temporally and spatially. Inclusion of propagation as a designated use in Zones 3 and 4 and the upper portion of Zone 5 (the "FMA") of the Delaware River Estuary appears to be attainable. Consistent with Resolution No. 2017-4, it is

recommended that the Commission initiate rulemaking to revise aquatic life designated use and associated dissolved oxygen criteria and develop an implementation strategy to implement the new criteria to support the enhanced designated use.

Model Expert Panel Coordination

Dr. Vic Bierman noted that the model results are supported by robust and defensible data, state-of-the-art hydrodynamic and water quality models, and cost and socioeconomic evaluations. Dr. Bierman stated that model development benefited from the guidance of the Expert Panel who have unanimously endorsed the models developed by the DRBC team and fully endorsed the staff's scenario results, technical findings and work products. Dr. Steve Chapra affirmed Dr. Bierman's statement.

Next Steps and Schedule

The draft Analysis of Attainability report will be released on September 30th along with concurrent drafts of the quality model calibration report and the socioeconomic evaluation study report. DRBC will solicit input from WQAC and co-regulators on draft reports. DRBC will begin developing an Implementation Strategy, which will consider alternative permitting and discharger prioritization. DRBC will initiate a Rulemaking Process for water quality standards based on Analysis of Attainability.

Adjournment

John Jackson moved to adjourn the meeting and Frank Klapinski seconded the motion. The meeting was adjourned at approximately 11:35 AM.