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Mr. Raymond Bahr
Maryland Department of the Environment
Sediment, Stormwater and Dam Safety Program
1800 Washington Boulevard
Baltimore, MD 21230

September 26, 2014

BY: U.S. mail and e-mail
RE: National Pollution Discharge Elimination System, Tentative Municipal Separate Storm Sewer System Discharge Permit for Frederick County, 11-DP-3321, MD0068357

Dear Mr. Bahr:

Thank you for the opportunity to present our views on the above-titled tentative Municipal Separate Storm Sewer System ("MS4") permit for Frederick County ("the Permit"). On behalf of our 100,000 Maryland members, the Chesapeake Bay Foundation ("CBF") is vitally interested in improving the management of polluted stormwater runoff in Frederick County. Stormwater pollution is a significant problem in Maryland and across the entire Chesapeake Bay watershed. According to the *Chesapeake Bay Total Maximum Daily Load* ("TMDL"), Maryland stormwater delivers 28 percent of Maryland's total nitrogen load, 28 percent of its total phosphorus load, and 32 percent of the state's total sediment load to the Bay. [1]

U.S. Environmental Protection Agency ("EPA") investigators and Chesapeake Bay Program scientists (respectively) estimate that the only pollution sector has increasing nitrogen trends is the suburban stormwater sector, while the other major sectors' contributions to water pollution in the Bay (*e.g.* agriculture or wastewater treatment) are being reduced.[2] In Frederick County, stormwater is a significant source of nutrients and sediments to local waters and the Bay.[3] As this round of MS4 permits are intended to be the "regulatory backbone" for achieving compliance with Watershed Implementation Plans (WIPs) under the Bay TMDL,[4] it is crucial that they contain objective, enforceable criteria and a mechanism for tracking progress throughout the permit term, such as numeric interim benchmarks or milestones and adequate monitoring. The

[1] U.S. Environmental Protection Agency, *Chesapeake Bay Total Maximum Daily Load for Nitrogen, Phosphorus and Sediment* (December 29, 2010), §4.3, at 4-5, 4-6 [hereinafter "Bay TMDL"].
[2] U.S. Environmental Protection Agency, Office of the Inspector General, *Development Growth Outpacing Progress in Watershed Efforts to Restore the Chesapeake Bay,* Evaluation Report No. 2007-P-00031, September 10, 2007, Summary Recommendations, Chesapeake Bay Program, *Bay Barometer,* CBP/TRS 293-09, EPA-903-R-09-001 (March 2009), 8. Chesapeake Bay Program, *Chesapeake Bay Watershed Model Version 5.3.2 2012-2013 Progress Runs* (March, 2014).
[3] Chesapeake Bay Model 5.3.2.
[4] Maryland Department of the Environment, *National Pollution Discharge Elimination System, [Tentative] Municipal Separate Storm Sewer System Discharge Permit for Frederick County,* 11-DP-3321 MD0068357 (2014) Part IV.A [hereinafter "the Permit" or "County Permit"].

comments and recommendations below are designed to bring Frederick County closer to compliance with their WIP and TMDL goals.

Summary

- The Permit must contain a stated prohibition against discharges which cause or contribute to the violation of water quality standards for the receiving waters.
- The Permit must include a quantification of the current loading of nitrogen, phosphorus and sediment from all identified sources in order to establish a quantitative baseline from which to assess progress towards either the Baywide or any local TMDLs and WLAs.
- The stormwater management section of the Permit allows for stormwater management exemptions and waivers, and therefore must include a requirement to account for those waivers and exemptions.
- The Permit must include a mechanism for tracking progress through the permit term, such as numeric interim benchmarks and milestones to determine compliance with the Permit terms and to allow for adaptive management.
- The Permit should include a preference for environmental site design practices (ESD) wherever reasonable.
- The Permit must require inspection and maintenance of best management practices (BMPs) at least every three years, in accordance with state law.
- The Permit must include a monitoring and assessment program which is capable of providing accurate, timely, representative, and statistically significant information on water quality countywide.

Detailed Commentary

1. The Permit must contain a stated prohibition against discharges which cause or contribute to the violation of water quality standards for the receiving waters.

State and federal laws require that all discharge permits issued under the Clean Water Act must achieve limitations necessary to meet water quality standards.[5] Federal laws and regulations prohibit the issuance of a NPDES permit "when the imposition of conditions cannot ensure compliance with the applicable water quality requirements…"[6] Under Maryland law, NPDES permits issued by the state must require that discharges authorized under such permits "will be in compliance with…surface and ground water quality standards." [7] Despite the clear mandates of state law and regulation, the tentative permit does not contain a prohibition against discharge violations, or a requirement that discharges must be in compliance with such water quality standards. If a permit does not meet the basic requirements of Maryland law and regulation, it is by definition contrary to that law and thus, "affected by an error of law." [8]

However, we understand the difficulties in meeting water quality standards when the subject of the Permit is a large system with many outfalls and many diverse and often unpredictable discharges. Therefore, we accept

[5] 33 U.S.C.S. §1311(b)(1)(C); Md. Code Ann., Envir. §9-324(a).
[6] 40 C.F.R. §122.4(d).
[7] Md. Code Regs. 26.08.04.02(A)(1).
[8] Md. Code Ann., State Gov't §10-222(h)(3)(iv) and (vi).

that meeting water quality standards within the context of an MS4 may take several permit cycles to accomplish,[9] and may be uneven among all the county's outfalls as schedules for restoration activities are implemented. The extended compliance period of five years (or possibly longer to reach water quality standards) points to the practical need for a detailed compliance schedule with enforceable interim benchmarks, in addition to the legal requirement for such a compliance schedule. The need for a compliance schedule is elaborated upon in a later section of this comment letter.

2. The Permit must include a quantification of the current loading of nitrogen, phosphorus and sediment from all identified sources in order to establish a quantitative baseline from which to assess progress towards applicable WLAs for each established TMDL for each receiving water body.

Under the terms of this Permit, the County must attain applicable WLAs for each TMDL for each receiving water body. However, under the Permit's current draft, there is no way to determine whether the practices considered or implemented are reducing pollutant loads down to the WLAs. While the Frederick County draft MS4 does require that the BMPs and restoration programs implemented under the Permit "be consistent" with the applicable WLAs, it does *not* provide a method of assessment of whether the chosen implementation strategies are actually obtaining the WLAs. Because this new permit round seeks to tie the MS4 implementation to meeting the WIP goals as mentioned above, these sources should apply Chesapeake Bay Model values or monitored Event Mean Concentrations to quantify the current loading of nitrogen, phosphorus and sediment from the existing stormwater infrastructure. This quantification is necessary to establish a baseline for meeting either the Baywide or any local TMDLs.

The recently finalized guidance manual "Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated"[10] ["MDE Accounting Guidance"] directs jurisdictions to determine the baseline of impervious surfaces in order to calculate the 20% restoration requirement. The final manual was improved from the draft as it does require properly recorded documentation of the post-2002 BMPs in order for the associated impervious surface drainage to be subtracted from the jurisdiction's baseline. However, this accounting does not provide a baseline for actual pollutant loads, and completely ignores the impervious surface for new development after 2002 even though those surfaces have some loading values. Even if new development after 2002 was supposed to follow the Stormwater Manual requirements, that manual does not require BMPs that treat 100% of the polluted runoff, meaning those areas still contribute to the polluted runoff problems. Furthermore, local governments grant a large number of exemptions and variances to those requirements. A baseline that counts only impervious surface before 2002 does not provide an accurate or useful baseline of current pollutant loadings.

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[9] The Clean Water Act specifies that municipal discharge permits must require compliance "as expediently as practicable, but in no event later than 3 years after the date of issuance…" 33 USCS §1342(p)(4)(A) – (B). However, where such compliance is not possible, "[t]he permit may…specify a schedule of compliance leading to compliance with CWA and regulations." 40 C.F.R. §122.47(a).

[10] Maryland Department of the Environment, *Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated: Guidance for National Pollutant Discharge Elimination System Stormwater Permits,* August 2014. Available at: http://www.mde.state.md.us/programs/Water/StormwaterManagementProgram/Documents/NPDES%20MS4%20Guidance%20August%2018%202014.pdf (last viewed September 15, 2014).

Proposed Language – Part E.2.b

b. Within one year of permit issuance, Frederick County shall submit to MDE for approval a restoration plan for each stormwater WLA approved by EPA prior to the effective date of the permit. The County shall submit restoration plans for subsequent TMDL WLAs within one year of EPA approval. Upon approval by MDE, these restoration plans will be enforceable under this permit. As part of the restoration plans, Frederick County shall: *i. Establish a quantitative assessment of the County's current pollutant loadings using the information collected during the source identification process required by Part IV.C of this Permit. This assessment of current loadings shall serve as the baseline from which the pollutant load reductions called for in the County's compliance schedule shall be calculated.*

2. Section IV.D.1.b. in the Permit Concerning Management Programs allows for stormwater management exemptions and waivers, and therefore must include a requirement to account for those waivers and exemptions.

The section on stormwater management (Part IV.D.1.b) must require a programmatic assessment of the impact, and full documentation, of all stormwater exemptions and waivers. Since the MDE Accounting Guidance[11] for impervious assessment calculations incorporated in the permit assume certain loads based on the era of the development (i.e. assuming ESD for post-2007 development), development that did not comply with all existing stormwater laws and regulations must be recorded and accounted for in any reduction calculations. The recently finalized MDE Accounting Guidance does now require all BMPs to be properly documented in order to be subtracted from the impervious surface assessment, but this does not account for the additional loadings that result from stormwater waivers and exemptions. Further, Maryland law requires that waivers and exemptions to stormwater management requirements granted by a county must ensure that development will not adversely impact stream quality and that the cumulative effects of the waivers are evaluated.[12] Therefore, the permit must require the county to not only document the waivers and exemptions, but also to evaluate the impacts to ensure that they will not adversely impact stream quality. Allowing exemptions and waivers without evaluating the impact to ensure there are no adverse effects would be contrary to law.

Proposed Language:

IV.D.1.b.iii. Number of stormwater exemptions issued, *including the justification for the exemption and associated pollutant load;* and

IV.D.1.b.iv. Number and type of waivers received and issued, including those for quantity control, quality control, or both. Multiple requests for waivers may be received for a single project and each should be counted separately, whether part of the same project or plan. The total number of waivers requested and granted for qualitative and quantitative control shall be documented, *along with the justification for the waivers and associated pollutant load.*

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[11] Maryland Department of the Environment, *Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated: Guidance for National Pollutant Discharge Elimination System Stormwater Permits,* June 2011. Available at: http://www.mde.state.md.us/programs/Water/StormwaterManagementProgram/Documents/NPDES%20Draft%20Guidance%206_14.pdf (last visited 8/15/2013).

[12] See COMAR 26.17.02.05(C)(1).

3. The Permit must include a mechanism for tracking progress throughout the permit term, such as numeric interim benchmarks and milestones to determine compliance with the Permit terms and to allow for adaptive management.

Frederick County is currently subject to 13 TMDLs, including those for the Chesapeake Bay.[13] Total maximum daily loads are pollution limits scientifically developed for water bodies that do not meet current water quality standards and have been designated as "impaired" under §303(d), 33 U.S.C. §1313(d) of the Clean Water Act. TMDLs express the maximum amount of a particular pollutant or pollutants which can be discharged into a water body, while allowing the water to meet water quality standards. The sources of pollution are provided "allocations:" waste load allocations ("WLAs") for point sources of pollution (e.g. industrial discharge pipes or municipal systems and outfalls), and load allocations ("LAs") for non-point sources of pollution (e.g. farmland). The allocations are set at a level calculated to permit the water body to recover and thereafter be maintained.

In order to gauge whether the appropriate reductions are being made, and WLAs being met, the Permit must require quantitative check-points along the way. The Permit fails to require the numeric benchmarks or interim standards or milestones in the implementation plan to be quantified as defined in Maryland law and under the federal Clean Water Act regulations.[14] The federal Clean Water Act requires that compliance with MS4 permits be "expeditiously as practicable, but in no event later than 3 years after the date of issuance of such permit."[15] Further, federal regulations require that "if a permit established a schedule of compliance which exceeds 1 year from the date of permit issuance, the schedule shall set forth interim requirements and the dates for their achievement."[16] There is no dispute that the draft Permit requires compliance by the end of the full five year permit cycle (excluding the common practice of administratively extending permits for many years), meaning the benchmark requirements under federal law are fully applicable.

Maryland law specifically states that where a schedule of compliance is required as a permit condition (which is the case here), "then quantitative limits shall be set for the interim period and following the final compliance date."[17] Maryland regulations allow MDE to include a compliance schedule as a condition of a permit for "existing discharges which do not comply with permit conditions, effluent limits, or water quality standards."[18] The regulations also *require* a compliance schedule longer than 9 months to include interim dates.[19] Both of these conditions are met in the Permit. The permit should clearly specify that the County must use the watershed assessment and restoration plans required under Part IV. E. to articulate specific annual pollution loading reductions and enforceable interim milestones that will be achieved by certain deadlines, necessary to meet the MS4's share of the WLAs. These should at the least and in their outermost margins be consistent with the deadlines associated with the Chesapeake Bay TMDL and the Watershed Implementation Plan, but because some of these deadlines and milestones are multi-year in nature, enforceable interim benchmarks are also required under the federal and state law cited above. Benchmarks and milestones are also essential to determining whether the implementation strategy and chosen practices are sufficient to meet the final WLAs, as is required by PART III of the draft permit. They are critical for "adaptive management," a tool which the permit states it will be using.[20] If

[13] *See* Attachment B, County Permit.
[14] See Md. Code Regs. 26.08.04.02-1(A)(3).
[15] 33 USCS §1342(p)(4)(A) and (B).
[16] 40 C.F.R. §122.47(a)(3).
[17] Md. Code Regs 26.08.04.02.1.
[18] Md. Code Regs. 26.08.04.02.
[19] Md. Code Regs. 26.08.04.02.
[20] County Permit, Part IV.D.; *see also* Frederick County MS4 Fact Sheet, page 4, 9.

the County does not have any milestones by which to gauge the efficiency of the implementation programs, the County is putting itself at risk for violating the requirement to reach WLAs by the end of the permit term or a specific subsequent permit term. In the end, the only way to ensure compliance with water quality standards is to insist upon enforceable interim waypoints so that corrections of course can be made. Considering the clear requirements under Maryland and federal law for deadlines and quantified interim standards, it would be arbitrary, capricious and otherwise contrary to law for MDE to issue a final permit to Frederick County that does not address these legal deficiencies. The restoration plan requirements outlined in Part IV. E. 2. of the draft permit clearly trigger these requirements for quantitative benchmarks under federal and Maryland law.

Undoubtedly, quantitative goals and dates certain for their attainment are not only legally required, but also necessary for enforcement under federal law to create an "enforceable framework" when compliance is going to extend beyond a single permit term. The need for clear, measurable benchmarks is reinforced in EPA's *Permit Improvement Guide:*

> "Finally, and most importantly, permit provisions should be clear, specific, measurable, and enforceable. Permits should include specific deadlines for compliance, incorporate clear performance standards, and include measurable goals or quantifiable targets for implementation. Doing so will allow permitting authorities to more easily assess compliance, and take enforcement actions as necessary."[21]

Finally, the interim benchmarks or milestones must be made fully enforceable by incorporating them into the permit via a major modification, which would trigger full public notice and comment process. Under federal and state law, modifications of a compliance schedule are a cause for a major permit modification.[22] Federal regulations further state that major permit modifications must follow all permit issuance procedures, including public notice and comment, an opportunity for a public hearing, and the right to appeal.[23] Simply stating that "the restoration plans will be enforceable under this permit" does not satisfy the regulatory requirements or provide the public their legal rights.

Proposed Language:

PART IV.E.2.b Within one year of permit issuance, Frederick County shall submit to MDE for approval a restoration plan for each stormwater WLA approved by EPA prior to the effective date of the permit. The County shall submit restoration plans for subsequent TMDL WLAs within one year of EPA approval. Upon approval by MDE, these restoration plans will be *incorporated into, and be made enforceable under, this permit via a major modification to the permit, which shall include milestones, benchmarks, and final dates for attainment of applicable WLAs. The County shall fully implement the plan upon MDE approval.*

If the County cannot demonstrate that its selected projects, programs, and controls will achieve WLAs, MDE will revise this permit to include additional controls and/or additional numeric effluent limitations sufficient to ensure that all applicable WLAs will be met. The County shall post the most current version of the plan on the County's website.

As part of the restoration plans, Frederick County shall:

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[21] U.S. EPA, *MS4 Permit Improvement Guide,* EPA 833-R-10-001 (April 2010), 5-6.
[22] 40 C.F.R. § 122.62(a)(4); Md. Code Regs. 26.08.04.10(D).
[23] 40 C.F.R. § 122.62 (cross-referencing 40 C.F.R. Part 124).

i. Include *a compliance schedule containing* the final date for meeting applicable WLAs and *interim milestones and numeric benchmarks. Final attainment dates shall be set as the soonest possible date by which each WLA can be attained and shall be consistent with the deadlines associated with the Chesapeake Bay TMDL and associated Watershed Implementation Plans*.

a. Numeric benchmarks will specify annual pollutant load reductions and will be used to assess progress toward attainment of milestones and ultimate WLA attainment;

b. Interim milestones will be expressed as a pollutant load reduction, with associated deadlines for attainment, will be enforceable upon incorporation into the permit, and will be included where final attainment of applicable WLAs requires more than five (5) years. Milestone intervals will be as frequent as possible but will in no case be less frequent than every five(5) years;

ii. Include a detailed schedule for implementing all structural and nonstructural water quality projects, enhanced stormwater management programs, *illicit discharge detection and elimination program, erosion and sediment control program*, and alternative stormwater control initiatives necessary for meeting applicable WLAs, *along with provision of the basis for the chosen approach, through demonstration with modeling of how each applicable WLA (and associated benchmarks and milestones) will be attained using the chosen projects, programs, and controls, by the date for ultimate attainment*;

iii. Establish a quantitative assessment of the County's current pollutant loadings using the information collected during the source identification process required by Part IV.C of this Permit. This assessment of current loadings shall serve as the baseline from which the pollutant load reductions called for in the County's compliance schedule shall be calculated;

~~ii.~~ iv. Provide detailed cost estimates for individual projects, programs, controls, and plan implementation *and maintenance;*

~~iii.~~ v. Evaluate and track the implementation of restoration plans through monitoring *and* modeling to document the progress toward meeting established benchmarks, deadlines, and stormwater WLAs; and

~~iv.~~ vi. Develop an ongoing, iterative process that continuously implements structural and nonstructural restoration projects, program enhancements, new and additional programs, and alternative BMPs where EPA approved TMDL stormwater WLAs are not being met according to the benchmarks and deadlines established as part of the County's watershed assessments. *If data indicate failure to meet any applicable WLA, including failure to attain any interim milestone or benchmark, the County shall make appropriate adjustments to its programs and controls within (6) months to address these failures.*

4. The Permit must include specific, objective criteria for stormwater management and restoration, and include a preference for ESD green infrastructure practices.

The current permit requires compliance with state stormwater regulations. This is, of course, the standard, fall-back approach for the general application of standards under an NPDES permit. In this instance, however – given the exigencies and challenges of meeting the deadlines set under the Chesapeake Bay TMDL, the continuing impairment of many of the County's waters as evidenced by local TMDLs, and the continuing difficulties of meeting water quality standards in Frederick County under Maryland law – it is neither a sufficient nor a reasonable approach, nor is it the only lawful one that may be taken.

Section 402(p), 33 U.S.C. §1342(p) of the CWA mandates that municipal permits must require controls that reduce pollutant discharges to the maximum extent practicable. According to case law, the term "maximum extent practicable" imposes a duty to fulfill the statutory command to the extent that it is at all technologically feasible[24] or physically possible.[25] Furthermore, §402(p)(3)(B)(iii), 33 U.S.C. §1342(p)(3)(B)(iii) states that "permits for discharges from municipal storm sewers…shall require…such other provision as the Administrator…determines appropriate for the control of such pollutants." With the County's continuing problems meeting water quality standards, as evidenced by the ten TMDLs, together with the necessity of meeting WLAs, this permit must institute or impose *all* the controls and the *highest* levels of management and treatment that are *capable of being put into practice* – most decidedly not standard practices.[26] At the very least, this would mean expressing the strongest of preferences for ESD. And under such challenging circumstances, findings or convincing evidence that the simple application of the state's basic standards will produce the results necessary for meeting WLAs and water quality standards under this permit should be provided.[27] No such supporting evidence, however, has been adduced by MDE.

Clearly, a set of performance standards which go above and beyond the regular state stormwater standards that might ordinarily apply in the County are required – and are fully permitted by law to be imposed. This was the judgment of the U.S. EPA when it promulgated the MS4 permit for the District of Columbia recently: the then-current stormwater management requirements under District regulation were not deemed strong enough to effect the sea-change in pollution loading reductions demanded by the Chesapeake Bay and other TMDLs, and by the City's on-going failures to meet water quality standards.

This permit should impose a higher performance standard in Frederick County, similar to that chosen for the District of Columbia's permit and similar to that used in numerous states and local jurisdictions around the country: i.e. the on-site retention and treatment of at least the *full* 98th percentile, 24-hour storm event from a 72-hour antecedent dry period (about 2.7 inches of treatment). While the Frederick County MS4 Fact Sheet states that this standard is being used, it is not required by the terms of the permit itself. This approach has many benefits, such as flexibility as it responds to "real time" changes in precipitation patterns over the next several years, its ability to accommodate any differences in precipitation across a permit area, and its alignment with the level of performance required for federal construction projects. This performance-based approach should be done primarily through Environmental Site Design (ESD) or "green infrastructure," as recommended in many EPA guidance documents.[28]

Environmental site design (ESD) represents the "MEP technology" for stormwater pollutant reduction in most circumstances. ESD is defined by the Maryland Stormwater Management Act of 2007 as "using small-scale

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[24] *NC Wildlife Federation v. NC Division of Water Quality,* 5 E.H.R. 2055, 6 E.H.R. 0164, at 21 (Oct. 2006) (citing to several 9th Cir. Cases). [hereinafter *NC Wildlife*].

[25] *Defenders of Wildlife v. Babbitt,* 130 F.Supp.2d 121, 131 (D.D.C. 2001); *Friends of Boundary Waters Wilderness v. Thomas,* 53 F.3d 881, 885 (8th Cir. 1995).

[26] *NC Wildlife,* at 21-22.

[27] *In re Gov't of D.C. Mun. Separate Storm Sewer Sys.,* 10 E.A.D. 323 *at* 324, 343, 2002 WL 257698 (EPA) ("…there is nothing in the record, apart from the District's section 401 certification, that supports the conclusion that the Permit would, in fact, achieve water quality standards. Without such record support, the Board cannot conclude that the approach selected by the Region is rational…").

[28] *See, e.g.,* Protecting Water Quality with Green Infrastructure in EPA Water Permitting and Enforcement Programs, signed by Nancy Stoner, Acting Assistant Administrator, Office of Water, and Cynthia Giles, Assistant Administrator, Office of Enforcement and Compliance Assurance, April 20, 2011.

stormwater management practices, nonstructural techniques, and better site planning to mimic natural hydrologic runoff characteristics and minimize the impact of land development on water resources."[29] ESD techniques include engineered technologies like green roofs and rain gardens, along with nonstructural techniques like conservation of natural landscapes and minimization of impervious surfaces. Maryland regulations state that stormwater management programs should "implement[ ] environmental site design to the maximum extent practicable and us[e] the appropriate structural best management practices only when necessary."[30] To be consistent with this state mandate, the language proposed below specifies that ESD must be used unless impracticable.

Proposed Language

Section IV.E.2.a

By the end of this permit term, Frederick County shall commence and complete the implementation of restoration efforts for twenty percent of the County's impervious surface area that has not already been restored to the MEP, *in addition to any impervious surface area which the County is under a previous obligation to restore. Such restoration efforts shall be designed to meet the standards of "woods in good condition" through evapotranspiration, infiltration, and/or reuse using Environmental Site Design retrofit techniques, unless the County demonstrates that:*

(i) Sole use of such techniques to meet the requirements of this section is impracticable and the County has exhausted all reasonable opportunities to use ESD to meet this requirement, and

(ii) That other types of restoration techniques will, in combination with ESD techniques, be adequate to achieve all applicable benchmarks, milestones, and final deadlines for attainment of WLAs and protect or restore the physical and biological integrity of the County's streams and rivers.

5. The permit must require inspection and maintenance of BMPs at least every three years, in accordance with state law.

Some failing infrastructure is easy to see, such as potholes and rotting bridges. Failing stormwater systems are not. Stormwater facilities can become clogged by trash, debris, sediments, or other stormwater pollutants. The facilities themselves can develop structural cracks and leaks over time. Unmaintained stormwater management structures lose effectiveness and provide little to no water quality benefits.[31] Stormwater management systems require regular maintenance, which varies depending on the facility but usually involves removing debris, dredging accumulated sediments, ensuring native plants are healthy, and removing invasive species. A facility that is neglected too long often requires time- and money-intensive repairs.

What's more, Maryland law requires that all county and municipal ordinances provide for inspection and maintenance of all completed ESD treatment practices and structural stormwater management measures.[32] Inspections must be done during the first year of operation and then at least once every three years thereafter.[33] Placing such requirements in a permit as well as in state regulation will make them enforceable as permit standards.

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[29] Md. Code Ann., Envir. § 4-201.1(b).

[30] COMAR 26.17.02.01(A).

[31] *See, e.g.,* Watershed Management Institute, Inc., US EPA, *Operation, Maintenance, and Management of Stormwater Management Systems,* August 1997.

[32] COMAR 26.17.02.11.

[33] *Id*.

Proposed Language
In a new section titled "Maintenance of Stormwater Management Practices" – this can replace Section IV.D.1.d (regarding inspections):

d. Maintenance of Stormwater Management Practices

i. County Owned and Operated Practices

Within 18 months of the effective date of this permit, the County shall develop and implement a maintenance plan for all County-owned and operated stormwater management practices. This plan shall be designed to ensure that these practices are properly maintained so that they operate as designed, are safe, and are free from trash. The plan shall provide for the inspection of all practices at least once every three years and shall identify the means by which the County will keep the practices properly maintained. The County shall submit documentation in its annual reports identifying the practices inspected, the number of maintenance inspections performed, the County's inspection schedules, the actions used to ensure compliance, and any other relevant information.

ii. Non-County Owned and Operated Practices

In conjunction with updating of relevant ordinances and policies, as required by COMAR 26.17.02, the County shall develop accountability mechanisms to ensure maintenance of stormwater control measures on non-County property. Those mechanisms may include combinations of deed restrictions, ordinances, maintenance agreements, or other policies deemed appropriate by the permittee. The County must also include a long-term maintenance verification process, which may include County inspections, 3rd party inspections, owner/operator certification on a frequency deemed appropriate by the permittee, and/or other mechanisms.

6. The Permit must include a monitoring and assessment program which is capable of providing accurate, timely, representative, and statistically significant information on water quality countywide.

The only way that the County and MDE can determine whether, or the extent to which, this MS4 permit for the County is working and accomplishing the difficult task of reducing stormwater pollution to the County's streams and rivers, is to carefully and effectively monitor various streams and outfalls for those impacts. This is especially true since the permit contemplates an iterative or adaptive process that regularly reviews the performance of restoration activities and management practices and makes adjustments as necessary to better accomplish the objective of meeting waste load allocations and attaining water quality standards. The monitoring and assessment program presented in this permit towards that end falls woefully short of providing such utility.

"Assessment of controls" is noted in the permit as "critical for determining the effectiveness of the NPDES stormwater management program and progress toward improving water quality."[34] We agree. However, under "Watershed Restoration Assessment," the permit contemplates monitoring of just *one* small *sub*-watershed for this purpose, the Peter Pan Run watershed. This sub-watershed is not sufficient to provide meaningful information about the larger watershed in which it is located, much less provide information about the County as a whole. Monitoring the chemical and biological components of only one outfall in a system of approximately 250 "major" and many more minor outfalls is insufficient. For example, please see the attached expert report from CBF's Senior Regional Water Quality Scientist regarding a nearly identical monitoring plan proposed for Baltimore City.[35] Both

[34] County Permit at Part IV.F.

[35] Attachment I, Beth McGee, Ph.D., "Monitoring and Stormwater Management Assessment Under the Tentative Baltimore City Municipal Separate Storm Sewer System Permit" (September 4, 2012).

monitoring plans propose to monitor only one small watershed for physical parameters and two small watershed for biological, chemical and physical parameters. The similarities between the two proposed monitoring plans make this expert report's principles and analysis applies equally in this case.

Despite the assertion of MDE that the combination of data from these one or two sites, combined with equally small sets of data from other counties, is sufficient to develop an overall profile of how BMPs are generally working statewide, it is not the "general" but the "specific," in *this* specific county, which this permit is about. The minimal proposed monitoring is scientifically insufficient to support a complex permit, and to help determine the effectiveness of BMP and retrofit regimes over time – as is crucial for adaptive management. It is also contrary to federal guidance[36] and certain federal laws.[37] An effective monitoring and assessment program is essential.

Finally, in order to achieve the most informative and useful data, CBF recommends working with county staff to establish representative sampling programs using flow-rated composite sampling to better ascertain the effectiveness of individual BMPs or combined treatment systems where influent and effluent samples can be collected. Flow-rated composite sampling is more consistent with watershed characterization studies being conducted by US Geologic Survey at the watershed scale, already being conducted by staff in many counties and will help fill gaps in bay-wide analyses with efficiency information from appropriately scaled local actions.

Conclusion

The Chesapeake Bay TMDL asserts, quite appropriately, that NPDES permits (such as the County's tentative MS4 permit under consideration here) "provide the reasonable assurance that the [WLAs] in the TMDL will be achieved."[38] As noted previously, such permits form the basic Clean Water Act infrastructure connecting the TMDL's science with the State's Watershed Implementation Plans, and giving the latter the implementation platform necessary for success.

CBF appreciates the Department's careful consideration of the comments and recommendations above, and believes that the success in Frederick County depends upon the incorporation of these key principles:

1. A stated prohibition against discharges which cause or contribute to the violation of water quality standards for the receiving waters;
2. A quantification of current baseline loadings;
3. A reasonable compliance schedule, with interim numeric benchmarks, for attaining WLAs and measuring progress to be used as enforceable parts of the permit;
4. Accounting for the impact of stormwater management waivers and exemptions;
5. A preference for environmental site design practices (ESD) where reasonable and appropriate;
6. An inspection and maintenance program for implementation of best management practices; and
7. A monitoring and assessment program that is capable of returning useful data on water quality,

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[36] *E.g.* U.S. Environmental Protection Agency Region 3, *Urban Stormwater Approach for the Mid-Atlantic Region and the Chesapeake Bay Watershed* (July 2010), at IV(A)(8), which reads: "Pursuant to 40 C.F.R. §122.48(i), Phase I permits must include relevant, interpretable and statistically significant evaluation and monitoring provisions."

[37] *See* 40 C.F.R. §122.44(i), concerning monitoring requirements in all permits as applicable. *See also,* 40 C.F.R. §122.48(b), which specifies that permits shall contain monitoring, "including type, intervals, and frequency sufficient to yield data which are representative of the monitoring activity including, when appropriate, continuous monitoring."

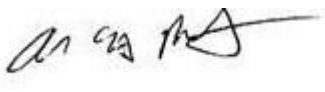
[38] U.S. Environmental Protection Agency, *Chesapeake Bay Total Maximum Daily Load for Nitrogen, Phosphorus and Sediment*, December 29, 2010.

County-wide, as well as on the effects of stormwater management practices and controls under this permit, as required by regulation.

The tentative draft Frederick County permit under consideration is notably better than previous permit cycles, but as set out above, it does not yet meet the obligations of the law, nor does it meet the administrative law standard of being reasonable rather than arbitrary and capricious in the respects enumerated. The recommended changes and comments are necessary to meet the challenge of the Chesapeake Bay TMDL and the many local TMDLs. We sincerely hope the Department will make the appropriate changes to accomplish these ends, and we pledge to assist in any way we can.

Again, thank you for the opportunity to present these comments.

Yours sincerely,



Alison Prost
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CHESAPEAKE BAY FOUNDATION
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ATTACHMENT 1

Monitoring and Stormwater Management Assessment Under the Tentative Baltimore City Municipal Separate Storm Sewer System Permit

Report of Beth McGee, Ph.D.

Introduction

My name is Dr. Beth McGee and I am the Senior Water Quality Scientist at the Chesapeake Bay Foundation (CBF) in Annapolis, Maryland. I hold a B.A. in Biology from the University of Virginia, an M.S. in Ecology from the University of Delaware, and a Ph.D. in Environmental Science from the University of Maryland. For more than 20 years, I have been active in Chesapeake Bay water quality issues, conducting research, and serving on technical subcommittees and advisory groups. I have published numerous peer-reviewed papers and served on a National Academy of Sciences Committee, as well as the Society of Environmental Toxicology and Chemistry's Board of Directors. In addition, I have worked for a variety of state and federal agencies, including the U.S. Fish and Wildlife Service, U.S. Environmental Protection Agency (EPA), and the Maryland Department of the Environment (MDE).

In this instance, I have been asked by CBF to review and comment upon the monitoring program proposed in the tentative National Pollutant Discharge Elimination System Permit for the Baltimore City Municipal Separate Storm Sewer System ["MS4"], NPDES Permit No. MD0068292, MDE Permit No. 11-DP-3315 (June 12, 2012). In sum, in my professional opinion, the monitoring and assessment program proposed in the tentative permit:

(1) Runs counter to best practices described in certain EPA and other expert guidance on this topic;

(2) Compares unfavorably with monitoring and assessment programs referenced in similar permits elsewhere around the country and readily utilized by other municipal permittees; and

(3) Is wholly inadequate to the task of assessing how effective the permit will be in reducing the impact of stormwater-borne pollution into the creeks and streams of the City and the Bay.

This three-part rationale is explained below.

First, however, it is useful to describe the proposed monitoring program.[1] The permit describes a simple and, in my opinion, inadequate two-part monitoring and assessment regime. The permittee, Baltimore City, would be tasked with monitoring certain physical parameters in a single, small watershed (Stony Run, which has a 3.3 square mile watershed) presumably to determine the effectiveness of stormwater management practices for stream channel protection across the City. Second, the City would be required to continue monitoring a single stormwater outfall and a single, associated in-stream station in Moores Run (a stream which has a 3.6 square mile watershed), for certain chemical, biological, and physical parameters, to help the state collect water quality information. These two elements constitute the full extent of the monitoring and assessment program in the tentative permit.

Report Rationale

(1) Expert Guidance and Federal Regulation

With respect to professional or expert guidance, in my opinion, the best and most appropriate references are three documents in particular. First, in July 2010, EPA published its *Urban Stormwater Approach for the Mid-Atlantic Region and the Chesapeake Bay Watershed*. In this guidance document, Part IV(A)(8) refers to water quality monitoring requirements, referencing relevant NPDES permit-writing regulations: "Pursuant to 40 C.F.R. §122.44(i), Phase I permits must include relevant, interpretable, and statistically significant evaluation and monitoring provisions…".[2]

Second, in 2009, EPA co-sponsored and published an excellent manual describing how an effective stormwater monitoring program that focuses upon Best Management Practice (BMP) performance evaluation should be constructed (available at http://water.epa.gov/scitech/wastetech/guide/stormwater/monitor.cfm)[3]. The manual extensively describes both BMP and water quality monitoring protocols.

The third reference is to the National Academies of Science, National Research Council scholarly report, *Urban Stormwater Management in the United States* (2008).[4] Chapter 4 represents the eminent research committee's considered views on monitoring and modeling. "The biggest issue," the report noted, "is the number of data points needed. In many cases, insufficient data are collected to address the objectives of a monitoring program with a reasonable amount of confidence and power."[5] The report suggests that sampling at multiple

[1] Tentative *National Pollutant Discharge Elimination System Permit for the Baltimore City Municipal Separate Storm Sewer System*, NPDES Permit No. MD0068292, MDE Permit No. 11-DP-3315 (June 12, 2012), Part III(F)(1) and (2).

[2] U.S. Environmental Protection Agency, *Urban Stormwater Approach for the Mid-Atlantic Region and the Chesapeake Bay Watershed* (July 2010), Part IV(A)(8).

[3] Geosyntec Consultants and Wright Water Engineers, Inc. (for U.S. EPA et al.), *Urban Stormwater BMP Performance Monitoring* (October 2009).

[4] National Academies of Science, National Research Council, *Urban Stormwater Management in the United States* (2008); *see* Chapter 4 in general.

[5] Id. at 267.

sites, with several samples/events chronicled per year can, over the course of five-year permit cycle, provide a reasonable calculation of average conditions and effects.[6]

This report would be remiss, however, if it did not mention an article that is critical of so-called "representative stormwater runoff monitoring." Robert Chandler published a critique in the proceedings of a 1999 Water Resources Planning and Management Conference,[7] in which he stated his belief that characterizing the quality of stormwater runoff from "representative" land use areas and types, given their variability and the expense involved, was not worth the effort. He noted that there were likely sufficient data already available from "various sources" in most any region that could be analyzed so that, when aggregated, they would likely provide stormwater runoff information of equal value. (He also noted that, on the other hand, "[p]roperly designed research efforts…on the efficiencies and effectiveness of urban best management practices (BMPs) are always valid monitoring endeavors."[8])

The problem with Dr. Chandler's assumptions about extensive stormwater runoff data already being available for analyses is, first, that these data are simply not equally available everywhere in the country or even in our region; second, that the "rich pool" of data to which he specifically refers were collected more than twenty years ago using a federal research effort[9]; and third, that what are crucial in our situation are the specific data on specific streams at issue, not the general or aggregated data from streams in one or several broad, multi-state regions. The Chesapeake Bay watershed, now subject to the Chesapeake Bay TMDL and its Waste Load Allocations ("WLAs"), requires much better, more contemporary, and more specific data than referenced by Chandler, to measure runoff in particular major Phase I MS4 permittee jurisdictions in the 2012-2017 timeframe. That is why particularized monitoring and data collection is, in my opinion, necessary and useful.

Finally, there are several important regulatory references of particular note. While referring specifically to a large municipality's application for a stormwater permit rather than to the permit itself, one federal regulation provides a good general description of the minimum monitoring expected. 40 C.F.R. §122.26(d)(2)(iii) describes a Phase I permitee/applicant's minimum monitoring program: quantitative data from at least 5-10 representative outfalls in drainages representative of various land uses; estimates of annual pollutant loads from cumulative discharges to waters of the United States from all identified municipal outfalls; and a monitoring program that would collect representative data over the term of the permit. 40 C.F.R. §122.44(i) pertains to and describes types of monitoring requirements appropriate to various NPDES permits, as applicable to the types of systems being monitored. 40 C.F.R. §122.48(b) summarizes permit requirements for monitoring, "including type, intervals, and frequency sufficient to yield data which are representative of the monitored activity including, when appropriate, continuous monitoring."

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[6] Id. at 266.

[7] Chandler, Robert D., Ph.D., "The Case Against Representative Stormwater Runoff Monitoring," in Wilson, Erin M., *Preparing for the 21st Century: Water Resources Planning and Management Conference '99 Proceedings* (1999).

[8] Id. at 14.

[9] While there are newer data bases to mine for helpful general information (e.g. the Nationwide Stormwater Quality Database or "NSQD"), they unfortunately do not resolve the site/locality-specific problem noted here.

(2) The Experience of Other MS4 Permittees

In addition to guidance documents and regulations, MS4 permits promulgated around the country provide real world examples of substantially broader and better monitoring programs than the one contained in the subject permit. In our own Mid-Atlantic EPA Region 3, in 2011 EPA promulgated an MS4 permit for the District of Columbia which details the components of an extensive monitoring and assessment program adequate to determine whether WLAs are being timely attained , due within two years of permit issuance. In an interim phase, six representative wet weather monitoring sites are designated, nine pollutants are specified, and dry weather screening processes are also outlined.[10]

As another example, the Phase I MS4 permit for Portland, Oregon contains a monitoring program that evaluates 15-16 sites, chosen probabilistically for stormwater and in-stream water quality, sampled several times/events yearly; and three continuous in-stream monitoring stations.[11] The City of Sacramento, California performs receiving-water monitoring on both the Sacramento and American Rivers at least six times annually at several locations; creek monitoring for various constituents on multiple creeks several times annually, during both wet and dry seasons; and urban discharge monitoring during rain events at three outlet/discharge locations, approximately five times yearly.[12] Florida Phase I MS4 jurisdictions follow exacting state guidance in constructing their extensive monitoring programs.[13]

Similarly, the City of Raleigh, North Carolina conducts a rigorous NPDES permit monitoring program at 18 locations four times annually, with field measurements for 11 parameters/pollutants; benthos are sampled annually at 22 stream locations; four BMP locations are regularly sampled for inflow and outflow pollutants during rain events.[14] Under its NPDES permit, Greensboro, North Carolina has conducted a regular program of monthly sampling that monitors ambient conditions at 20 sites representing the major land uses in the City and County.[15] Both grab samples to capture "first flush" runoff, and three-hour, time-weighted composite samples are taken at multiple locations. Several dozen fish and macroinvertebrate sites also are located around the City, and lakes/reservoirs undergo monthly monitoring at multiple sites.

Clearly, if one compares the tentative permit's monitoring program to those of other such programs in many jurisdictions around the country, the proposed Baltimore City MS4 permit's monitoring program falls woefully short.

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[10] U.S. EPA, NPDES Permit No. DC0000221, *Authorization to Discharge Under the national Pollutant discharge Elimination System Municipal Separate Storm Sewer System Permit* (Sept. 30, 2011), at §5.

[11] http://www.deq.state.or.us/wq/wqpermit/docs/individual/npdes/ph1ms4/portland/PortlandMS4Permit201101131.pdf (last viewed August 20, 2012).

[12] http://www.sacstormwater.org/AboutSQIP/ProgramInformation/NPDESWaterDischargeRequirements.pdf (last viewed Aug. 2, 2012)

[13] Florida Department of Environmental Protection, *Guidance for Preparing Monitoring Plans as Required for Phase I Municipal Separate Sewer System (MS4) Permits* (August 1, 2009), found at http://www.dep.state.fl.us/water/stormwater/npdes/docs/phase1-ms4-monitor-plan-guidance.pdf.

[14] www.raleighnc.gov/environment/content/PWksStormwater/ (last viewed July 17, 2012).

[15] http://www.greensboro-nc.gov/index.aspx?page=2300 (last viewed August 20, 2012).

(3) Professional Judgment

Finally, in my own professional opinion, the proposed monitoring program is technically deficient. The program constitutes monitoring two small watersheds comprising just seven square miles within a 92 square mile jurisdiction which has multiple, geographically distinct streams and watersheds, as well as 350 major stormwater outfalls. In the one case where physical, chemical and biological data are collected (Moores Run), the program would monitor a single stormwater outfall and one sampling station.

Conclusion

In sum, a more rigorous, well-designed, representative, and statistically significant monitoring and assessment program is needed. Such a program would: (1) effectively calculate stormwater pollutant loadings from major outfalls, and provide scientifically valid information on the ambient condition of major streams and watersheds; and (2) evaluate the overall effectiveness of the City's stormwater management program. In particular, such a program should be able to evaluate the panoply of BMPs and watershed restoration practices the state and City are promoting and which are then being installed (as described in the Phase I NPDES MS4 permit and subsequent restoration plans), with technically sufficient sampling from different areas of the City representative of different land use types or watershed profiles, in particular from areas where such practices and restoration activities are taking place.

Beth McGee, Ph.D.
September 4, 2012