Nontidal Network Workgroup February 2026 Meeting

Wednesday, February 18th, 2026
1:00PM – 2:15PM

Visit the meeting webpage for meeting materials and additional information.

This meeting was recorded for internal use only to assure the accuracy of meeting notes.

MINUTES

I. Welcome, Introductions & Announcements (1:00 – 1:05)

Lead: ***Peter Tango*** *(U.S. Geological Survey, USGS), Chair.*

Upcoming Conferences, Meetings, Workshops and Webinars

- Choose Clean Water Conference – May 18-20, 2026. Lancaster, Pennsylvania.
- Chesapeake Community Research Symposium – June 1-3, 2026. Annapolis, Maryland. ***Early bird registration is now open (Deadline March 20).***

II. New Critical and Long-term Average Hydrology Periods for CBP and Chesapeake Bay Streamflow Period Diagnostics (1:05 – 1:30)

Lead: ***Lewis Linker*** *(U.S. Environmental Protection Agency, EPA) &* ***Robin Glas*** *(USGS)*

Lew Linker: The 2010 Total Maximum Daily Load (TMDL) documentation provides clear guidance on how the long-term, 10-year, and critical 3-year hydrologic periods were originally developed and applied. Updating these periods is technically straightforward. We now have more observational data and improved analytical tools. Revising the hydrologic periods will redistribute flows and loads among state basins, and depending on the selected critical period, may alter the Bay's carrying capacity. Any decision to adopt a new hydrologic period must be finalized by the end of 2026 to ensure consistency across the hundreds of model scenarios that will be evaluated during the Year of Review.

The critical condition used in the Chesapeake Bay TMDL is the 1993–1995 period, which represents a relatively wet period and is oriented toward dissolved oxygen (DO) standards. While water clarity and chlorophyll are also considered, DO drives the selection of this critical period. We use this 3-year span within a 10-year hydrologic window to evaluate management scenarios and determine nutrient and sediment load targets. Because the TMDL includes an explicit margin of safety, the selected period must be wet, though not the wettest possible. For example, 1996 was excluded because of extreme events. The long-term 10-year period provides context for relative load contributions and supports trading analyses, such as nitrogen and phosphorus trading and basin-to-basin comparisons. It ensures that allocations reflect average conditions and that we can assess how load reductions in one area affect water quality elsewhere in the Bay.

In selecting these periods, we consider both flow and the influence of flow on water quality. For example, while the Susquehanna contributes approximately 61% of freshwater flow, its influence on water quality during certain periods may be closer to 82%. In contrast, tributaries like the James contribute less influence relative to their flow because of their location near the Bay mouth. Extreme events, such as the January 1996 snowmelt, are considered in the 10-year window but excluded from the critical 3-year period. Ultimately, technical recommendations will be developed collaboratively through the modeling and other technical workgroups, with final decisions made through the appropriate policy committees. Notably, recent analyses show increasing flows over time, likely influenced by long-term climate trends, yet nutrient loads have decreased, indicating progress in management efforts.

Robin Glas: I am based at the New York Water Science Center in Troy, NY, and my background is in statistical hydrology, including trend and frequency analysis of floods and droughts.

For this analysis, I am beginning with the 10-year base period analysis, focusing on River Input Monitoring (RIM) stations and later incorporating additional tributary gages. Using a rolling 10-year window approach, I analyze daily average streamflow values, not instantaneous peaks. For long-term averages, I focus primarily on post-1970 data, as 1970 marked a transition to wetter hydrologic conditions following the severe 1960s drought. To ensure data completeness, I require at least 90% of daily values per water year, defined as October 1 through September 30. Years failing to meet this threshold are treated as missing. These steps minimize bias from partial records.

I examined how station coverage has evolved over time. Earlier decades had fewer active stations, while the modern period includes the full RIM network. When flows are normalized to long-term means, the 1960s drought stands out clearly, as does the 1970 shift toward wetter conditions. These patterns underscore the importance of carefully selecting a representative base period.

I calculated several exploratory metrics, including mean and median flows, variability measures, and low and high flow quantiles. Using rolling 10-year windows, I evaluated each period's statistical characteristics. For example, each plotted year represents the midpoint of a 10-year span (Slide 7-11). I standardized results to highlight deviations from post-1970 averages. Periods with predominantly neutral values may better represent long-term conditions, whereas windows with pronounced deviations indicate atypical hydrology.

I also assessed annual flow variability, low flows (5th percentile), and high flows (95th percentile), recognizing that high flows are particularly influential in model sensitivity. The rolling window approach allows us to visually identify 10-year spans that approximate long-term typical conditions. Future steps include weighting tributary contributions consistent with previous Appendix F and G methodologies, expanding the network analysis, and evaluating candidate critical periods. Ideally, the selected base and critical periods will align in a scientifically defensible manner.

Discussion:

Q: *Kaylyn Gootman:* is there anything that jumps out to you on how our current critical period compare to what you have found?

- ***A:*** *Robin:* I do not have a definitive conclusion at this point. However, based on my qualitative review of the records so far, the current base period appears to be fairly representative of long-term conditions. As I continue refining the analysis and move beyond initial data wrangling and cleanup, I will be able to provide more detailed

insights. For now, it does appear that the period currently in use is performing reasonably well.

Comment: *Scott Heidel:* I would like to raise a point regarding the Susquehanna River. There are several impoundments on the lower portion of the river. These are relatively old and were not designed with sediment transport in mind; instead, they effectively trap sediment. During large flow events, such as the 1996 snowmelt or Tropical Storm Lee following a hurricane, these impoundments can release substantial amounts of stored sediment and associated pollutants, including nutrients, which are then transported to the Bay. We do have monitoring stations throughout the Susquehanna, and the Marietta station is located upstream of those impoundments. I recommend considering data from the Marietta station in your analysis to better understand these dynamics.

Comment: *Lew Linker:* Robin, the strategic progression you outlined for moving through the dataset makes sense. For the preliminary analysis, using the current multipliers is appropriate. However, if we begin to focus on a different long-term hydrologic period, we may need to revisit those multipliers. That would likely become a task for the modeling team to evaluate how any adjustments should be handled. For now, applying the existing multipliers to your initial analysis seems reasonable.

III. **Discussion on RIM and NTN Update Plans for 2026** **(1:30 – 2:00)**
Lead: ***Alexander Soroka*** *&* ***Douglas Moyer*** *(USGS)*

Doug Moyer: My primary goal today is to emphasize the importance of timely transmittal of Water Year 2025 observed NTN data, along with subsequent Duet processing and upload to the Chesapeake Data Hub. Timely submission is critical to ensuring we can compute and release updated loads and trends for the nontidal network through Water Year 2025.

To briefly review the workflow: sample collection occurs throughout the water year, with approximately 20 samples collected along the hydrologic continuum and analyzed for nutrients and suspended sediment. Once the data are finalized, providers transmit them to EPA via the Duet portal, which feeds into the Chesapeake Data Hub. Some data also move into the Water Quality Portal. These repositories serve as the starting point for load and trend computation.

Once the data are available, automated scripts are used to retrieve raw NTN data from the Data Hub and Water Quality Portal. The records are assembled and cleaned to generate standardized input files for WRTDS (Weighted Regressions on Time, Discharge, and Season). These files are quality assured and then passed to Chris Mason.

Chris runs two analytical tracks. First, he uses WRTDS-K (Kalman Filter) to compute observed loads and trends, aggregated to monthly and annual timeframes. Second, he uses WRTDS to generate flow-normalized loads and derive trends for two periods: the 10-year trend (2016–2025) and the long-term trend (1985–2025). After modeling is complete, we conduct quality assurance (QA), compile results, prepare a data release, update geonarratives and web materials, and then begin communicating findings across the Bay Program.

Our target release window for updated loads and trends is October through December 2026, likely closer to December. Data aggregation and preparation typically requires 1-2 months. Model runs, QA, and product preparation require approximately 4-5 additional months. The key variable is when complete 2025 data, along with confirmation of 2024 completeness, are transmitted and available in the Data Hub. Ideally, we need all data submitted by May 2026 to stay on schedule.

If data are submitted earlier, we gain flexibility and may be able to accelerate delivery. Earlier availability also benefits Phase 7 (P7) modeling efforts. Can each group share their anticipated data transmittal timelines so we can identify potential obstacles and coordinate accordingly?

Round Robin:

Susquehanna River Basin Commission (SRBC): *Tyler Shenk:* Dawn Hintz manages our database uploads. We typically submit data in *late February or early March*, and we expect to meet that timeline again this year

- *Jamie Shallenberger:* Dawn handles uploads not only for SRBC but also for Pennsylvania data and New York sites. The only potential delay sometimes involves sediment samples from the Kentucky lab, but generally everything is in by March.

Pennsylvania USGS (PA): Dawn Hintz (SRBC) will transmit data.

PA Department of Environmental Protection (DEP): *Mark Brickner:* Molly Pulket is usually working on the DUET around this time (*early-March*). Uploads are coordinated through Dawn at SRBC.

Maryland Department of Natural Resources (MD DNR): *Tom Parham:* We are currently working through software updates and minor glitches with Duet uploads. We expect more clarity within two weeks. We are working closely with Mary Stack with Interstate Commission on the Potomac River Basin (ICPRB) to get those uploaded. *March* remains possible, but we are still resolving technical issues. This is only DNR data.

Department of Natural Resources and Environmental Control (DNREC, Delaware, DE): *Bhanu Paudel:* we usually upload data *end of February*. I will confirm with our labs for new data and will let you know if anything changes.

MD-DE-DC USGS: *Alex Soroka:* I can get the data by end of March but I know our review teams are still going through it. April is our likely timeline.

Virginia Department of Environmental Quality (VA DEQ): *Cindy Johnson:* Our grant requires partial uploads by January 15 and full completion *by March 31*. Most data are uploaded except for some sediment results pending from Kentucky. I will notify you once those are submitted.

VA/WV USGS: *Doug Moyer & Matt Kearns:* Virginia and West Virginia USGS sites are coordinating with Alex's team, *targeting April* at the latest, though we will explore opportunities to move earlier if possible.

Discussion:

Comment: *Lew Linker:* we have multiple datasets that we use in the model and land use is one of them, but this will stop at 2022. If we go all the way up to 2024, we will have a repeated land use. Our strategy is to take everything as far as we can because after P7 model approval, we will have different versions and will be updated throughout the year. All to say, 2024 is the max that we would be allowed to but management might say otherwise.

IV. Introduction of New NTN Leadership Team Members & Discussion on NTN Leadership Structure **(2:00 – 2:15)**

Lead: ***Peter Tango*** *(USGS) &* ***Kaylyn Gootman*** *(EPA)*

Peter Tango: As many of you know, the leadership structure for NTN has evolved over time. In some years it was led by one person, and in others by 1-2 people. A few years ago, it transitioned into a chair plus a leadership team that meets roughly every other month. Tammy Zimmerman,

Mark Nardi, and John Clune were instrumental in helping form that initial leadership panel and in strengthening our agendas, improving how we use our meeting time, and ensuring we are aligned with what partners across the watershed can transmit. Since then, John has moved to another agency, and Mark and Tammy have retired. We now have new members joining the leadership team.

Doug Moyer: Matt Kearns is based in our Charleston, West Virginia office. He coordinates closely with our technicians in Leetown, West Virginia, at the USGS Eastern Ecological Science Center. That team manages the panhandle area where our NTN stations are located, and Matt helps coordinate their work. He is also working closely with DEP staff to support their involvement. DEP staff volunteer alongside our teams during sample collection and also provide funding that supports parts of our analysis.

Brandon Fleming: Brandon Fleming with the Pennsylvania Water Science Center, based in New Cumberland. My technical role is groundwater specialist, and I also oversee the studies program here. I have been adjacent to NTN throughout my career, including my first decade in the Maryland office where NTN work was a major part of the program. My technical interests focus on trends, and much of my experience has been in both surface water and groundwater quality trend analysis.

Alex Soroka: I represent the MD/DE/DC at the Baltimore office. I have been involved with the Chesapeake Bay research community for a while, starting in Delaware, where I sampled several NTN stations. I have also sampled all of our river input monitoring stations, along with others. I support load and trend computations and also contribute to USGS science and internal coordination work.

V. Adjourn **(2:15)**

Next Meeting: *April 15th, 2026, from 1 – 2:30 PM.*

Attendees:
Peter Tango (USGS), Kaylyn Gootman (EPA), Alexander Soroka (USGS), Douglas Moyer (USGS), Lewis Linker (EPA), Robin Glas (USGS), Gabriel Duran (CRC), Scott Heidel (PADEP), Andrew Keppel (MDDNR), Allison Welch (CRC), Mark Brickner (PADEP), Cassandra Davis (DEC), Durga Ghosh (USGS), Kristen Heyer (MDDNR), Bailey Robertory (MDDNR), Matthew Kearns (USGS), Brandon Fleming (USGS), Nicholas Santoro (USGS), Nick Murray (WVDEP), Tyler Shenk (SRBC), James Webber (USGS), Tyler Trostle (PADEP), Breck Sullivan (USGS), Ashley Hullinger (PADEP), Chris Mason (USGS), Bhanu Paudel (DNREC), James Shallenberger (SRBC), Mary Stack (ICPRB), Meighan Wisswell (VADEQ), Klaus Huebert (MDDNR), Cynthia Johnson (VADEQ), Renee Karrh (MDDNR), Tom Parham (MDDNR), Joseph Morina (VADEQ), Lori Brown (DNREC).