

Sand Branch Benthic Total Maximum Daily Load (TMDL) Study

Fourth Technical Advisory Committee Meeting

June 24, 2021

Meeting Summary

Location: Virtual (GoToMeeting platform)

Start: 1:00 P.M.

End: 3:00 P.M.

Meeting Attendance:

Project Team

Sarah Sivers – Virginia Department of Environmental Quality (DEQ)

Bryant Thomas – DEQ

Cathy Nicely – DEQ

Courtney Hayler – DEQ

Justin Loyd – DEQ

Rob Breeding – DEQ

Katie Shoemaker – Wetland Studies and Solutions, Inc. (WSSI), DEQ contractor

Robert Brent – James Madison University (JMU), DEQ contractor

TAC Members

Benjamin Bradley – Stantec, representing Virginia Department of Transportation (VDOT)

Dennis Cumbie – Loudon County

Heather Ambrose – Fairfax County

Joseph Fitterer – Chantilly Crushed Stone

Edward Hoy – Chantilly Crushed Stone

John Brooks – Apex, representing Chantilly Crushed Stone

Mike Smith – Virginia Department of Mines, Minerals, and Energy (DMME)

Niffy Saji – Fairfax Water

Normand Goulet – Northern Virginia Regional Commission

Sean Minavio – Environmental Systems Service, Ltd (ESS), representing Loudon Composting

Shannon Curtis – Fairfax County

Thomas Foley – Virginia Concrete

General Public

(Information for the below attendees obtained from GoToMeeting platform information)

James Carroll

Jared K.

Zack Tomek

Dalton

Meeting Materials:

The meeting agenda is provided as an attachment to the PDF.

The meeting was conducted with the assistance of a MS PowerPoint presentation. Detailed information in the presentation (provided as an attachment to the PDF) is not repeated in these summary notes; instead, highlights from each general topic section of the meeting are summarized along with the questions and discussion held during the meeting.

Meeting Summary:

Sarah Sivers, DEQ opened the meeting by welcoming the participants and discussed requirements for holding a solely virtual meeting and read opening remarks (provided as an attachment to the PDF). She then provided an overview of the GoToMeeting platform to help attendees become familiar with it. Ms. Sivers also provided a brief introduction of DEQ and contractor support staff. She then discussed the objectives of this meeting:

1. Provide a brief overview of the TMDL process.
2. Share the approaches selected for development of TMDL endpoints for the three pollutants: sediment, total phosphorus (TP) and total dissolved solids (TDS).
3. Discuss modeling the TMDLs, including model selection and the process to model the TMDLs.

During the meeting, Ms. Sivers provided a reminder of the recent meetings held prior to this one, the 3rd Technical Advisory Committee (TAC) meeting on April 21, 2021 and the second public meeting held on May 26, 2021. She reminded the TAC that the public comment period on the benthic stressor analysis report and developing TMDLs to address three pollutants closes on June 28, 2021 and to submit any comments to her in writing (email is acceptable) by the end of June 28th. She mentioned that to date, no comments have been received.

Ms. Sivers then shared refresher on the TMDL targets and process for TMDL development. The pollutants for TMDLs are being developed are identified below. Total dissolved solids (TDS) will address the probable stressors of conductivity and sulfate.

Stream	TMDL Target
Sand Branch	<ul style="list-style-type: none"> ▪ TDS ▪ Total Phosphorus ▪ Sediment

Ms. Sivers also shared that there are other factors that contribute to the impaired benthic community but for which TMDLs cannot be developed. Those contributing factors are summarized in the below table.

Stream	Contributing Factors
Sand Branch	<ul style="list-style-type: none"> ▪ Underlying Geology ▪ Land Disturbance ▪ Percent Imperviousness ▪ Degraded Riparian Buffer

Ms. Silvers then turned the presentation over to Dr. Robert Brent, who kicked off the topic discussion setting TMDL endpoints for each of the three pollutants. The need to identify an endpoint is necessary as all three pollutants have only narrative and not numeric water quality criteria. Dr. Brent presented an overview of the approaches considered to develop a TMDL endpoint for TDS. He discussed the basis for the selection of the preferred approach and the steps associated with that approach. Ms. Shoemaker then discussed the approach to be used to develop TMDL endpoints for both sediment and TP.

The next topic discussed was led by Ms. Shoemaker on modeling the TMDLs. In this portion of the meeting, Ms. Shoemaker discussed the components of this process including the selected model, Hydrologic Simulation Program - FORTRAN (HSPF) and source assessment.

Summarized below is the content of the discussion and comments shared during the meeting.

- An attendee asked if Per- and Polyfluoroalkyl Substances (PFAS) were evaluated during the benthic stressor analysis. The attendee followed-up with a comment that PFAS should be evaluated because Dulles International Airport has a firefighting training area within the watershed and uses PFAS in their fire suppression activities.
 - DEQ replied that PFAS were not evaluated in the benthic stressor analysis because emerging contaminants such as PFAS are not part of the water quality monitoring program to support benthic TMDLs. Water quality samples were collected and evaluated for a suite of parameters commonly found to be stressors to aquatic life, such as nutrients, metals, major ions. Several probable stressors to aquatic life were identified through that analysis and for which TMDLs will be developed.
- A question was asked if the margin of safety (MOS) for the TMDL was explicit or implicit?
 - Ms. Shoemaker answered this question during the course of the presentation that typically they use a combined implicit and explicit MOS. An implicit MOS is incorporated into the modeling by making conservative yet realistic modeling assumptions, while an explicit MOS is also included by setting aside a percentage of the TMDL.
- One attendee asked for confirmation that the ambient toxicity test results did not show impact on water flea. They questioned this, as their expectation that the water flea would be more impacted than the hardy fathead minnow.
 - Dr. Brent responded that that was correct. , Only the fathead minnow demonstrated a toxic response in March 2020 ambient toxicity test.
- Another participant questioned why the water flea (*Ceriodaphnia dubia*) was used in the toxicity test as these species are not found in Sand Branch and that they are lentic, found in ponds more than in running streams.
 - Dr. Brent answered that the water flea is a standard toxicity species, so it was used as part of the first round of testing. For the upcoming tests, the approach is to use both the standard and also less standardize species, a scud and mayfly, which are more representative of freshwater streams in this part of VA.
 - The participant responded that it was a good call to add to the upcoming toxicity testing the two benthic species that are more likely to be found in Sand Branch.
- An attendee asked if samples to identify the amount of TDS (mg/L) in Sand Branch was also identified when the samples were collected to run the toxicity tests or if just specific conductivity was known.
 - Ambient water quality samples, including specific conductivity and TDS, were collected at both monitoring stations on Sand Branch (1ASAN001.45 and 1ASAN000.34) concurrent with the collection of ambient water samples at the downstream station (1ASAN000.34) to

run the toxicity tests in March 2020 and also will be done for upcoming tests. Additionally, DEQ reviewed the relationship between TDS and specific conductivity and found the two parameters are highly correlated, with an R^2 of 0.92. Based on the strength of this relationship, TDS can be estimated in Sand Branch from measured specific conductivity values.

- A participant asked if DEQ reviewed water quality data from ground water wells in the watershed or locally, as such information could help identify the background concentration for TDS.
 - DEQ is not aware of groundwater well data in the watershed or locally. If TAC members are aware of such data, they can provide it for DEQ to consider.
- Mr. Curtis with Fairfax County commented that they are exploring a possible Triassic Basin reference reach in Loudoun at Banshee Reeks, which is a small order stream with health benthic macroinvertebrates. He commented that the water quality of this reference stream may be worth investigating.
- A participant asked if the Virginia Stream Condition Index (VSCI) score of 60, which is the threshold below which a benthic community is considered impaired, is appropriate for the TMDL target, or if the target should be more conservative. Alternatively, will including the MOS help to provide that buffer, actually targeting a condition that is slightly above 60.
 - Ms. Shoemaker verified that the model is set-up to aim for a VSCI of 60, with the MOS providing a buffer for the pollutant reduction to achieve that VSCI score. She mentioned that the TAC could discuss setting a higher VSCI value to achieve but typically most elect to aim for 60.
- An attendee questioned why toxicity testing was focused solely on TDS and not also on TP, if that meant that TP was not being viewed as directly toxic.
 - Dr. Brent replied that the impact of TP on aquatic life is seen more immediately in terms of changing food availability and impacts on oxygen, not direct toxicity. Therefore, the focus of the toxicity tests is on TDS, which is isolated through the approach of laboratory prepared water.
 - The attendee commented that the approach made sense as they also see a lot of diurnal swings in pH and dissolved oxygen.
- A participant asked if the regression to evaluate the relationship of specific conductivity with TDS was done for any of the individual ions that make up TDS.
 - Ms. Siverson replied that the regression was only done for specific conductivity and TDS and not individual ions. This was because TDS was identified as a probable stressor and addressing TDS will also address the ions that comprise TDS, such as sulfate which was also identified as a probable stressor.

Ms. Siverson began the meeting wrap-up with an overview of the project timeline, noting that the aim is to complete the project in March 2022. She noted that the next TAC meeting is anticipated to be held in September 2021 to share information on the source assessment and scenarios for TMDL allocations. However, Ms. Siverson commented that the timing of the 5th TAC meeting may be delayed if additional time is needed to complete work in preparation for that meeting.

Ms. Siverson asked that any questions or comments pertaining to the Sand Branch TMDL study be directed to her. Ms. Siverson also reminded the TAC that the 30-day public comment period on the stressor analysis report and public meeting to kick off TMDL development closes the end of the day on June 28, 2021.

Ms. Siverson concluded by saying she would email the TAC the following day a copy of the presentation, [web link to the meeting recording](#) and the draft meeting minutes for TAC to review. She also said the

email would contain the Virtual Meeting Comment Form, which provides meeting attendees opportunity to provide feedback on the virtual meeting format itself. Comments on the virtual meeting format (comment form provided as an attachment to the PDF) are to be submitted to the FOIA Council.

She closed the meeting by thanking those present for attending.