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October 6, 2023

Mr. Stewart Comstock
Chief, Program Review
Maryland Dept. of the Environment
Stormwater, Dam Safety, and Flood Management Program
1800 Washington Blvd.
Baltimore, MD 21230

Dear Mr. Comstock:

Thank you for providing MDE's comments, dated September 15, 2023, on the County's biological monitoring plan entitled "Anne Arundel County Comprehensive Plan for Watershed Assessment Monitoring: Biological and Habitat Monitoring" (Plan). We have revised and updated the Plan per your review comments and re-submit with this transmittal letter. We also enclose, for your review, the Countywide Biological Monitoring Program (Program) Quality Assurance Project Plan (QAPP) that is updated for both the Program's Round 4 monitoring and the biological and habitat monitoring requirements of the MS4 Phase I Permit - 2021 Monitoring Guidelines. Further documentation regarding the Program, including protocols/quality assurance documents, can be found here: aacounty.org/public-works/bwpr/ecological-assessment-evaluation/biological-monitoring.

Specific responses to the September 15 comments are provided below:

Required Items

No. 1: Please provide the anticipated total number of sampling sites per year and over the 5-year round, and the method used to determine those numbers, including the method to determine the number of sites per PSU.

Response: Table 1 in the Plan has been updated to show the total number of samples that will be collected in each 8-digit watershed by the end of the 5-year sampling round. Between 2023 and 2027, a total of 192 samples (plus approximately 10% extra for QA/QC purposes) will be collected in the execution of the Countywide Biological Monitoring Plan (Program). The number of Program sites per Primary Sampling Unit (PSU) is currently set at eight, which was determined by power analysis during the Program update carried out prior to the commencement of Round 3 sampling work. Please also see the Probability Sampling Design narrative on pages 4-5 of the Plan and the County's Program Design Document found at aacounty.org/sites/default/files/2023-04/Design%20Update%20of%20the%20Anne%20Arundel%20County%20Biological%20Monitoring%20Program%20Round%203.pdf

No. 2: Please correct “complaint” on page 10’s third paragraph to “compliant”.

Response: Correction made.

No. 3: Please clarify why changing from rotation to non-rotation sampling would lead to data not being comparable with data collected in previous rounds using a rotating-basin approach.

Response: Our concern is that we simply do not know if compatibility between a rotating versus a non-rotation approach exists. During the last significant update of the Program, which was done for Round 3 (2017-2021), we did not evaluate this option. Additionally, Round 4 sampling began in spring 2023, so changing to a new approach now would very likely compromise comparability within Round 4 assessment years and between Round 4 and the prior rounds. We can, however, consider the potential ramifications of moving to a non-rotating basin approach at the conclusion of Round 4, during a Round 5 design update (post-2027). This is addressed on page 6 of the Plan.

No. 4: While fish sampling is not a required component, please clarify if the Countywide Biological Monitoring Program includes fish sampling. The Department is developing a database to house biological data and optional data (including fish data) can also be included. Additionally, if the County already plans to conduct summer sampling (e.g. for fish), MDE recommends following MBSS habitat protocols also in terms of the season habitat metrics are collected (majority collected in the summer) so that the data can be utilized in the BSID and other analysis.

Response: The Program does collect fish data, largely mirroring MBSS methodologies. Specific details are found in our 2023 QAPP. We collect habitat data per MBSS methodologies and MS4 program document requirements in both spring and summer index periods. Currently fish and summer habitat data are not required per the MS4 Phase I permit nor included in the MDE 2021 MS4 Monitoring Guidelines. This is addressed on page 11 of the Plan.

Recommended Items

No. 1: Rotational sampling: The Department strongly recommends adopting non-rotation sampling to have full coverage of the County every year and avoid annual variability (e.g., wet versus dry years).

Response: This is addressed above in our response to Required Item No 3. The County will continue with a rotating basin approach through the end of Round 4 (end of 2027). A non-rotational approach may be evaluated during preparations for a presumed Round 5, which would likely commence in 2028 and end in 2032.

No. 2: Fixed sites: although an ideal minimum number of fixed sites for each MS4 jurisdiction has not been determined, there is still value in revisiting sites for trend analysis.

Response: The County agrees that there is potential utility in having fixed sites as part of a biological monitoring program. We are open to discussing adding such sites at a later date when MDE has determined the actual number of fixed sites needed in each of our 8-digit watersheds.

No. 3: Continuous trace studies: the Department acknowledges the additional cost of conducting continuous trace studies and that is a recommendation that jurisdictions can opt out. The

monitoring design outlined in the monitoring guidelines can be valuable for better characterizing stream conditions of a sampling site, whether such site is fixed or randomly selected. Water quality parameters collected alongside biological sampling are used in identifying stressors causing stream's poor biological health. Datapoints collected over a period of time prior to biological sampling are more representative of the stream conditions than a single datapoint taken at the time of the sampling and would lead to more robust data for stressor identification studies.

Response: The County agrees that collection of a handful of water quality or other samples, collected over some continuous period of time before the biosample is collected, would be useful for MDE's stressor identification studies. It should be noted, however, that the Program is not designed as a stressor identification exercise, but as a watershed-level assessment to track broad trends in system ecological health, so it is unclear to us if such stressor identification work added to these efforts will result in useful outcomes. Putting that potential issue aside for the moment, even applying a simplistic "rule of 10" approach to the number of samples needed to perform this analysis would potentially add up to 80 additional water quality samples per PSU, or approximately 400 samples per Round year. Even if it was just one additional sample, however, it would double our current analytical costs. Consequently, due to the currently unknown potential time, effort, and analytical costs associated with this proposed work, the County will decline to collect these additional, optional samples.

We look forward to our continuing collaboration with MDE as we work to meet our MS4 Permit requirements for biological monitoring. If you have any questions about our responses or the updated Plan, please do not hesitate to contact me at pwmark02@aacounty.org or Chris Victoria at pwvict16@aacounty.org. We look forward to receiving approval of the Anne Arundel County Comprehensive Plan for Watershed Monitoring: Biological and Habitat Monitoring (2023).

Sincerely,



Janis Markusic
Program Manager
Ecological Assessment & Evaluation

JM/CV
Enclosure(s)

Transmittal via Email

cc: Shannon McKenrick, WPRPP, MDE
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