Nontidal Network Workgroup Monthly meeting

Wednesday, October 18th, 2023
1:00PM – 2:30PM

Meeting Materials: **Link**
This meeting was recorded for internal use to assure the accuracy of meeting notes.

Actions/Next steps:

- ✓ Kristen Heyer (MD DNR) will check with the labs on what is possible in terms of time frame on reporting back NTN samples, and will let Doug Moyer (USGS) know.
- ✓ Tammy Zimmerman (USGS) will check with the data chief at the PA Water Science Center on what their algorithm or method for determining influence of upstream inputs on downstream sites based on channel size, to gain more information on whether the SRBC Bald Eagle Creek site could be integrated into the NTN using the upstream USGS flow gage for flow reference.
- ✓ NTN Workgroup will follow up on the Bald Eagle Creek SRBC sampling site at future meeting.
- ✓ NTN future meetings will include updates as needed from USGS on the Aquarius software transfer.

Minutes:

1:00 PM **Welcome and announcements**

Upcoming Conferences, Meetings, Workshops and Webinars

- Chesapeake Watershed Forum – November 3-5, 2023, Shepherdstown, VA.
- MAPC Webinar: High-Resolution Land Use/Land Cover and its Applications to Land Use Planning – November 9, 2023, 12:00PM, Virtual.
- CERF 2023 Conference: Resilience & Recovery – November 12-16, 2023, Portland, Oregon.
- Maryland Water Monitoring Council Annual Conference – November 17, 2023, Linthicum, MD.
- National Conference on Ecosystem Restoration – April 14-19, 2024, Albuquerque, New Mexico. Abstracts are due September 1, 2023.
- Chesapeake Community Research Symposium – June 10-12, 2024, Annapolis, Maryland.

Peter Tango (USGS) shared that VIMS and MD DNR found that hypoxia levels are at a record low for 2023. Doug Moyer (USGS) said these low hypoxia levels are likely due to low 2022 flow due to a drier than usual year.

1:15 PM Updates

- Updates on reconstruction of historic and current data sets – *James Colgin (USGS), Doug Moyer (USGS)*

James Colgin and Nieko Santoro have been working on this. They made scripts to pull and interrogate data. CEDR had data from 2010-present. The water quality portal and USGS's National Water Information System (NWIS) database had data going back to 1985. They aggregated all this data. They'll be working with each jurisdiction as they identify any outliers or Quality Assurance (QA) issues. They will address how to come up with decision rules for aggregating raw data analytes to come up with TP and TN. There are multiple options, which will be presented to the labs in the Data Integrity Workgroup for their input. Finally, they will create files for Chris Mason to initiate the next load and trend analysis.

So far, James and Nieko have been able to compare the different data sources. They are seeing a good match between the historical data set and the data hub. There are still some differences, and they are taking a deeper dive into database calculated values and summed values. NWIS has its own database algorithm. The data hub also has its own algorithms for its database. There are differences, although not major. They'll be making sure they compile data for Weighted Regressions on Time, Discharge and Season (WRTDS) correctly.

Doug Moyer said that the labs analyzed a whole water sample and from a separate container, analyzed particulate nitrogen (PN) and total dissolved nitrogen (TDN). So when the raw data shows up in James' files he has the analytically derived total nitrogen (TN) value, PN and TDN, and has to determine which one is the most defensible if they are different values. The question is do we take the raw value of TN or sum the PN and TDN and come up with TN? Doug Chambers brought up that from the National Water Quality Laboratory (NWQL) there was documented bias that they wanted to warn everyone about on the persulfate method and the difference between whole water analysis vs PN/TDN. There was a focused discussion on this issue. Although the USGS document showed that there was bias outside of the Chesapeake Bay watershed area, there was not bias comparing the two analytical results in the Nontidal Network. Doug said he'll get more information on this to know how to represent the NWQL results.

Doug said the next steps are meeting with Data Integrity Workgroup to get their input on the decision tree. Jurisdictions are being led by the USGS team (Chris Mason, James Colgin, Nico Santoro, Alex Soroka) to see how the new data compares to the old data and if there are any issues or concerns around data completeness. Then they will do QA and run loads and trends.

- Bald Eagle Creek as part of the NTN – discussion on site inclusion in NTN, and gage location – *all*

Tyler Shenk (SRBC) said that SRBC has operated sampling since approximately 2005, with a monthly sample and high flow sample. The funding is coming through the grant with DEP like regular NTN sampling. It's not co-located with a USGS gage, so they don't run trends. It's 10 or 12 miles downstream from a major reservoir. There is a USGS site on Bald Eagle Creek that is 5-6 miles upstream of where SRBC samples. They would be open to discussion on this site.

Mark Brickner (PA DEP) said the funding is going through pass through to SRBC. He had brought this up to Tammy Zimmerman and Doug Moyer about why Bald Eagle Creek isn't on the NTN website. They've been collecting everything needed for the NTN analysis, so the data is there. It's not exactly co-located with a USGS gage as Tyler said.

Tammy Zimmerman (USGS) said this has been on her list of NTN stations, even though it's not a loads and trends site. Bald Eagle Creek near Beech Creek Station is the USGS gage, and Bald Eagle Creek at Castanea is where SRBC samples. Bald Eagle Creek is a PA water quality network station run like an NTN station. Doug said he has never received input files for this station as part of the loads and trends analysis. If there is no flow gage tied to this site there will be no analysis, unless we can say the flow upstream is the same as what it is at this site. But if there are major inputs between those locations that would not be representative.

Tammy commented in the chat that 01548005 is Bald Eagle Creek near Beech Creek Station, PA and 01548085 is Bald Eagle Creek at Castanea, PA. Mike Mallonee says he receives data from 01548085. Tyler Shenk said that the USGS flow gage is about 7-8 miles upstream of the sampling site. The group looked at the map and observed there are a few inputs of tributaries between the gage and the sampling site. One tributary is Fishing Creek. There's a small town in the area. Peter asked what is the maximum distance we allow between sampling and flow? Doug said it depends on inputs. Peter asked if there was a way to estimate likely influence based on channel size, and Doug said the PA center has algorithms for predicting flow to a location. Tammy said she can check with her data chief at the PA Water Science Center. Doug said if it's a long-term site, they could consider recommending a stream gage there, and have a period of overlap to see how similar or different the upstream and downstream measurements of flow are.

The drainage area of Bald Eagle Creek at the SRBC site is 768 square miles, and the drainage at the USGS gage site is 562 square miles. The USGS site is also right below a dam. Doug said as long as NTN protocols are followed, the only limiting factor is flow.

Doug asked if SRBC could collect water-quality samples at the current USGS stream gage, and Tyler said he doesn't see why not; it looks like a bridge is nearby and could be a possibility. Tammy asked how many samples should be collected at both sites before they would fully switch to the stream gage site? Peter said he recalled some work with Kevin McGonigal (former SRBC employee) one time with a year of comparisons when the change in high flow sampler

was happening. The balance of cost and time was always respected since it could be longer for comparisons to offer a greater spectrum of flow conditions for comparison.

Will follow up on this item at a future meeting.

- Updates on small agricultural watershed monitoring sites

More detail will be provided at an upcoming meeting. Site evaluations are moving forward in MD and VA. John Clune (USGS) is working on PA sites.

1:40 PM **River Input Monitoring Loads and Trends, 2022** – *Chris Mason (USGS)*

Discussion

Doug Moyer (USGS) asked, what is timing of providing the 2023 data to Mike Mallonee through DUET and stored in CEDR? Cindy Johnson (VA DEQ) said data from January 2023-September 2023 is transmitted January 2024 as outlined in the agreement.

Mike Mallonee (ICPRB) said that MD DNR and VA DEQ have set due dates. All other states are to upload it to DUET by the following March 15. They then work through problems and hope to have it reported by April 1st of the year.

Doug asked if MD and VA can successfully transmit in the January time frame, why can't others submit earlier than spring? Mike responded that you'd have to take it up with the data providers.

Doug said in the past his team wouldn't start getting files until early summer, and hearing that VA DEQ is able to provide data by the January timeframe, it would be great to see if things could be bumped up to see results sooner. With the current time frame there is about a five-month time window between when Chris gets the WRTDS files, to presenting the results. This would not only have an effect on NTN results but also on RIM results; if the NTN results are done earlier, RIM results can be run earlier as well. Doug added that he knows the sediment piece is often the straggler, and they can work with their Kentucky lab to get that in. Doug asked if the nutrient and flow data can be finalized earlier, what would it take for the data owners to provide it sooner than spring?

Peter Tango (USGS) said that 3-month time frame between sampling receipt and delivering data has been a lag that worked well over the years with MD and VA but he doesn't know so much about the other groups.

Doug Chambers (WV DEP) said that this year might be problematic as USGS is changing their water quality database. For Doug, that's going to break several of his processes that he uses to pull, format and review the data.

Doug Moyer asked what is the timing of transitioning to Aquarius [AQ; software platform used by USGS] samples versus transmitting the 2022 data? Doug Chambers said the time frame is the second quarter of the Fiscal Year – January/February/March.

Doug Moyer said that next year is going to be a challenge, and that he would like to avoid complications coming from AQ samples which could delay them. Doug Chambers said if the time frame is earlier to provide data to Mike, he can change some of his processes to try to meet that. Doug Moyer said that would be helpful, especially because as soon as AQ samples are implanted it could delay getting data out and in the right format to Mike Mallonee. Doug Chambers said if it comes at an inopportune time it could interfere with data coming into the system and inputting discharge values, etc. Everyone on the USGS side is aware of that coming down the road.

Peter suggested having an update on that in the next month or two. Doug Moyer suggested an update on data receipt completeness, and how it matches up with transition of AQ samples.

Tammy said that shouldn't be an issue for PA. They have scripts that take what they get from the DEP lab to upload into QW data right now. They'll have to change how it happens, but they should be able to work through that.

Doug Moyer said the motivator is if they beat that transition, may be able to use the existing scripts one last time!

Kristen Heyer said she will have to check with the data managers on what is possible. She'll look up the timeline on the state labs giving them their results and will report back on what they say.

Doug Moyer recommended a topic for the next meeting: the SRBC 2022 loads and trends for their network which includes many of the NTN sites. It would be good to discuss if there are any differences based on differences in data set inputs, and how to make sure there is harmony between data sets and methods, and communication of results.

Tyler Shenk (SRBC) agreed and said he's up for that discussion.

2:30 PM Adjourn

Attendees:

August Goldfischer (CRC), Bhanu Paudel (DE DNREC), Chris Mason (USGS), Cindy Johnson (VA DEQ), Doug Chambers (USGS WV), Doug Moyer (USGS), Durga Ghosh (USGS), Isabella Bertani (UMCES), James Colgin (USGS), James Webber (USGS), Kristen Heyer (MD DNR), Lori Brown (DE DNREC), Mark Brickner (PA DEP), Meighan Wisswell (VA DEQ), Mike Mallonee (ICPRB), Nick Murray (WV DEP), Nicholas Santoro (USGS), Peter Tango (USGS), Scott Heidel (PA DEP), Tammy Zimmerman (USGS), Tyler Shenk (SRBC)