

## Lewis Creek Technical Advisory Committee Meeting #1

February 25, 2020

### *Attendees:*

John Bauman	Jean Andrews, August Co. Service Authority
Fred Blanton, Shenandoah Green/Lewis Creek Adv. Com	Courtney May, City of Staunton
Randolph Bertin	Moges Wagena, VT BSE
Gerry Kirkpatrick	Pete Kesecker, City of Staunton
Tom Shapcott, Friends of Middle River	Karen Kline, VT BSE
Rachel Winter, Headwaters SWCD	Joe McCue, Friends of Middle River
Doug Wolfe, Augusta County	Emily Smith-McKenna, VT BSE
Rebecca Joyce, Central Shenandoah PDC	Tom Yeago, Lewis Creek Water Quality Adv. Comm.
Ken Hearst	Ashley Hall, Stantec
Georgi Tomisato, Shenandoah Green	Courtney Marquette, VADEQ
Sara Hollberg	Nesha McRae, VADEQ
Howard Kato	Mark Richards, VADEQ

### *Meeting Summary:*

Mark Richards began the meeting sharing additional content about the extent of the PCB impairment on Lewis Creek, which will be extended in the next VA Water Quality Assessment from 10 miles to 12 miles based on the VDH fish consumption advisory. He reviewed the monitoring timeline resulting in the impairment listing for Lewis Creek and provided an overview of the TMDL process. One participant asked how the extent of the impairment is determined. Mark explained that Lewis Creek is contaminated down to its confluence with Middle River based on fish tissue monitoring. Mark provided some background information on PCBs including their chemical composition. Mark discussed some of the properties that result in the persistence of PCBs in the environment and reviewed some of the previously common uses of PCBs. Mark shared background information on DEQ's fish tissue monitoring program, which has more recently focused on monitoring of PCBs in fish tissue due to budget limitations, but has recently begun expanding to include other parameters, like mercury, once again. The water quality criterion (WQC) that DEQ uses for impairment listings (640 pg/l) is based upon a translator in the equation. The fish tissue screening value of 20 ppb is directly related to the WQC that has been adopted by the agency. VDH uses a value of 100 ppb (total PCBs, tPCB) for fish tissue in order to issue a consumption advisory. A participant asked if the 640 pg/l is a VA water quality criterion and Mark replied that it was. Mark reviewed fish tissue data collected between 2001 and 2017 and noted that DEQ plans to do additional fish tissue monitoring this year (summer 2020). Fish consumption is typically the pathway for human exposure to PCBs. Since they are very persistent, they bioaccumulate and may be biomagnified as you move up the food chain. Mark explained how the endpoint for the PCB TMDL will be determined. Either the water quality criterion of 640 pg/L will be used, or a site specific bioaccumulation factor could be used. DEQ is currently evaluating these two approaches based on the extent of data that is available for Lewis Creek. DEQ is in the process of writing the source assessment of PCBs in the Lewis Creek watershed. VT BSE will then take this information to develop the watershed

model that links these sources to targets that will be used to assign allocations. One participant asked if lessons learned from previous PCB TMDLs developed across the state are being applied to this project. Mark noted that we are generating more data prior to initiating the public process of TMDL development given the amount of time it takes. We've also refined the approach that we used in developing watershed models (e.g. using harmonic mean flow data). Karen Kline with VA Tech Biological Systems Engineering will touch on some of these topics in her presentation. VA Tech is serving as the contractor for this project and is providing DEQ with support for watershed model development.

Karen Kline provided the group with an overview of how the watershed model is being developed. She described how a watershed model may be used to simulate the fate and transport of PCBs. The model consists of three major components: Hydrology (this is the foundation of the model, USGS stream flow data collected from their gages is used to populate this component), Sediment (this is the primary way in which PCBs make their way into the stream, suspended sediment concentration data is used for this model component), and PCB fate and transport which is based on data collected from the stream by DEQ. Karen explained that data inputs are used to develop the model, which then generates outputs based on simulated watershed processes. Then the model is calibrated based on observed data. This is an iterative process. Once the model is calibrated, the PCB outputs are then compared with the TMDL endpoints. Multiple reduction scenarios may then be evaluated in order to determine the best way to meet the TMDL endpoints. Karen explained that at this point in the process, we are playing a "what if" game where we are looking at the different PCB sources in the watershed and the reductions that can be made from these sources in order to meet the TMDL endpoint. Once we reach a place where we are meeting the TMDL endpoints through various reduction scenarios, these can be evaluated by the Technical Advisory Committee.

Karen reviewed local sources of model inputs. Meteorological data collected at the Staunton Water Plant will be used in addition to watershed topography data used to delineate subwatersheds. The National Hydrography Dataset is used to model the stream network, and the VA Land Cover Database is used to estimate land use acreages in the watershed. Soil types are important for the model because it helps us better understand infiltration rate and how soil is transported to the stream. One participant asked how the presence of karst influences transport of PCBs to the stream. Karen explained that the presence of karst will impact transport, and that while it is considered in the model, though she was not sure how well it is captured. Another participant asked how detailed land use data is. Karen replied that there are six different categories by which land use is classified. A participant asked what the timeline is for meeting TMDL endpoints. Mark Richards explained that this varies by watershed. He expects that conditions in Lewis Creek will improve faster than in some other project areas based on preliminary results of the source assessment. A follow up question was asked on how climate change might impact our ability to accurately model the watershed. Mark explained that it's something that DEQ has been discussing, but that we haven't gotten to the point of determining how climate change might be impacting TMDL development. Karen added that modeling efforts are focused on existing conditions. The participant asked how growth is accounted for (e.g. more pavement). Karen replied that future growth is normally considered in TMDL development, though not typically with PCBs. Mark added that sources are typically legacy in nature, meaning that new development (e.g. industries) shouldn't be adding new PCB sources to the stream. Another participant asked how goals are identified, are they done strictly by looking at how model inputs may be manipulated, or is it based on how particular sources may be addressed. Karen and Mark explained that the goal of the TMDL process is to

find the sources in the watershed and determine how best to address them. Mark noted that DEQ has a Land Division that works on remediation of contaminated sites, though often their goals are different and do not result in meeting the water quality criterion. A participant asked how we can ensure that contaminated sites are remediated and how we prevent streambank erosion from contributing more PCBs to the stream. Mark noted that covering the contaminated sources with an impermeable cover should prevent runoff and that stabilizing streambanks can help prevent erosion of contaminated soils into the stream.

Karen discussed how PCB sources are considered in the model. Contaminated sites (e.g. former manufacturing facilities, rail yards wherein EPA is allowing older train engines that contain PCBs to continue operating) are modeled as diffuse sources - nonpoint sources washed off during rainfall events. PCB oil spills may be considered as another source. These are modeled as a single event on one day at one time. These incidents are identified using DEQ's Pollution Response Program database. Atmospheric deposition is also considered (there are small concentrations of PCBs in the atmosphere). While this is typically a small source, it is still modeled as a daily load and is considered to be a legacy source. Permitted sources are also considered. In Lewis Creek, the only point sources to be considered will be the Municipal Separate Storm Sewer Systems (MS4s). Impervious sources in these areas have watershed outlets or discharge points that will be considered. In-stream sediment is also considered in the model as an initial concentration in the stream bed and are considered to be a legacy source. Karen shared a map of the watershed showing the division of nine subwatersheds that will be used in the model. These divisions are based on major tributaries, land use and the presence of DEQ monitoring stations. Another participant noted that working with the regulated community appears to be the only way to address the problem. She asked if DEQ has enough regulated partners to work with to address the problem. Mark responded that MS4s are the regulated partners that DEQ expects to work with in this effort, but that other sources will be noted. A participant asked how MS4 outfalls will be captured. Karen explained that these outfalls will be grouped by subwatershed and modeled accordingly.

Mark Richards moved on to discuss the source assessment that is currently underway for Lewis Creek. Fish tissue, sediment and water column samples have been collected for Lewis Creek. Some bracketing of monitoring was done in the watershed to hone in on prospective contaminated sites. Water samples from wet weather and dry weather monitoring were collected across the watershed. Mark noted that data collected between 2017 and 2019 showed that concentrations go up around Bridge Street and are very high in the water column at the watershed outlet near the Route 612 bridge. We only have dry weather data for the site located below the former Staunton Metal Recycling site, which still shows a spike, but it would be interesting to see what the creek looks like at the site under wet weather conditions. Sediment data collected between 2001 and 2019 mirror what we see in fish tissue. Sediment samples were collected and analyzed for PCBs as part of a special study in 2005 including several tributaries of Lewis Creek. The PCB concentration from the November 2019 sample increased notably at river mile 8.12 below the former Staunton Metal Recycling site.

Mark discussed point sources in the watershed including MS4 entities (City of Staunton, Augusta County and the VA Department of Transportation). A decision will need to be made as to whether or not to aggregate these permitted loads, or address them individually. VDOT has already weighed in on this and would prefer that these loads and associated allocations are aggregated, in which case a collaborative approach would be used. Mark noted that it's hard to tell whether areas within the County's MS4 boundaries are contributing to the impairment. Several participants asked about the extent to which

the MS4s are likely contributing to the impairment. Mark explained that the model will help us get a better idea of source contributions. A participant asked about current existing sources within these MS4 areas. Mark explained that there could be a variety of sources within these areas. MS4s will be asked to develop action plans to address loads coming from within their regulated area. A participant noted that the persistence of PCBs in the creek suggest that there may be some existing sources in the watershed in addition to those contaminated sites from many years ago. It was noted that there is an active rail yard located adjacent to the contaminated CSX site which may be actively contributing to the impairment. Courtney Marquette noted that groundwater sampling is underway at the contaminated CSX site, but that DEQ doesn't have these data yet.

Mark reviewed the implementation process used to accomplish PCB TMDL targets. He noted that MS4s are asked to develop an action plan that employs adaptive implementation. Some additional field work may be required to better identify potential sources in order to prescribe BMPs to address these sources. The PCB clean up level of 1 mg/kg that is used for land based contaminated sites is insufficient to meet the PCB water quality criterion. A participant asked about potential remediation measures such as tree planting. For high concentrations of PCBs, these areas typically need to be covered, but BMPs to prevent erosion are also helpful. PCBs can migrate through the soil profile, and land use and soil type influence the extent to which this may occur. This can result in groundwater concentrations of PCBs. A participant asked how contributions from the former Rose Time site will be differentiated from the CSX site. Mark explained that we don't have data from this site, but that it seems likely that it is contributing. It was noted that the state is currently exploring the purchase of the CSX site. Another participant asked whether there are any potential concerns when it comes to human exposure aside from fish consumption. Mark noted that long term exposure to PCBs at industrial sites could be a problem for human health, but that these risks are evaluated by DEQ's Land Division at these contaminated sites. A participant noted that if the state is contemplating the purchase of these railyard sites, their potential to contribute PCBs to the creek should be addressed sooner rather than later.

Mark shared PCB finger printing data by PCB homolog group for wet weather and dry weather samples collected from Lewis Creek. He also shared 2007 data from the contaminated CSX site. Additional characterization work is underway at the site, which will be helpful in TMDL development. Three different Aroclor groups are present at the site. From a total PCB perspective, three monitoring sites located along the tributary that bisects the site had the highest concentrations. The Aroclors present at the site are consistent with those that we see in the stream, but that doesn't mean that this site is the only source in the watershed. This site is currently enrolled in DEQ's voluntary remediation program, though EPA is not involved at this point. Their TSCA program typically gets involved when soil concentrations are above 50 ppm, which is much greater than what we see at the site from the 2007 monitoring. A participant asked about the extent of clean up that has been done at the contaminated site and the level of engagement we are seeing from the property owner. Mark touched on a few of their remediation efforts including some streambank stabilization and removal of contaminated soil around a crusher at the site.

Next steps: We will hold another TAC meeting once allocations have been set and possibly a draft report has been prepared. An endpoint will be determined as well and discussed at the next meeting.

Nesha McRae asked participants if there is anyone else who should be contacted to participate in future meetings. Robert Clemmer would be good to reach out to for the next TAC meeting (from the

LCWQAC). Brenda Meade is the City Council liaison to the committee. It is expected that the next committee meeting will be this summer at the earliest based on expected progress with model development. A participant asked whether any additional monitoring can be done at the old Rose Time Recycling site, he knows the property owner very well and could reach out to him. Mark wasn't sure if there was sufficient time to do this although DEQ would not collect samples on private property. A participant asked whether we will be able to adequately address the impairment without additional monitoring at the Rose Time site, and whether we will be able to differentiate between the active rail yard site and the contaminated site. Mark explained that at this point, the site is considered to be an uncharacterized source. Another participant asked whether Mark thought that the high concentrations we are seeing down at the mouth may be the result of sediment deposition. This could be the result of sediment deposition from upstream areas. The county has some regulated area down around this area that includes some industries that may need to be considered. A participant asked about the possibility of completing additional sampling on Middle River to capture potential impacts of the wastewater treatment plant. Mark explained that Middle River is not impaired by PCBs and given that the treatment facility discharges directly to Middle River, it would not be a potential source in Lewis Creek. The participant responded with concerns of the high concentrations of PCBs at the watershed outlet and their potential impact on Middle River. There is a small tributary down at the outlet that is contained within the county's MS4 service area that includes GE and Westinghouse properties along with American Safety Razor. Additional monitoring to determine potential impacts from these properties would be helpful. DEQ can explore this option. Upon further exploration, it looks like the GE and Westinghouse sites are draining to a tributary that goes directly to Middle River.

Nesha and Mark thanked participants for attending and for their great questions and comments and the meeting was adjourned.