James, Maury, Jackson River Benthic TMDL

Final Public Meeting: February 15, 2024 (5:30 p.m. – 7:10 p.m.)

Presenter: Mark Richards, Department of Environmental Quality

Meeting Summary

Mark Richards (DEQ) welcomed participants to the meeting and announced that the TMDL study report is up on the DEQ website, and that his presentation will be posted on the web early to mid-next week or as soon as possible. Mark explained that the objectives of the meeting included providing a high-level review of the study, kicking off comment period where stakeholders can submit written comments. Mark noted that once the TMDL study is approved, the implementation process will begin. He provided a short overview of the study timeline beginning in 2017 when DEQ completed field data collection for this project (sediment, water, fish, flow data collection). The first public meeting for the project was held in January 2021, followed by a Technical Advisory Committee (TAC) meeting in February 2021. A second TAC meeting was held in July 2022, and a third meeting in November 2022. The first meeting went focused on the monitoring study results. The second and third meetings focused on PCB endpoint development and allocation scenarios. EPA conducted a preliminary review of the study this past summer (2023).

Mark provided some background information on polychlorinated biphenyls (PCBs) including their molecular structure. DEQ regulates PCBs based on total PCB concentrations (there are 209 compounds that are summed to come up with this value). PCBs have always been considered a legacy contaminant and were banned in the US in 1977. As we have developed more TMDLs, we have found them to be present in the environment with upland sources continuing to contribute to instream loads. The Toxic Substances Control Act (TSCA), passed in 1976, regulates PCBs. TSCA allows for the inadvertent manufacture of PCBs (up to 50 ppm). Virginia regulates PCBs based on our water quality criterion. We have a fish tissue threshold of 18 ppb. The Virginia Department of Health (VDH) also has a fish tissue threshold of 100 ppb. DEQ's fish tissue criterion is directly related to our water quality criterion, resulting in a threshold far lower than VDH's. If fish tissue concentrations exceed 100 ppb, VDH will issue a fish consumption advisory, which triggers an impairment listing. DEQ may also list a stream as impaired based on exceedance of water quality or fish tissue criterion.

Mark moved on to summarize the TMDL development process, noting the criteria for delisting of a PCB impairment (based on meeting both fish tissue and water quality criterion). He explained that PCBs are very persistent in the environment and present a human health concern as a suspected carcinogen and may have a secondary effect on reproduction and development. PCBs bioaccumulate in the environment at low concentrations and can be biomagnified. The PCB TMDL development process started with a low-level PCB analysis that can detect PCBs at levels below the water quality criterion. The next step in the process is to identify PCB sources and estimate their loads. A computer model is used to link sources to targets and estimate total loads, then TMDL allocations are developed based on estimated reductions needed to meet the water quality and fish tissue criteria.

Mark shared a map of the PCB impairments. VDH issued fish consumption advisories in 2004 for the James River mainstem (170 miles) and a segment of the Maury River (16 miles). DEQ listed a segment of the Jackson River (~13 miles) as impaired in 2008 and VDH issued an additional advisory for a 59 mile reach of the James River in 2020. Mark showed a map of PCB fish tissue monitoring locations beginning

in 1995, extending to 2021. Mark noted that there are plans for additional monitoring this coming summer (2024).

Mark shared a series of figures showing average fish tissue concentrations for the impaired rivers, noting instances when DEQ and VDH's impairment thresholds were exceeded. Mark noted that when you move from upstream to downstream on the James River, you see PCB concentrations go up. There are hot spots around Lynchburg and Richmond. Data collected by DEQ between 2017 and 2019 were used to calibrate and validate the model used to develop the TMDL. Mark shared that the low-level testing method used for this study was Method 1668.

Mark shared a map of water monitoring locations in the project area. Water samples were collected under low flow conditions and elevated high flow conditions, when more suspended sediment is moving through the system (PCBs attach to sediment). Twenty-six (26) sediment samples were collected in the project area to augment what has previously been collected by DEQ. Some of the monitoring sites were located below dams to capture more sediment from deposition. These data also show PCB concentrations increasing as you move downstream on the James River.

Mark reviewed source categories that comprise the PCB TMDL equation. The wasteload allocation includes permitted facilities. The other part of the TMDL equation is the load allocation, which includes non-permitted PCB sources associated with contaminated sites including rail yards, electric utility transformer pads and Brownfield sites. DEQ also worked with its Voluntary Remediation Program staff to identify other contaminated sites. Another component of the load allocation is the nonregulated surface load. This includes unregulated stormwater, small tributaries carrying PCBs, and unidentified contaminated sites. Atmospheric deposition and streambed sediment are also included in the load allocation. Streambed sediment includes loads from legacy contamination. A participant asked what is included under the industrial facilities category. Mark explained that several different types of facilities would fall under this category where industrial activity resulted in PCB production. This includes manufacturing facilities and could also include landfills to name a couple of possibilities.

Mark explained that TMDL endpoints are developed to meet site specific conditions, accounting for bioaccumulation of PCBs in fish tissue, ensuring that TMDL endpoints are protective of local water quality. Site specific values account for all possible exposure pathways.

Mark shared a map of the overall project area divided into four different subwatersheds for which site specific endpoints were developed. Three scenarios were evaluated when selecting an endpoint for each of the four subwatersheds. Scenario 3, which specified that consumption advisory fish species with a sample size greater than or equal to 8, was selected as the best endpoint development scenario. This decision was discussed in detail during the second advisory committee meeting.

The Hydrologic Simulation Program Fortran (HSPF) model was used to develop the TMDL. This model is very effective at simulating concentrations of PCBs. There are three components to the model (hydrology, sediment transport, PCB fate and transport). Mark discussed how the model is used to simulate the fate and transport of PCBs in the project area.

Mark shared the model results, showing charts of annual relative contributions to PCB concentrations from sources in each of the four subwatersheds. He also shared a chart showing the reductions needed from each source in each subwatershed to meet the site-specific endpoints. Mark noted that in the

Jackson River, the unregulated surface load comprises an estimated 63% of PCBs in the system. A 56% reduction from permitted PCB sources in the Jackson River watershed is needed. In the Maury River, permitted facilities comprise the greatest proportion of the PCB load (68%), and a 99% reduction from this source is needed to restore the river. In the Upper James River, permitted facilities also contribute the greatest portion of PCBs in the watershed (79%). A 99% reduction from permitted sites is also needed in this portion of the watershed. In the Lower James watershed, permitted facilities contribute an estimated 46% of PCBs in the river, while upstream sources contribute an estimated 35%. A 98% reduction is needed from permitted facilities in this section of the watershed.

Mark moved on to discuss the TMDL implementation process. The process for addressing PCB contamination has two pathways. For point sources, goals are accomplished through development of a Pollutant Minimization Plan, which is BMP based rather than end of pipe treatment. The goal is to trace sources of PCBs in the system. Municipal facilities can look at effluent and influent and depending what the influent shows, move upstream in the system to target hot spots. A participant asked for clarification on what is defined as influent. Mark explained that for sewage treatment systems, influent is untreated waste. A participant noted that it sounds like DEQ's main approach to implementation is tracing back sources for facilities. They asked whether DEQ is looking to localities to place additional regulation on the discharge of PCBs since current federal regulations allow for a certain discharge of PCBs. Mark responded that TSCA's regulation of PCBs is not based on end of pipe concentrations. What is allowed by TSCA is not necessarily released in the environment in the same way as PCBs would be released from a WWTP. Mark noted that this is definitely a challenge since we are dealing with a banned substance, and that the bulk of the contamination that is out there could be in old pipes, and old spills that have remained in the system. There may also be industrial facilities (that discharge to the municipal system) contributing PCBs on a daily basis that no one is aware of. Addressing non point sources will begin with using the available PCB (congener) data to assist with targeted monitoring and eventual investigation of hot spots, hopefully leading to detection of uncharacterized sources. Once identified, the source of these hot spots and responsible parties must be identified.

A pollutant minimization plan focuses on that backtrack/source ID process, remediation BMPs and reevaluation of baseline loads. Mark added that estimated existing loads applied in the TMDL are based on a study completed in 2016 using the Standard Industrial Classification categories. DEQ used data that were collected from similar SIC based facilities around the state, and performed statistical analyses to determine which categories had the potential to contribute PCBs. We asked many facilities in the James River watershed to collect samples to screen for PCBs but did not have many facilities volunteer to conduct this monitoring. Therefore, one of the first steps in the implementation process is to include the screening of effluent from these facilities to determine whether concentrations/loads match estimated values used to develop the TMDL. If monitoring shows that values are below what is needed in the TMDL, the remediation process for these facilities is considered complete provided sufficient screening samples are provided (e.g., two for industrial facilities).

A participant asked how the allocation for Municipal Separate Storm Sewer Systems (MS4s) was calculated. The MS4 loading and allocations were driven by the model using the different landuses. The City of Roanoke has done a good job of studying their MS4 and were PCBs are likely coming from. To address PCBs, Mark explained that MS4s can first conduct a tabletop exercise for their action plans looking at different land uses in their service areas as a first step. As the WLA is aggregated by the specific watershed area, each MS4 area would have to determine their portion of the wasteload

allocation. There are some basic guidelines in the MS4 guidance as to what would be required in an MS4 action plan. A participant asked what an MS4 was and what MS4 stands for (it's a Municipal Separate Storm Sewer System). A participant asked what the 99% reduction for a permitted facility equates to. Mark explained that it comprises a collective 99% reduction for all permitted facilities, but this value might not be uniformly applied to all those facilities (e.g., not all facilities have to reduce 99% as their allocation will depend on factors such as the concentration/load from their facility along with their discharge rate/volume. A participant asked how monitoring results for baseline conditions should be shared. Mark responded that these data are submitted to DEQ. DEQ has a guidance document on the website regarding how to go about collecting samples and who to send it to. Facilities usually submit these data to regional water permit writers who they work with on other permit compliance issues. A participant asked about the different PCB analysis methods (608 versus 1668), Mark referred to the reference document on the website that describes the method to use. A participant asked when the TMDL will go into effect. Mark said it could be 6 months to a year. A participant asked whether there is anything a wastewater treatment plant can do to treat PCBs before they are discharged if they are detected in the system. Mark explained that it is really difficult to treat PCBs. PCBs can settle out into solids, but the best thing to do is to actually remove the source if possible. A participant asked what would be involved in removing a source and how a Pollutant Minimization Plan would describe that process. The first step in the plan will be to collect screening data to compare with the load that was assigned in the TMDL. If it exceeds the wasteload allocation, then the next step for the facility is to do an overall review of historic uses of the property, looking for spills and records of any other sources. For a stormwater outfall, the goal is to keep PCBs from conveying from the pipe when it rains. For a municipal system, the goal would be to look at the influent/effluent and trace contamination back to potential source areas in the system. A participant asked if they should focus on stormwater if they don't have any sort of (continuous) discharge from their facility. Mark responded that in this instance the focus should be on stormwater, explaining that we do see a lot of inputs of PCBs during rainfall events. A participant asked whether compliance with these allocations is treated similarly to compliance with stormwater benchmark goals rather than a permit limit. Mark responded that compliance with these two goals is treated similarly. The PCB reductions for permitted facilities are expected to be meet using a "non-numeric", BMP based approach. For an individual permit like a larger municipality, DEQ includes a special condition that spells out first steps in the implementation process. Typically this requires submittal of a pollutant minimization plan with a schedule. The schedule then becomes the enforceable process rather than a numeric limit. A participant asked if you have a permit that does not require testing, whether you will be required to complete testing at a later date. Mark explained that if your facility was excluded from DEQ's initial request for screening testing, it is not a likely source. A participant added that if they did the testing and it came back below the TMDL amount, they shouldn't be required to continue testing. Mark agreed that if the initial testing does not show PCBs present, permittees do not need to continue testing. The exception includes large individual permits (e.g., municipal systems) that would be required to screen/monitor for PCBs once every five years during a permit cycle. A participant asked how compliance with the TMDL is determined, will facilities work with their permit writers at DEQ? Mark noted that guidance regarding compliance is currently under development and will hopefully be in place by the time this TMDL is approved. While DEQ has the ability to require that a facility begin working to meet TMDL reductions once the TMDL is completed, this requirement is typically introduced during the next permit reissuance. A participant asked if the TMDL accounts for PCB contributions after 2021 (when monitoring was completed). Mark explained that the

objective is to restore the water body, so once this happens, the end goal has been achieved. A participant asked what kind of monitoring will be done to assess progress in meeting TMDL goals. Mark explained that DEQ will continue fish tissue monitoring, which is typically done on a 3 year cycle in perpetuity. If sufficient clean up or reductions have occurred, that should be the endpoint for the whole project. A participant asked if testing shows improvement, will allocations for facilities be revisited? Mark explained that they way he would envision the process going forward is that if testing shows that fish are meeting the criterion, some level of monitoring would be needed to ensure that we are still meeting the TMDL, but that this should really be considered the end of the clean up process. A participant noted that a lot of participants are not familiar with this process, and that when guidance is issued, it would be helpful to expand more on potential sources of PCBs so that facility operators can really understand what they need to do to look at their operations and determine changes that are needed. In addition, it was noted that a lot of acronyms were used in the presentation, making it hard to follow. DEQ should keep this in mind when developing guidance.

Mark noted that DEQ is seeking comments starting today, through March 18th. There is a link to the study in the public notice. Anybody can reach out to the DEQ project team with any questions. An economic analysis of the proposed WLA regulations must be completed. A participant asked about needed testing and when this needs to occur. Mark explained that facilities will be expected to conduct testing once the TMDL is approved. After this happens, DEQ permit writers will reach out to individually permitted facilities to coordinate testing. For general permits, guidance is also provided to permit holders. If you are listed in the TMDL, there is no reason not to go ahead and start monitoring now. Facilities may find that they are already meeting the TMDL once they complete this monitoring. A participant asked if the draft report has wasteload allocations for individual facilities. Mark responded that it does include these for each facility. A participant asked what the reductions called for in the TMDL are based on since monitoring data wasn't available for all permitted facilities. Karen Kline (DEQ) explained that for permitted facilities, DEQ used their permitted discharge and a standard concentration based on their Standard Industrial Classification. A participant asked what period of time is used to assess fish tissue and water quality data. The assessment is conducted over a 6-year monitoring period, and two exceedances are allowed.

Mark thanked participants for attending and welcomed their comments.