

Moores and Mill Creek Technical Advisory Committee Meeting (#2)

Rockbridge County Administration Building
150 S. Main Street, Lexington VA

August 11, 2022, 2:00 – 4:00 pm

Participants

Nesha McRae (DEQ)	Barbara Walsh (RACC)
Tara Wyrick (DEQ)	Bill Sweeney (DOF)
Jonathan Gibson (DEQ)	Cole Young (DOF)
Katie Shoemaker (WSSI)	Spencer Suter (Rockbridge Co.)
Stephen Dombroski (WSSI)	Jonathan Griffin (Rockbridge Co.)
Tom Stanley (VCE)	Jay Lewis (Rockbridge Co. BOS)
Charlie Simmons (NRCS)	Chris Wise (RACC)
Lee Cummings (NBSWCD)	Toby Jonas (White's Travel Center)
Sandra Stuart (RACC)	David Walsh (Outdoor Rockbridge)
John Pancake (RACC)	

Meeting Summary

Introductions and Background

Nesha McRae (DEQ) began the meeting with a round of introductions and a recap of the project including the benthic stressor analysis, which identified sediment as the primary pollutant of concern in both Moores and Mill Creeks. Nesha explained the next steps in the TMDL process including development of a model of the watersheds to simulate how sediment makes its way into the streams, and identification of an endpoint or target sediment load for the streams. This endpoint should be equal to the estimated amount of sediment that these streams could receive and still support a healthy biological community.

Watershed Modeling

Katie Shoemaker (WSSI) provided an overview of the model of the two watersheds that WSSI has developed using the Generalized Watershed Loading Function (GWLF) application. Katie explained that the model simulates sediment leaving the land and making its way into the streams. The model incorporates a transport ratio that accounts for sediment losses before it reaches the stream. Inputs to the model include land cover and stream length data, in addition to physical characteristics of the watershed and climatic data. The model was developed to be used in ungaged watersheds so that you do not need to do perform a hydrologic calibration. However, in order to improve the accuracy of the model, WSSI completed a hydrological calibration using data from the USGS gage on Kerrs Creek. Since neither Moores nor Mill Creek have a stream gage, WSSI looked for nearby watersheds with similar land use and size that had gages monitoring stream flow. During the calibration process, different input parameters are adjusted until the simulated model output for stream flow closely matches the observed data from the gage. After the model is calibrated using data from the gage and model output for a given period of time, a different time frame is selected to validate the model. This allows us to make sure that the model has been accurately calibrated and effectively simulates stream flow under a variety of hydrologic conditions (not just those experienced during the calibration period). We know that the model won't be perfect, but we want it to be as accurate as possible.

Sediment Source Assessment

Katie reviewed land uses in the watersheds and discussed how land cover distribution data is used to estimate the amount of sediment coming from different land uses in the watershed. Both Mill and Moores Creek were divided into a series of three smaller subwatersheds, and acres of each land cover category were calculated. A sediment loading rate is calculated for each land cover category in the watersheds, and then the watershed model simulates the transport of that sediment to the stream. Katie explained that some of that sediment is lost along the way, while a portion makes its way into the stream channel.

Nesha reviewed how permitted sources of sediment are accounted for in the TMDL model. She explained that DEQ issues discharge permits to different types of facilities across the state, and that these facilities must be included as a source of sediment in the TMDL. In Mill and Moores Creek, there were nine (9) VA Stormwater Management Program (VSMP) permits in the watershed. These permits are issued for land disturbing (construction) activities. The permit includes the length of time permit coverage is needed along with the estimated number of acres to be disturbed. Since it is unlikely that all land disturbance occurs at the same time on a site, the total acres to be disturbed was divided by the length of time over which land disturbance was estimated to occur for each permit. These acres are then used to calculate an annual sediment loading rate from construction sites in the watershed. Nesha explained that the VSMP permit requires the permittee to install best management practices (BMPs) to control runoff of sediment from the site. In estimating the sediment load coming from these sites, an assumption was made that these practices were installed and maintained in accordance with design specifications, meaning that they would be effective in retaining 85% of sediment from the site (preventing it from running off into the stream). Nesha asked participants if this was a safe assumption to make, or if construction sites in the area are frequently out of compliance when it comes to BMPs. Jonathan Griffin (Rockbridge County) stated that he thought that was a safe assumption to make. He explained that sites can fall out of compliance from time to time, but that developers are always responsive when the county asks them to correct BMP maintenance issues. He explained that the county has an excellent working relationship with local developers and the group agreed that these watersheds are not areas of accelerated growth where construction is being rushed. One participant asked whether the estimate of disturbed acres includes the work that VDOT is doing in Mill Creek. Nesha responded that 3.65 acres of land disturbance is included in the estimate from VDOT's VSMP permit. Another participant asked if estimates include construction at Whites Travel Center. Nesha responded that they did include their permitted acreage as well.

There is also one Industrial Stormwater General Permit in the Mill Creek watershed, Devils Backbone Brewing Company, that must be accounted for in the watershed. Facilities covered under this permit include areas where industrial activity is occurring and there is a stormwater discharge. This permit requires that the permit holder complete semi-annual monitoring at their discharge, and report sediment, nitrogen and phosphorus concentrations. The permit establishes benchmark concentrations that must be met in the discharge. The sediment benchmark concentration was converted into a loading rate of 440 lb/ac/yr of sediment, which was applied to the permitted acreage to establish the sediment load coming from this facility. A participant noted that they had heard Devils Backbone would be modify their stormwater management infrastructure but that they were not sure of the details. Nesha offered to follow up on this.

A participant asked how legacy sediment deposited in the stream years ago is addressed in the model, this is a big issue in this area. Katie explained that these deposits are not directly addressed in the model, but that it does consider streambank erosion and the gradient or slope of the stream in sediment loading and

transport calculations. Katie also noted that a lot of this legacy sediment was deposited in the floodplain, and that the model simulates the transport of this deposited sediment into the stream channel as well. Another participant noted that a very large portion of both streams have undercut banks. Mill Creek runs along I-81 and is relatively flat with a number of large twists and turns. It was noted that you see multiple farms where banks have collapsed and pools are forming with continuous erosion occurring. The banks aren't sloped on much of either stream. Lee Cummings noted that the Natural Bridge Soil and Water Conservation District (SWCD) Just finished installing 6,800 feet of livestock stream exclusion fencing in Mill Creek, and that they are about to begin a project to install an additional 7,000 feet of exclusion fencing in Mill Creek by the end of the year. It would be nice to have funding to support design and construction costs for streambank restoration as part of these projects. This is not something for which the SWCD has adequate funding. The committee discussed challenges to obtaining funding for streambank restoration. A participant asked what sorts of funding opportunities are available outside of the SWCD. Nesha explained that the next step in the TMDL process after completing the study is to develop an implementation plan. Once a plan is completed and approved, this opens the door to funding that DEQ receives from EPA. These funds can be matched with other sources to support streambank stabilization practices.

TMDL Endpoint Identification: All Forested Multiplier Approach

Nesha moved on to discuss how sediment endpoints were established for Moores and Mill Creeks. The All Forested Load Multiplier (AllForX) endpoint approach was used for the two watersheds. The AllForX approach has been used to establish sediment and nutrient reduction targets in many TMDLs studies completed in Virginia since 2014. AllForX is the ratio of the simulated pollutant load under existing conditions to the pollutant load from an all-forest simulated condition for the same watershed. Nesha shared a graphic illustrating the concept and showing how the ratio was calculated for Moores Creek. Katie shared several figures showing how the multipliers for Moores and Mill Creeks along with a number of other streams in the region were paired with VA Stream Condition Index (VSCI) scores, which are a measure of the health of the benthic macroinvertebrate community, to create a linear regression. When a VSCI score falls below 60, a stream is designated as impaired for aquatic life. The regression equation was then used to establish a target AllForX value for both streams that would result in a predicted VSCI score above 60. Once this multiplier was identified for the streams, it was used to establish the target sediment endpoint for the streams. Katie noted that while the average VSCI scores were used in the regression for Moores Creek, the 33rd percentile of VSCI scores was used in the regression for Mill Creek due to the fact that it is a borderline impairment, which necessitated a more conservative approach. Nesha added that Mill Creek has a considerable amount of bedrock in the channel, which limits available habitat for aquatic life. This may amplify the effects of excess sediment in the stream.

TMDL Equation

Nesha explained that the target sediment loads are ultimately used to calculate the TMDL equation for each stream. This equation includes a load allocation, which Nesha described as the unregulated load that runs off of the land into the stream following precipitation events. It also includes a wasteload allocation, which is the regulated, permitted load of sediment in the watersheds. The wasteload allocation is established based on the concentration limits or benchmarks included in the permits for the relevant facilities. This load can be reduced if necessary to meet goals, but this is not typical. A margin of safety is also included in the equation to ensure that the TMDL target is protective enough. For Mill and Moores Creeks, this value was set at 10% of the TMDL.

Accounting for BMP implementation

Nesha reviewed information on BMPs installed by agricultural landowners in the watershed through the SWCD to date. She explained that estimates of sediment loads are reduced to account for these BMPs within the subwatersheds where they are installed. Nesha explained that TMDLs are not intended to be spatially explicit, meaning that we are not looking to identify individual landowners and assign them a reduction.

A participant asked Katie whether the lake in Moores Creek accounted for in model. Katie responded that the model was not sophisticated enough to simulate sediment dynamics in the lake. Nesha asked participants if they thought that the lake was a significant source of sediment in the watershed. Participants did not think it was and noted that there is a lot of submerged aquatic vegetation growing in the lake, but that sediment transport downstream was not observed.

Allocation Scenarios

Nesha reviewed a series of four (4) allocation scenarios for each watershed with the committee. Scenario 1 included equal reductions from all sources, Scenario 2 includes reductions only for agricultural sources, Scenario 3 includes reductions only for urban/residential sources, and Scenario 4 includes the largest reductions for the largest sources and smaller reductions for smaller sources. Nesha asked participants to come to a consensus on which scenario would work best for the two watersheds. The group voted and agreed that Scenario 4 offered the most feasible and equitable solution.

A participant asked how the sediment reductions would be enforced. Nesha explained that the reductions called for from sources included in the load allocation will not be regulated or enforced. Implementation is typically encouraged through financial incentives. Regulated sources must comply with the limits or benchmark concentrations included in their permit. A participant asked about the types of BMPs that would be installed to address urban sources of sediment. Nesha described several BMPs including bioretention filters and pervious pavers. There are some programs out there that provide funds for urban BMPs including the VA Conservation Assistance Program (VCAP) that is administered by SWCDs. Natural Bridge SWCD has not dealt with this program much to date, but Lee Cummings noted that with a \$10,000 cap on financial assistance, funds are intended to be used for smaller scale projects. Bill Sweeny (VA Department of Forestry) noted that his organization has two open requests for proposals for tree planting and urban forestry projects. A participant asked what the likelihood is of securing funds for projects. Nesha commented that DEQ has an open request for proposals for TMDL implementation projects, and that the agency is only aware of one proposal under development. She added that funding opportunities can be combined in order to meet match requirements and get more done on a watershed scale. A participant commented that often times, you can't match federal funds with other federal funds. Another participant commented that assistance is necessary to deal with all of the paperwork associated with grant proposals and to work through complicated requirements. Nesha responded that once momentum is established and local interest in moving forward is strong, partner organizations usually come together to bring in necessary funding.

Next Steps

Nesha discussed next steps with the group. A draft TMDL report will be prepared and emailed out to committee members in the next few weeks. After members have had a chance to provide comments, a final public meeting will be held to share the report with the public. Participants agreed that another committee meeting will not be necessary to discuss edits to the report unless they are substantial. Nesha asked for suggested on locations for the public meeting. Participants suggested the Raphine Fire Department, the Board Room and the county office building, the horse center, high school, Fairfield

Elementary, and Fairfield United Methodist church. Some of these facilities have fees. Nesha will look into locations. Participants agreed that it's best to hold the meeting before dinner time (5:30 pm) to ensure better participation.

Nesha thanked participants for their input and the meeting was adjourned.