Third Technical Advisory Committee Meeting
January 12, 2017 at 3 pm
W&L University Community Room – Lexington, VA

Attendees: Morris Trimmer (NBSWCD), Barbara Walsh (RACC), Susan Meister (Boxerwood & SOS), Steve Richards and Chris Wise (RACC), James Willey (W&L), Jeff Karlstrand (Lexington Golf Course), Mike Kennedy & Jeff Martone (City of Lexington Public Works), Lee Cummings (NBSWCD staff), Herby Markin (Kendal at Lexington), Kip Brooks (NBSWCD) , Gene Yagow & Ebrahim Ahmadisharaf & Wesley Tse (VT-BSE), Tara Sieber & Jared Purnhagen (VADEQ)

Tara Sieber, the Regional TMDL coordinator for The Virginia Department of Environmental Quality (VADEQ), opened the meeting by welcoming everyone and thanking W&L for hosting the meeting. Tara asked participants to introduce themselves and the organization or agency they were representing (or if they were a landowner or interested citizen, as well). Next, Tara reviewed the agenda for the meeting which would include: the review the TMDL process, discuss the Benthic Stressor Analysis process and draft revised conclusions, and then discuss the unique situation going on with the bacterial calibration/validation period and ask for input.

Gene Yagow from Virginia Tech's Biological Systems Engineering (VT-BSE) Department reviewed the Stressor Analysis of the biological impairment on Woods Creek. Gene reviewed the fact that this is a minor impairment on Woods Creek, which means that the Virginia Stream Condition Index (VSCI) score is not terrible, but averages just below the impaired threshold of 60. Gene rewrote chapters 5 and 6 of the Stressor Analysis to better describe all the different stressors and stream impacts in the Woods Creek watershed. One of the revisions made to this version of the draft Stressors Analysis is the addition of hydrologic modification to the "Most Probable Stressors" list and rewording organic matter to include the algae flushing from small ponds with connections to the bacteria impairment. Gene's rcommendation would be to address both of these stressors with a narrative TMDL with no computer modeling necessary. Some possible actions to address the hydrologic modification issue could include: I&I investigations by the city, investigation possible dam removal, buffer roads near streams to filter runoff from impervious areas. Some possible actions to address organic matter contributions to Woods Creek could include: source reductions as identified in the bacteria TMDL, improved pond management, and additional monitoring to isolate sources (primarily spring impacts). Gene will have a final version of the narrative TMDL by the next TAC meeting. Participants of the meeting had numerous questions. One question was what would happen to the quality of the streamwater if the connection to the Moores Creek Reservoir was cut off? Gene responded that this would probably be detrimental as the contribution of this very clean source of water was diluting some of the other water quality issues. Another participant asked if there were positive effects that would come after the removal of the low-water dams? Right now, the water stagnates and provides some ponding action, which may act as a sediment trap. The city stated that it had plans to meet with DGIF stream restoration specialists on a project on the Maury river, and would also bring this issue up to discuss options available. Another issue that was raised was regarding a more in-depth understanding of organic matter and how this was

classified as an impairment, with no effects on Dissolved oxygen or extremely high nutrient levels. Gene responded that more monitoring was needed, but the taxa of benthic invertebrates indicated some sort of impact from nutrients (detritus worms, etc.). Tara took this opportunity to talk about the Benthic Stressor Analysis report and uniqueness of Woods Creek benthic impairment and the fact that computer modeling may not be needed. Gene thanked everyone for their input – it was helpful to have people with historical knowledge of the watershed!

Ebrahim Ahmadisharaf and Wesley Tse from VT-BSE began the bacteria discussion by summarizing previous meetings and describing how this data and information was inputted into the computer model, which actually began with the Maury River TMDL project in 2013. There are many different sources for the data, including the National Land Cover Database (NLCD) and Google Earth. They reviewed a synopsis of how the computer model works:

Watershed Inputs Computer Model model outputs CalibrationData WQS (235 cfu/100 mL) Pollutant reduction scenarios TMDL implementation planning

The group reviewed the bacteria sources as discussed at the last two meetings and how important it is to have the review of local experts, such as those participating in the TAC. Wesley and Ebrahim next presented the idea of the Calibration & Validation portion of the computer modeling, which is very important in order to ensure accuracy of the model and uses DEQ monitoring data to "tweak the knobs". Unfortunately, the latest data from about October 2015 through the end of 2016 is unusual and throws the model out of whack. Tara presented the "mystery" of the bacteria fluctuations and asked for the group's assistance. The TAC reviewed the handouts, which were DEQ bacteria data tables of the Woods Creek stations as well as several other local stations monitored during the same time period. For some reason, the data on Woods Creek gets very "wonky" (for lack of a better term) and unpredictable from the end of 2015 through the end of 2016 (the most current data available). The group reviewed the downstream station's seasonality (February, April, June and October were the highest concentrations). In contract, the Woods Creek Ross Rd station's seasonality had October 2016 highest (which was skyrocketing! Over 5000 mpn/100 ml). From all the stations, most of the violations occurred in the Fall. One participant asked if it could be tied to precipitation, but Wesley and Ebrahim said that they did not see that direct influence, and showed their precipitation charts. Also, it was pointed out that May 2016 was the rainiest month but did not have the highest bacteria concentrations. One participant asked if More stream flow data would be helpful since there are only six points for USGS in the watershed. W&L can send data which is in instantaneous load form (with no permanent gage). Paul Low's modeling is on point with data W&L has monitored. VT is going to consider comparing this data with what they have to see if any meaningful difference can be made. One attendee asked if bacteria could be coming in from the Moores Creek Reservoir thru the pipe? Wesley responded that this was unlikely due to the length of travel and travel time. Another question was raised about the relationship between travel time between Woods Creek monitoring points? Gene responded that it was hard to say given that bacteria is distributed through the entire water column. For this type of pollutant, overall trends are significant. One participant who has been an active monitor offered that usually high concentrations of bacteria are seen in hot weather months when cattle are in the streams. Low high

precipitation can influence bacteria concentrations in different ways depending on the source of the bacteria. Another attendee asked about the die-off rates of bacteria and how long it took for them to die exposed to the elements. Tara discussed how they were evolved to live in intestinal gut tracts where it is nice and warm. A local resident brought up all the construction activities at W&L, VMI, and Waddell E.S. which are all located right along the banks of Woods Creek, and the group also discussed the main sewer line and possible leaks/overflows. The group discussed the experience of other watersheds and Tara described how Direct Deposited source of bacteria cause very high concentrations during low-flow periods while runoff drive impairments peak during high precipitation events. Several participants mentioned large Canada geese populations that move around the watershed, and estimated that this flock could number around 400 birds. The question was asked whether Sarah's Run had been monitored specifically and whether a change in farming practices had occurred up in the watershed. NBSWCD replied that there weren't a lot of ag practices currently implemented up in that watershed. Another participant recounted how the local Farmer's Coop used to wash out trucks in Woods Creek. Citizen monitors tried to do benthic monitoring on Sarah's Run but it didn't have a great riffle area due to too much bedrock. The group agreed it would be a difficult stream to monitor and access would also an issue. Future monitoring efforts could include Sarah's Run, however, and a number of volunteers came forward to do coliscan monitoring. The City of Lexington also voiced support for a citizen monitoring program, or a program operating out of the City government itself. Some coordination is needed between citizen monitors, DEQ and the City and Tara stated that this could be an issue to discuss at the next TAC meeting , or perhaps on a separate conference call or date/time to be determined. So many additional points of data will help identify the issues at work and fill in the gaps where DEQ monitors can't! This is a wonderful piece of news for Woods Creek.

The group discussed the possible date of the next meeting and decided that the late afternoon or February 16 or 23 would work for the group. Tara will call around to find a place, but W&L again offered the use of the Community Room. Tara thanked everyone for their input and time! The group adjourned until February.