NATURAL RESOURCES DEFENSE COUNCIL

together with

ANACOSTIA RIVERKEEPER · ANACOSTIA WATERSHED SOCIETY
ASSATEAGUE COASTAL TRUST/ASSATEAGUE COASTKEEPER
AUDUBON NATURALIST SOCIETY
CHESAPEAKE BAY FOUNDATION · CLEAN WATER ACTION
COMMUNITY & ENVIRONMENTAL DEFENSE SERVICES
FRIENDS OF LOWER BEAVERDAM CREEK · MARYLAND CHAPTER, SIERRA CLUB
MATTAWOMAN WATERSHED SOCIETY · PATUXENT RIVERKEEPER

September 20, 2012

Maryland Department of the Environment
Sediment, Stormwater and Dam Safety Program
c/o Mr. Brian Clevenger
1800 Washington Boulevard
Baltimore, MD 21230
bclevenger@mde.state.md.us

Re: Comments on Draft MS4 Permit No. 11-DP-3315 / MD0068292 for Baltimore City, Maryland

Dear Mr. Clevenger:

Thank you for this opportunity to comment on Draft Permit No. 11-DP-3315 / MD0068292, the National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) discharge permit for the City of Baltimore ("the Draft Permit").[1] This Draft Permit is critically important to Maryland's efforts to clean up water bodies in Baltimore and, further downstream, the Chesapeake Bay. These water bodies are vitally important in their own right, but this permit has a special significance insofar as MDE has indicated to our groups that it intends to use this permit as a model for others across the state.

These comments are submitted on behalf of the Natural Resources Defense Council, together with Anacostia Riverkeeper, Anacostia Watershed Society, Assateague Coastal Trust/Assateague Coastkeeper, Audubon Naturalist Society, Chesapeake Bay Foundation, Clean Water Action,

[1] Maryland Department of the Environment, National Pollutant Discharge Elimination System Municipal Separate Storm Sewer System Discharge Permit, Permit Number 11-DP-3315 / MD0068292 (June 2012), *available at* http://www.mde.state.md.us/programs/Water/StormwaterManagementProgram/Pages/programs/waterprograms/sedimentandstormwater/storm_gen_permit.aspx (hereinafter "Draft Permit").

Community & Environmental Defense Services, Friends of Lower Beaverdam Creek, Maryland Chapter of the Sierra Club, Mattawoman Watershed Society, and Patuxent Riverkeeper, which are nationwide and local environmental organizations working to protect and restore water quality in Maryland and the Chesapeake Bay region through advocacy, enforcement, and education. Members of these groups use and enjoy waters adversely affected by Baltimore City MS4 discharges, including the Patapsco River and Baltimore Harbor.

We are concerned that the Draft Permit in several aspects fails to meet the requirements of federal and state law, and is inadequate to control pollution and protect the region's waters, which are threatened by persistent, pervasive pollution from urban runoff. In sum:

- The Draft Permit's failure to ensure compliance with water quality standards and total maximum daily loads violates state and federal law. The Draft Permit must be revised to make clear that discharges from the permittee's MS4 that cause or contribute to the violation of water quality standards are prohibited, and to require that the MS4 must attain wasteload allocations by a date certain, in compliance with TMDL implementation plans (or "restoration plans") that MDE will approve and incorporate into the Draft Permit as an enforceable permit term.

- The Draft Permit fails to require the permittee to reduce its discharge of stormwater pollution to the maximum extent practicable for two reasons. First, the Draft Permit's restoration requirements fall short of MEP because they do not require the use of environmental site design (ESD) practices. Second, the Draft Permit's many vague requirements and lack of MDE review of permittee-developed programs cannot ensure that the permittee will *in fact* reduce its discharge of pollutants to the maximum extent practicable.

- The Draft Permit contains unlawful monitoring requirements that are completely insufficient to yield data representative of Baltimore City's stormwater discharges, or to assure compliance with the limitations contained within the Draft Permit.

- The Draft Permit unlawfully does not provide for public hearings on the permittee's watershed assessments or restoration plans. In addition, the Draft Permit makes no provision at all for public input on the permittee's stormwater management programs, in violation of Maryland law.

We enclose with these comments a flash drive containing all of the references cited herein, and we incorporate them as attachments.

I. Standards Governing Adoption of the Draft Permit

MDE may only issue a discharge permit upon its determination that the discharge meets all state and federal legal requirements.[2] In addition to compliance with this substantive legal standard, MDE must comply with the well-settled standards that govern the Department's administrative decision making. Under Maryland administrative law principles, the Department's issuance of a NPDES permit may not be arbitrary or capricious.[3] An administrative agency's actions will be classified as arbitrary and capricious if they are "unreasonable or without a rational basis."[4]

The Draft Permit must therefore be supported by evidence that justifies MDE's decision to include, or not to include, specific requirements. Moreover, MDE would violate these precepts if the Draft Permit ultimately failed to contain findings explaining the reasons why certain control measures and standards were selected while others were omitted. Maryland law requires that MDE provide evidentiary support for its permitting decisions sufficient to show that a "reasoning mind reasonably could have reached the factual decision the agency reached."[5]

As discussed below, at this juncture neither the Draft Permit, accompanying fact sheet, nor other documents that have been made available to the public suffice to meet these obligations. Consequently, we strongly urge MDE to strengthen the permit in accordance with the recommendations and requirements set forth in these comments.

II. Water Quality in Receiving Waters Does Not Meet Clean Water Act Requirements

In developing the MS4 permitting program, Congress and the U.S. Environmental Protection Agency (EPA) recognized the serious damage polluted stormwater runoff causes local waterways. The wisdom of that judgment remains true today: according to the National Research Council, "Stormwater runoff from the built environment remains one of the great challenges of modern water pollution control, as this source of contamination is a principal contributor to water quality impairment of water bodies nationwide."[6] Locally, stormwater from rain or snow melt runs through Baltimore City's MS4 and flows untreated into local waterways. Stormwater is the fastest growing source of pollution to the Chesapeake Bay.[7] In Maryland, stormwater contributes 22.4 percent of phosphorus, 18.2 percent of nitrogen, and 39.4 percent of sediment loads to the Bay.[8]

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[2] Md. Code Ann., Envir. § 9-324(a).
[3] *See Assateague Coastkeeper v. MDE*, 200 Md. App. 665 (Md. App. 2011).
[4] *Dep't of Human Res., Baltimore City Dep't of Soc. Servs. v. Hayward*, 426 Md. 638, 647 (2012).
[5] *See Assateague*, 200 Md. App. at 693, 696.
[6] National Research Council, *Urban Stormwater Management in the United States* vii (2008), *available at* http://www.epa.gov/npdes/pubs/nrc_stormwaterreport.pdf (hereinafter "*Urban Stormwater*").
[7] Chesapeake Bay Program, "Stormwater Runoff," http://www.chesapeakebay.net/issues/issue/stormwater_runoff (last visited Sept. 4, 2012).
[8] Maryland Baystat, "Causes of the Problems," http://www.baystat.maryland.gov/sources2.html (last visited Sept. 5, 2012).

Baltimore City has thousands of storm sewer outfalls that discharge stormwater, and associated pollution, directly into local water bodies.[9] Urban runoff from the city's storm sewer is a cause of impairment for the Patapsco River, Back River, Jones Falls, Gwynns Falls, and other Baltimore City water bodies.[10] In addition, portions of Baltimore Harbor are impaired for pathogens like *Enterococcus*, which are commonly associated with MS4 discharge.[11]

MDE issued Baltimore City its first MS4 permit in 1993. Though the current Draft Permit represents Baltimore's fourth MS4 permit cycle, poor water quality continues to plague the city. In fact, Maryland's 2012 draft listing of impaired surface waters shows that no water bodies in Baltimore City (or, in fact, in all of Maryland) meet all applicable water quality standards.[12] Water body impairment persists in Baltimore despite total maximum daily loads (TMDLs) having been developed for many local water bodies as long ago as 2002.[13] (Many local waters, however, still await TMDL development by MDE.[14]) This marked lack of progress in achieving water quality standards confirms the need for an effective and enforceable MS4 permit that will stem stormwater pollution and achieve improvements in water quality.

III. The Draft Permit's Failure to Ensure Compliance with Water Quality Standards and Total Maximum Daily Loads Violates State and Federal Law

The Draft Permit cannot serve as an effective or lawful regulatory tool to clean up local Baltimore City water bodies unless and until it ensures compliance with water quality standards (WQS) and total maximum daily loads (TMDLs), as required by the federal Clean Water Act and Maryland law.

The stated goal of the Clean Water Act is the complete elimination of the discharge of pollutants into the Nation's waters.[15] In keeping with this goal, the Act requires each state to adopt and submit for federal approval water quality standards for all waters within its boundaries.[16] When Congress enacted the 1972 amendments that created the modern Clean Water Act, Council on Environmental Quality (CEQ) Chairman Train explained the role of water quality standards,

[9] City of Baltimore, "Planning/Comprehensive Master Plan/Water Resources Element/Stormwater RunOff/Non-Point Pollution Prevention," http://www.baltimorecity.gov/Government/AgenciesDepartments/Planning/ComprehensiveMasterPlan/WaterResourcesElement/StormwaterRunOffNonPointPollutionPrevention.aspx (last visited Sept. 4, 2012).

[10] Maryland Department of the Environment, *Maryland's Final Draft 2012 Integrated Report of Surface Water Quality* (July 23, 2012), *available at* http://www.mde.state.md.us/programs/Water/TMDL/Integrated303dReports/Pages/2012_IR.aspx.

[11] *Id.;* NRC, *Urban Stormwater* at 22 ("A variety of studies have shown that stormwater runoff is a vector of pathogens with potential human health implications in both freshwater (Calderon et al., 1991) and marine waters (Dwight et al., 2004; Colford et al., 2007).").

[12] MDE, *2012 Integrated Report* (listing no water bodies as Category 1 waters ("water bodies that meet all water quality standards and no use is threatened")).

[13] *Id.* at Part F.4 (Category 4a Waters).

[14] *Id.* at Part F.7 (Category 5 Waters).

[15] 33 U.S.C. § 1251(a).

[16] 33 U.S.C. §§ 1311(b)(1)(C), 1313.

stating, "Speaking very generally, the whole permit program is tied to the water quality program standards and is a mechanism designed to reach those standards."[17]

For this reason, the Act and implementing regulations require that all NPDES permits must include conditions adequate to "ensure compliance" with applicable water quality standards.[18] Further, the regulations require each NPDES permit to contain limitations on all pollutants or pollutant parameters that "are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard."[19] The EPA's Environmental Appeals Board has held that this requirement applies equally to MS4 permits.[20] In the words of EPA's General Counsel, "[t]he better reading of Sections 402(p)(3)(B) and 301(b)(1)(C) [of the Clean Water Act] is that all permits for MS4s must include any requirements necessary to achieve compliance with WQS."[21]

In accordance with this federal requirement, Maryland law authorizes MDE to issue discharge permits *only* upon a determination that the discharge "is or will be in compliance with all applicable requirements of: … [s]urface and ground water quality standards."[22] Maryland courts agree: "The MDE may issue a discharge permit upon its determination that the terms of the permit meet all state and federal regulations, *water quality standards*, and appropriate effluent limits."[23]

In addition, all NPDES permits must contain requirements "consistent with the assumptions and requirements of any available wasteload allocation."[24] Wasteload allocations (WLAs) represent the maximum amount of pollutant that a source – such as the Baltimore City MS4 – can discharge into a water body each day and still attain water quality standards, in accordance with that water body's total maximum daily load (TMDL).[25] Once a point source such as an MS4 is assigned a WLA, that WLA must be implemented through a NPDES permit.[26] EPA guidance clearly states that the regulatory requirement to be "consistent with" WLAs means that "the permit's administrative record needs to provide an adequate demonstration that, where a best

[17] Remarks of CEQ Chairman Train, 92 Cong. S4340 (June 22, 1971).
[18] 40 C.F.R. § 122.4(d); *see also* 33 U.S.C. §§ 1311(b)(1)(C), 1342(a).
[19] 40 C.F.R. § 122.44(d)(1)(i).
[20] *In re Government of the District of Columbia Municipal Separate Storm Sewer System*, 10 E.A.D. 323, 329, 335-43 (EAB 2002).
[21] Memorandum from E. Donald Elliott, Assistant Administrator and General Counsel, EPA, re: Compliance with Water Quality Standards in NPDES Permits Issued to Municipal Separate Storm Sewer Systems (Jan. 9, 1991) at 1.
[22] Md. Code Regs. 26.08.04.02(A)(1)(b); *see also* Md. Code Ann., Envir. § 9-324(a); *Assateague Coastkeeper v. MDE*, 200 Md. App. 665, 677 (Md. App. 2011).
[23] *Northwest Land Corp. v. MDE*, 104 Md. App. 471, 479 (Md. App. 1995) (emphasis added).
[24] 40 C.F.R. § 122.44(d)(1)(vii)(B).
[25] 33 U.S.C. § 1313; 40 C.F.R. § 130.2(h).
[26] *See Friends of the Earth, Inc. v. EPA*, 446 F.3d 140, 143 (D.C. Cir. 2006) ("Once approved by EPA, TMDLs must be incorporated into permits.").

management practice (BMP)-based approach to permit limitations is selected, the BMPs required by the permit will be sufficient to implement applicable WLAs."[27]

MDE itself has recognized the critical importance of implementing TMDL WLAs through MS4 permits: within the text of the Draft Permit itself, MDE states, "Maryland's NPDES stormwater permits issued to Baltimore City and other municipalities will … be used as the regulatory backbone for controlling urban pollutants toward meeting the Chesapeake Bay TMDL by 2025."[28] As MDE clearly understands, if WLAs are not incorporated as enforceable permit terms, they are nothing more than aspirational targets that dischargers will never be compelled to attain.

Despite the clear legal requirement for the Draft Permit to ensure compliance with WQS and TMDL WLAs, it does not do so. In fact, the Draft Permit specifically excuses Baltimore City from complying with water quality standards through its "safe harbor" provision, which states: "Compliance with the conditions contained in this permit shall constitute adequate progress toward compliance with Maryland's receiving water quality standards."[29] The Draft Permit explains this unlawful provision by stating: "The application of the MEP standard is an iterative process, which should continually adapt to current conditions and BMP effectiveness while striving to attain water quality standards."[30] This statement wholly misunderstands the MEP standard, which is a technology-based standard distinct from the Clean Water Act's water quality-based requirements, as described more fully in Section IV below.

The Draft Permit's approach to WQS compliance may be acceptable in certain cases when a permit's conditions set out a clear and enforceable path toward attainment by a certain future date, such as through a compliance schedule or implementation plan. Federal regulations provide that if WQS or WLA compliance cannot be achieved immediately, a "permit may, when appropriate, specify a schedule of compliance leading to compliance with CWA and regulations."[31] The Clean Water Act defines a schedule of compliance as "a schedule of remedial measures including an enforceable sequence of actions or operations leading to compliance with an effluent limitation, other limitation, prohibition, or standard."[32] Schedules must be designed to achieve compliance "as soon as possible, but not later than the applicable statutory deadline under the CWA."[33] Maryland regulations confirm that compliance schedules must require the permittee to achieve compliance within "the shortest reasonable time consistent

[27] Memorandum from James A. Hanlon, Director, EPA Office of Wastewater Management, re: Revisions to the November 22, 2002 Memorandum "Establishing Total Maximum Daily Load (TMDL) Wasteload Allocations (WLAs) for Storm Water Sources and NPDES Permit Requirements Based on Those WLAs" (Nov. 12, 2010) at 4; *see also* 40 C.F.R. §§ 124.8, 124.9, 124.18.
[28] Draft Permit at V.A.
[29] Draft Permit at VI.A.
[30] *Id.*
[31] 40 C.F.R. § 122.47(a).
[32] 33 U.S.C. § 1362(17); *see also* Md. Code Regs. 26.08.01.01(B)(79).
[33] 40 C.F.R. § 122.47(a)(1).

with the requirements of the Federal [Clean Water] Act and State law or regulation."[34] Compliance schedules that are longer than one year in duration must set forth interim requirements and dates for their achievement.[35]

The Draft Permit lacks any compliance schedule or plan meeting these requirements. The Draft Permit does not require Baltimore City to attain its WLAs either immediately or by *any* future date – only to "show progress" toward meeting WLAs.[36] This vague and unenforceable standard fails to satisfy federal or state legal requirements for permit terms that must assure compliance with WLAs and other standards.

While the Draft Permit does require the permittee to "[s]pecify pollutant load reduction benchmarks and deadlines that demonstrate progress toward meeting all applicable stormwater WLAs," this requirement does not compel the permittee to develop a full schedule leading to attainment as soon as possible, by a future date certain.[37] Even more fundamentally, these "benchmarks and deadlines" are to be contained within the permittee's "watershed assessments," documents which are not incorporated into the permit and which consequently are not enforceable by MDE or the public. Additionally, while the Draft Permit requires Baltimore City to "[i]nclude a detailed schedule for implementing all structural and nonstructural water quality projects, enhanced stormwater management programs, and alternative stormwater control initiatives necessary for meeting applicable WLAs," this provision could potentially be interpreted to require schedules for the implementation of projects and programs, not for attainment of WLAs or pollution reduction targets.[38] Finally, the Draft Permit makes no provision for the attainment of water quality standards in impaired water bodies that lack TMDLs.

These aspects of the Draft Permit are not only unlawful, but they also fall short of the standard set by EPA Region III's recent modifications to the Washington, DC MS4 permit.[39] Those modifications make clear that the District of Columbia must develop and comply with an enforceable schedule that sets out a plan for achieving compliance with wasteload allocations by a date certain. In particular, we believe that the proposed modifications make clear that

[34] Md. Code Regs. § 26.08.04.02(C)(2)(a)(ii).
[35] 40 C.F.R. § 122.47(a)(3).
[36] Draft Permit at III.E ("Show *progress* toward meeting WLAs" (emphasis added)), III.E.1.b.v ("Specify pollutant load reduction benchmarks and deadlines that *demonstrate progress* toward meeting all applicable stormwater WLAs" (emphasis added)), III.E.2.c.iii ("Evaluate and track the implementation of restoration plans through monitoring or modeling to *document progress* toward meeting established benchmarks, deadlines, and stormwater WLAs" (emphasis added)), III.E.4 ("Baltimore City shall evaluate and document the *progress* toward meeting all applicable stormwater WLAs" (emphasis added)).
[37] Draft Permit at III.E.1.b.v.
[38] Draft Permit at III.E.2.c.i.
[39] EPA Region III, Draft Modification #1, NPDES Permit No. DC0000221 (proposed July 12, 2012), *available at* http://www.epa.gov/reg3wapd/pdf/pdf_npdes/Wastewater/DC/DC%20MS4%20Draft%20Permit%20Mod_1%2011Jul12.pdf.

compliance with an EPA-approved compliance schedule (contained within TMDL Implementation Plans) is the only acceptable substitute for immediate compliance with wasteload allocations and water quality standards. The modifications also specify that the elements of the District's compliance schedule are enforceable as permit provisions, and that they contain "final attainment dates" along with an "associated narrative" to explain how the District's selected programs and projects will achieve the needed pollutant and volume reductions.[40] MDE should strengthen the Baltimore City permit requirements according to this example, particularly given that EPA Region III has stated that it intends the Washington, DC MS4 permit to serve as a model for other permits in the Chesapeake Bay watershed.[41]

In addition to delaying the achievement of water quality standards indefinitely, a failure to require attainment with WLAs may preclude new discharges within the MS4's jurisdiction pursuant to the Ninth Circuit's decision in *Friends of Pinto Creek v. EPA*.[42] Under that decision, no NPDES permit may be issued to a new discharger (including newly constructed buildings and developments within an MS4's jurisdiction) if the discharge will contribute to the violation of water quality standards, as is the case when new discharges of pollutants are made to waters impaired for those same pollutants.[43] A single exception to this rule exists where a TMDL has been performed, and the "new source can demonstrate that, under the TMDL, the plan is designed to bring the waters into compliance with applicable water quality standards."[44] In other words, new discharges may not be allowed, even when a TMDL for the relevant pollutant exists, unless it can be firmly established that "there are sufficient remaining pollutant load allocations under existing circumstances."[45]

Water quality standards in Baltimore City are already violated by existing discharges; according to MDE's draft 2012 Integrated Report, no water body fully supports all of its designated uses.[46] Therefore, any new or additional discharge of pollutants for which impairments already exist would necessarily contribute to a violation (unless, per Maryland jurisprudence, those discharges are offset by other reductions within the jurisdiction).[47] The Draft Permit does not guarantee that there are sufficient pollutant loads remaining under any of the TMDLs relevant to Baltimore

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[40] *Id.* at 4.
[41] Statement of Shawn M. Garvin, EPA Mid-Atlantic Regional Administrator, EPA Press Release (Apr. 21, 2010), *available at* http://yosemite.epa.gov/opa/admpress.nsf/e77fdd4f5afd88a3852576b3005a604f/ecf0fc0431afbf0b8525770c006ea74b.
[42] *Friends of Pinto Creek v. EPA*, 504 F.3d 1007, 1012 (9th Cir. 2007).
[43] *Id.*; *see also* 40 C.F.R. § 122.2 (defining "new discharge" as "any building, structure, facility, or installation: (a) From which there is or may be a 'discharge of pollutants;' … (c) Which is not a 'new source'; and (d) Which has never received a finally effective NPDES permit for discharges at that 'site'").
[44] *Friends of Pinto Creek*, 504 F.3d at 1012.
[45] *Id.*
[46] MDE, *2012 Integrated Report* (listing no water bodies as Category 1 waters ("water bodies that meet all water quality standards and no use is threatened")).
[47] *Assateague Coastkeeper*, 200 Md. App. at 711-14.

City. Consequently, if the Draft Permit is approved as currently written – providing no basis to find that any available load exists – no new or increased discharges may be authorized in the permittee's jurisdiction.

At minimum, MDE's decision not to ensure compliance with WQS or WLAs in the Draft Permit, either immediately or through a compliance schedule, is arbitrary and capricious. Even if MDE contends that the only standard applying to MS4 permits is the maximum extent practicable (MEP) standard – a contention that is not supported by law – the MEP standard still "does not permit unbridled discretion. It imposes a clear duty on the agency to fulfill the statutory command to the extent that it is feasible or possible."[48] Nowhere in the Draft Permit or accompanying fact sheet does MDE explain why it is not practicable for Baltimore City to comply with WQS and TMDLs now or by *any* date certain.

Ultimately, to comply with the Clean Water Act and Maryland law, the Draft Permit must be revised to make clear that discharges from the permittee's MS4 that cause or contribute to the violation of water quality standards are prohibited, and to require that the MS4 must attain wasteload allocations by a date certain, in compliance with TMDL implementation plans (or, per the terminology used within the Draft Permit, "restoration plans") that MDE will approve and incorporate into the Draft Permit as an enforceable permit term. Such plans must contain enforceable interim milestones so that the permittee is held accountable for staying on track. Finally, the plans must include a sound rationale for determining that the compliance schedule meets the requirement that standards be met "as soon as possible."[49]

In order to ensure that all of these requirements are satisfied, we recommend the specific permit language changes appended to these comments as Attachment A.

IV. The Draft Permit Fails to Require the Permittee to Reduce its Discharge of Stormwater Pollution to the Maximum Extent Practicable

The federal Clean Water Act (CWA) states that MS4 permits "shall require controls to reduce the discharge of pollutants to the *maximum extent practicable*," otherwise known as the "MEP" standard.[50] Likewise, CWA regulations mandate that MS4 permits "will require at a minimum that [regulated entities] develop, implement, and enforce a storm water management program designed to reduce the discharge of pollutants from [their] MS4[s] to the *maximum extent*

[48] *Defenders of Wildlife v. Babbitt*, 130 F.Supp.2d 121, 131 (D.D.C. 2001) (internal citations omitted).
[49] 40 C.F.R. § 122.47(a)(1).
[50] 33 U.S.C. § 1342(p)(3)(B)(iii) (emphasis added).

practicable."[51] Critically, it is the responsibility of the permitting authority to determine whether the permittee is meeting the MEP standard.[52]

Courts have held that the phrase "'to the maximum extent practicable' does not permit unbridled discretion. It imposes a clear duty on the agency to fulfill the statutory command to the extent that it is feasible or possible."[53] While the term "practicable" is not defined in the municipal stormwater context, "practicable" as used in a different section of the Clean Water Act has been defined as meaning that technology is required unless the costs are "wholly disproportionate" to pollution reduction benefits.[54] As one state hearing board has held:

> [MEP] means to the fullest degree technologically feasible for the protection of water quality, except where costs are wholly disproportionate to the potential benefits. … This standard requires more of Permittees than mere compliance with water quality standards or numeric effluent limitations designed to meet such standards. … The term "maximum extent practicable" in the stormwater context implies that the mitigation measures in a stormwater permit must be more than simply adopting standard practices. This definition applies particularly in areas where standard practices are already failing to protect water quality.[55]

Nor is MEP a static requirement: the standard anticipates and in fact requires new and additional controls to be included with each successive permit. As the EPA has explained, NPDES permits, including the MEP standard, will "evolve and mature over time" and must be flexible "to reflect changing conditions."[56] "EPA envisions application of the MEP standard as an iterative process. MEP should continually adapt to current conditions and BMP effectiveness and should strive to attain water quality standards. Successive iterations of the mix of BMPs and measurable goals will be driven by the objective of assuring maintenance of water quality standards."[57] In other words, successive iterations of permits for a given jurisdiction will necessarily evolve and contain new and more stringent requirements for controlling the discharge of pollutants in runoff.

The Draft Permit fails to meet the MEP standard in two important respects. First, the Draft Permit's restoration requirements fall short of MEP because they do not require the use of environmental site design (ESD) practices. Second, the Draft Permit's many vague requirements

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[51] 40 C.F.R. § 122.34(a) (emphasis added). States such as Maryland that have been delegated authority to implement the NPDES program must administer their programs in conformance with this federal requirement. 40 C.F.R. § 123.25.
[52] *Environmental Defense Center v. EPA*, 344 F.3d 832, 855-56 (9th Cir. 2003) (hereinafter "*EDC*").
[53] *Defenders of Wildlife v. Babbitt*, 130 F.Supp.2d 121, 131 (D.D.C. 2001) (internal citations omitted); *see also Friends of Boundary Waters Wilderness v. Thomas*, 53 F.3d 881, 885 (8th Cir. 1995) ("feasible" means "physically possible").
[54] *Rybachek v. EPA*, 904 F.2d 1276, 1289 (9th Cir. 1990).
[55] *North Carolina Wildlife Fed. Central Piedmont Group of the NC Sierra Club v. N.C. Division of Water Quality* 2006 WL 3890348 at Conclusions of Law 21-22 (N.C.O.A.H. Oct. 13, 2006) (internal citations omitted).
[56] 55 Fed. Reg. 47,990, 48,052 (Nov. 16, 1990).
[57] 64 Fed. Reg. 68,722, 68,754 (Dec. 8, 1999).

and lack of MDE review of permittee-developed programs cannot ensure that the permittee will *in fact* reduce its discharge of pollutants to the maximum extent practicable.

1. *The Draft Permit fails to meet the MEP standard because it does not require the use of environmental site design practices.*

The MEP standard is a technology-based standard that applies specifically to MS4s.[58] According to the EPA, technology-based standards "are based on the pollutant control capabilities of available technologies."[59] Consequently, the MEP standard requires MS4s to use the technology that will reduce their pollutant discharges to the maximum extent practicable.

Environmental site design (ESD) represents the "MEP technology" for stormwater pollutant reduction in most circumstances. ESD, also known as "green infrastructure" or "low impact development," is defined by the Maryland Stormwater Management Act of 2007 as "using small-scale 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."[60] In other words, ESD techniques seek to reduce the pollution entering water bodies by reducing the amount of runoff that reaches those waters in the first place.

Many ESD techniques accomplish this function by reducing the amount of effective impervious area on a site or in a watershed. Impacts to water quality are tied directly to the introduction of impervious surface cover in the landscape; as impervious cover increases in a watershed, runoff and pollutant loads increase, and water quality degrades. Research shows that when impervious surfaces cover as little as 5 percent of a watershed, aquatic insect and freshwater fish diversity declines significantly, and "[m]arked habitat degradation occur[s] at 8 to 10 percent total impervious area."[61] Overall stream quality diminishes when impervious cover exceeds 10 percent and becomes "severely degraded" beyond 25 percent.[62] As a result, the most effective means of addressing impacts to water quality is through addressing runoff at its source, *i.e.*, through reducing the amount of runoff that is generated by a development. This approach prevents runoff and pollutant loads from increasing in the first instance.

ESD techniques include engineered technologies like green roofs and rain gardens, along with nonstructural techniques like conservation of natural landscapes and minimization of impervious

[58] This technology-based requirement applies separately and in addition to the Clean Water Act's water quality-based requirements for all NPDES permits. *See* Section III above.
[59] U.S. EPA, "Section B. Clean Water Act Requirements," http://www.epa.gov/dfe/pubs/pwb/tech_rep/fedregs/regsectb.htm (last visited Sept. 4, 2012).
[60] Md. Code Ann., Envir. § 4-201.1(b).
[61] Earl Shaver et al., North American Lake Management Society, *Fundamentals of Urban Runoff Management: Technical and Institutional Issues* 4-98, 4-95 (2007), *available at* http://www.deq.state.ms.us/mdeq.nsf/pdf/NPS_FundamentalsofUrbanRunoffManagement/$File/Fundamentals_full_manual_lowres.pdf.
[62] Center for Watershed Protection, *Impacts of Impervious Cover on Aquatic Systems* 1 (2003), *available at* http://clear.uconn.edu/projects/TMDL/library/papers/Schueler_2003.pdf.

surfaces. Together, these techniques work to infiltrate, evapotranspirate, and reuse stormwater that otherwise would run off into storm sewers and water bodies.

ESD or green infrastructure methods have proven to be a cost-effective way of dealing with stormwater pollution. A 2007 EPA study found that "in the vast majority of cases…[ESD] practices save money for developers, property owners and communities while protecting and restoring water quality."[63] A report released this year by American Rivers, the Water Environment Federation, the American Society of Landscape Architects, and ECONorthwest found that found green infrastructure reduced or did not influence costs 75 percent of the time.[64] Additionally, ESD "provides ecosystem services and associated economic benefits that conventional stormwater controls do not."[65] These practices not only address stormwater runoff but also beautify neighborhoods, cool and cleanse the air, reduce asthma and heat-related illnesses, save on heating and cooling energy costs, boost economies, and support green jobs.[66]

MDE's regulations state that the primary goals of state and local stormwater management programs are "to maintain after development, as nearly as possible, the predevelopment runoff characteristics, and to reduce stream channel erosion, pollution, siltation and sedimentation, and local flooding."[67] These goals are best met through the use of ESD technology, which is why Maryland law states that ESD should be used in stormwater management programs whenever possible, and structural BMPs should be used "only when necessary."[68]

However, the Draft Permit allows Baltimore City to meet its "restoration" requirement through the use of non-ESD practices that have been proven to be less effective. The Draft Permit requires Baltimore City to "commence and complete the implementation of restoration efforts for twenty percent of the City's impervious surface area consistent with the methodology described in the MDE document cited in paragraph a. ['Accounting for Stormwater Wasteload Allocations and Impervious Areas Treated, Guidance for National Pollutant Discharge Elimination System Stormwater Permits' (MDE, June 2011)] that is not already restored to the MEP."[69] This guidance document, in turn, allows the use of practices other than ESD – such as extended detention – to fulfill the restoration requirement.

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[63] U.S. EPA, *Reducing Stormwater Costs through Low Impact Development (LID) Strategies and Practices* iii (2007), *available at* http://water.epa.gov/polwaste/green/costs07_index.cfm.

[64] American Rivers, Water Environment Federation, American Society of Landscape Architects & ECONorthwest, *Banking on Green: A Look at How Green Infrastructure Can Save Municipalities Money and Provide Economic Benefits Community-wide* 8, *available at* http://www.asla.org/uploadedFiles/CMS/Government_Affairs/Federal_Government_Affairs/Banking%20on%20Green%20HighRes.pdf.

[65] ECONorthwest, *The Economics of Low Impact Development: A Literature Review* iii (2007), *available at* http://www.econw.com/media/ap_files/ECONorthwest-Economics-of-LID-Literature-Review_2007.pdf.

[66] *See* Natural Resources Defense Council, *Rooftops to Rivers II: Green Strategies for Controlling Stormwater and Combined Sewer Overflows* Ch. 2 (2011), *available at* http://www.nrdc.org/water/pollution/rooftopsii/.

[67] Md. Code Regs. 26.17.02.01(A).

[68] *Id.*

[69] Draft Permit at III.E.2.b.

Extended detention practices are significantly less effective than ESD at controlling stormwater pollution because they fail to address the core problem: overall runoff volume. While reduction of pollutant loadings is important, it is secondary to the enormous runoff volumes that destroy aquatic life and mobilize sediments and nutrients by eroding stream banks. Not only do extended detention facilities fail to address this problem of overall runoff volume, they can actually exacerbate the damage by generating greater flow volumes for extended periods. According to the EPA, "[t]hose prolonged, higher discharge rates can undermine the stability of the stream channel and induce erosion, channel incision and bank cutting."[70] For this reason, the EPA has concluded that "[s]imply reducing the peak flow rate, and extending the duration of the predevelopment peak flow, is not effective because as the different discharge sources enter a stream, the hydrographs are additive, and the extended predevelopment peak flows combine to produce an overall higher than natural peak. The result is the pervasive condition of channel incising, erosion, and loss of natural stream biological and chemical function…"[71]

The Washington, DC District Department of the Environment (DDOE) agrees: in the Department's recent draft stormwater regulations, it states that while detention practices have had some benefits for District water bodies, "they have also been inadequate, particularly in terms of controlling the volume of stormwater flowing from major regulated project sites. The water quality treatment requirement provides no control of flow rates from these sites, and the 2-year storm detention requirement fails to mimic natural, pre-development conditions."[72] For this reason, the new regulations will require *retention* of stormwater, which will "more closely approximate natural conditions by keeping stormwater on site rather than allowing it to wash off in large volumes that erode land and stream banks and carry pollution into District waterbodies, thereby damaging aquatic ecosystems and limiting human use."[73]

The National Research Council's 2008 report on stormwater provides strong evidence – and a scientific consensus – that detention ponds fail to meet the full range of urban stream and watershed restoration objectives. The scientific articles relied on in that report, and EPA's interpretations of it, lead to the conclusion that detention is an obsolete practice. The reasons for this conclusion include:

- Detention does not reduce the overall volume of polluted runoff.[74]
- Detention may delay or reduce the peak flow from a particular site, but in combination with the polluted runoff from detention systems across the watershed, volume impacts are merely delayed, not mitigated, and the discharges from multiple basins are additive.[75]

[70] U.S. EPA, *Guidance for Federal Land Management in the Chesapeake Bay Watershed* 3-16 (May 12, 2010), *available at* http://water.epa.gov/polwaste/nps/upload/chesbay_chap03.pdf.
[71] *Id.* at 3-17.
[72] District Department of the Environment, Notice of Proposed Rulemaking: Stormwater Management and Soil Erosion and Sediment Control at 9 (Aug. 10, 2012), *available at* http://ddoe.dc.gov/proposedstormwaterrule.
[73] *Id.* at 8.
[74] NRC, *Urban Stormwater Management in the United States* at 33.

- Detention practices are often designed and constructed on an "ad hoc" or "site by site" basis without analysis of cumulative conditions in the watershed.[76]
- Concentrations of pollutants leaving detention ponds may be reduced, but the volume of the stormwater flows leaving them keeps pollutant discharges high.
- Detention does not protect downstream channels from the erosive effects of stormwater volume, which mobilizes sediments and destroys biota.[77]

In addition, the pollutant removal rates achieved by detention methods may have been overstated, given that much of the pollutant reduction of such methods is due to gravity settling and/or uptake by plants. Unless the sediments are dredged and removed and the plants are harvested, the nutrients they hold may become re-suspended and otherwise discharged to streams during larger storms. According to the National Research Council, nutrient reduction in such facilities is only likely to occur where plants are harvested.[78] The harvesting of plants from extended detention facilities is rare. MDE should explain that the removal efficiencies cited can only be relied on when plants are harvested, and sediment is dredged and properly disposed, at regular intervals.

In conclusion, reliance upon detention ponds and similar non-ESD methods will fail to restore Baltimore City's water bodies. Instead, ESD must be required as the MEP basis for the Draft Permit's restoration provision, for six key reasons.

(1) The major categories of ESD technologies, including bioretention, achieve consistently higher pollutant removal rates than detention ponds and other non-ESD methods.

The May 2012 report issued by the Water Environment Research Federation on the pollutant removal performance of stormwater practices in the Chesapeake Bay region supports the fact that bioretention and other ESD technologies, because they achieve volume reduction along with frequent pollutant concentration reduction, remove the Chesapeake Bay TMDL target pollutants

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[75] *Id.* at 341.
[76] *Id.* at 457; *see also* C.H. Emerson, C. Welty, & R. Traver, "Watershed-Scale Evaluation of a System of Storm Water Detention Basins," *Journal of Hydrologic Engineering*10(3): 237-242 (2005).
[77] EPA, *Guidance for Federal Land Management in the Chesapeake Bay Watershed* at 3-17; NRC, *Urban Stormwater Management in the United States* at 372; *see also* B.K. Ferguson, "The Failure of Detention and the Future of Stormwater Design," *Landscape Architecture* 81(12): 76-79 (1991); J.R. Maxted & E. Shaver, "The Use of Retention Basins to Mitigate Stormwater Impacts on Aquatic Life," in *Effects of Watershed Development and Management on Aquatic Ecosystems* 494-512 (L.A. Roesner ed., 1997) (Study of the areas downstream of eight stormwater ponds showed that the ponds were no more effective than uncontrolled sites in terms of protecting downstream aquatic life.); R.H. McCuen, "Downstream Effects of Stormwater Management Basins," *Journal of the Hydraulics Division* 105(11): 1343-1356 (1979).
[78] NRC, *Urban Stormwater Management in the United States* at 401-02.

of total suspended solids, total phosphorus, and total nitrogen at higher levels than do conventional methods, including detention ponds.[79]

The WERF report developed a method for calculating pollutant mass loading reduction by various BMPs by combining volume reduction with pollutant concentration values. The report concluded: "A number of BMPs have shown demonstrated volume reductions. Therefore, even for some BMPs where effluent concentrations are not significantly reduced (or even increased by a small amount), overall loads can be reduced."[80]

The report further presented the key pollutant load reduction values for bioretention practices compared with detention ponds:[81]

Stormwater Practice Type (based on Chesapeake Bay performance studies)	**Total Suspended Solids – Percent Removal**	**Total Kjeldahl Nitrogen[82] – Percent Removal**	**Total Phosphorus – Percent Removal**
Bioretention	75-77%	69-74%	70-77%
Detention Ponds	51-56%	18-38%	41-61%

MDE's own draft TMDL and MS4 implementation guidance indicates that ESD practices achieve consistently higher pollutant removal rates than non-ESD practices. For instance, "Wet Ponds and Wetlands" are to be credited for: 20% Total Nitrogen (TN) removal; 45% Total Phosphorus (TP) removal; and 60% Total Suspended Solids (TSS) removal. In contrast, ESD practices including Micro-Bioretention, Green Roofs, and Permeable Pavements, are to be credited for: 50% TN; 60% TP; and 90% TSS removal.[83]

Additionally, a recent study of urban stormwater practice performance and cost-effectiveness in St. Paul, Minnesota, examined annual volume and pollutant load reduction and performance

[79] Water Environment Research Federation, *International Stormwater Best Management Practices Database: BMP Performance Summary: Chesapeake Bay and Related Areas* (2012), *available at* http://www.bmpdatabase.org/Docs/BMP%20Database%20Chesapeake%20Bay%20Paper%20May%202012_Final_wAttachments.pdf.
[80] *Id*. at 33.
[81] *Id*. at 32, Table 19.
[82] Organic nitrogen, measured as Total Kjeldahl Nitrogen (TKN), includes the plant and animal matter that is contained in urban runoff. Along with Total Phosphorus, TKN is the most commonly reported nutrient compound in stormwater practice performance studies.
[83] Maryland Department of the Environment, *Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated: Guidance for National Pollutant Discharge Elimination System Permits* at 10, table 4 (Draft, June 2011).

efficiencies for 18 projects, including eight rain gardens and eight infiltration trenches.[84] Actual monitoring data for each stormwater practice unit were modeled to calculate annual performance results. The researchers found high pollutant removals for the rain gardens for all four years that were modeled (2007-2010), with rain gardens achieving a 100% removal of Total Suspended Solids in three out of the four years modeled, and achieving an 83% TSS removal rate in the fourth year.

Part of this higher pollutant removal performance is due to the fact that the majority of ESD techniques are "living systems" that employ soil and plant complexes to capture and transform pollutants along multiple pathways, in contrast to non-ESD methods such as underground tanks, ponds, and sand filters that aren't designed to reduce runoff and/or that are unable to capture and utilize both the water and the physical matter and chemical compounds in runoff. (Other ESD subcategories, such as rainwater harvesting, reduce runoff by capturing and reusing rainwater at the source.) Another reason for the higher pollutant removals achieved by bioretention and other ESD practices is the fact that by reducing total stormwater volumes discharged, total pollutant loadings are also reduced. This is a significant difference between ESD and non-ESD measures that MDE has largely overlooked thus far.

(2) ESD is the only stormwater management method that reduces and prevents stormwater discharges at the source, thus supporting the Clean Water Act's zero discharge goal.

Runoff reduction is achieved by applying ESD retrofits to either replace portions of existing imperviousness or to capture the runoff from such areas. Other stormwater management or restoration methods attempt merely to slow, temporarily store, and/or filter runoff before it reaches or after it flows into a stream. While some of these approaches may remove some pollutants, they constitute only partial treatment, not pollution prevention. In contrast, a review of six rigorous bioretention studies by the Water Environment Research Foundation (WERF) found that, on average, bioretention cells with underdrains reduced 61% of the runoff volume that flowed into them.[85]

In Baltimore, ESD practices have already been proven to be both feasible and effective at reducing stormwater runoff volumes. In four years, Blue Water Baltimore's Water Audit program – which gives cash rebates to residential homeowners for installing rain gardens and

[84] M. Baker and M. Doneux, *Urban Stormwater BMP Performance and Cost-Effectiveness* (paper presented at the July 2012 WERF Stormwater Symposium in Baltimore, Maryland).
[85] J. Clary, S. Tillick, and M. Leisenring, *Bioretention Performance Findings from the International Stormwater BMP Database* at 9, table 2 (paper presented at the September 2011 LID Symposium in Philadelphia sponsored by the Mid-Atlantic Research Consortium).

other ESD practices – has reduced the amount of runoff to Baltimore Harbor and Chesapeake Bay by over 2 million gallons per year.[86]

(3) Only ESD techniques mimic predevelopment hydrology, a technical performance standard required under Maryland and federal policy and law.

ESD technologies use a variety of functions, including rainwater harvesting and infiltration, in order to mimic predevelopment hydrology and to reduce stormwater volumes discharged to streams. ESD practices, particularly the subcategory of bioretention, use both engineered media and surrounding native soils, along with trees, shrubs, and other deep-rooted plants, to capture, infiltrate, and evapotranspirate runoff at the source – at each parking lot, roof leader, and street curb inlet. For instance, one function of pre-development hydrology that is performed by woods in good condition is shallow subsurface groundwater flow, also termed "interflow." Bioretention units have been found to retain and release water following rain events in the same way that woodlands release interflow to streams: in a slow, steady seepage. "A nonurbanized watershed and a bioretention cell release water to the draining stream in the same manner."[87]

In order to mimic predevelopment hydrology, it's crucial that a technology be able to mimic the ecological systems that produced that hydrology. Bioretention units and green roofs are examples of ESD practices that are also living systems. As such, they change and evolve over time, but they function similarly across many sites. For instance, a long-term study of ten bioretention units in Maryland found that the plants and soils initially installed undergo an evolution. This evolution gradually creates a thicker topsoil layer that is rich in organic matter. This topsoil layer, and the plant, fungi, and animal communities that create it, are key to the stormwater reduction and pollutant removal functions of bioretention units. The researcher noted: "This [bioretention topsoil] layer has properties significant to engineers, including increased porosity, increased cation exchange capacity, and increased bacterial activity."[88]

(4) ESD is the only method that enables achievement of the three core water quality objectives of urban water body restoration: pollutant removal, runoff reduction, and aquatic life community restoration.[89]

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[86] Blue Water Baltimore, "Stormwater Grant From National Fish & Wildlife Foundation Will Reduce Residential Water Pollution," http://www.bluewaterbaltimore.org/blog/nfwf_grant/ (last visited Sept. 17, 2012).
[87] K.M. DeBusk, W.F. Hunt, and D. Line, *Bioretention Outflow: Does it Mimic Non-Urban Watershed Shallow Interflow?* (presentation at the Bioretention Summit: Ask the Researcher, July 15-16, 2010, Annapolis, MD, hosted by NC State University), *available at* http://www.bae.ncsu.edu/stormwater/.
[88] E. Ayers, *Topsoil Development in Bioretention Cells: What are the Implications?* (paper presented at the September 2011 LID Symposium in Philadelphia sponsored by the Mid-Atlantic Research Consortium).
[89] D. Cameron, J. Zeidler, and D. Sheveiko, *Green Stormwater Retrofits: Objectives and Costing* (paper accepted for publication by ASCE for the conference proceedings of the September 2011 LID Symposium in Philadelphia sponsored by the Mid-Atlantic Research Consortium).

Other approaches, including ponds and stream restoration, can at best achieve two of these three objectives, but ESD is the only method that achieves all three. The aquatic life community restoration has been eclipsed by the emphasis on achieving nutrient and sediment reductions within the Chesapeake Bay TMDL and associated Watershed Implementation Plans (WIPs) (with MS4s as prime enforcement mechanisms). Yet the single most prevalent form of stream impairment in urban and urbanizing counties in Maryland is aquatic life impairment due to the "urban stream syndrome," which includes excessive stormwater volumes causing stream habitat disruptions, along with loss of riparian and upland forest cover. The health of the Bay depends on the health of all of its tributaries; they are not mere conduits. Only ESD addresses and remedies the urban stream syndrome, particularly because it provides runoff reduction to reduce or cease channel scour, groundwater base flow increases to keep streams flowing in dry weather, and increases in trees and other deep-rooted vegetation and soil-based land covers.

In Baltimore, five major watersheds and Bay tributary streams – Back River, Lower Gunpowder Falls, Jones Falls, Gwynns Falls, and the Patapsco – are listed as impaired for "lack of riparian buffer" and/or "stream channelization due to urban development."[90] These impairments are symptoms of a problem caused by excessive runoff from uncontrolled or poorly controlled impervious surfaces, combined with a dearth of riparian and upland forests and vegetation throughout these watersheds. These impairment listings are noted as replacing an earlier listing for biological impairment, but despite the wording change, the reality of biological impairment remains: few fish or macroinvertebrates can survive and reproduce in streams that are repeatedly blown out by stormwater flows, then become a dry gulch in dry weather. The restoration section of the Draft Permit must apply the best, most effective technology, ESD, to reduce and eliminate the cause of these widespread impairments.

(5) ESD retrofit techniques are technically feasible and affordable, and have been demonstrated to remain effective over many years.

A recent EPA-led study of ESD approaches found that "LID [ESD] designs can be from two to four times more cost-effective than comparable conventional designs when environmental performance is factored into the cost analysis."[91] Well designed and built bioretention units have been shown to significantly reduce runoff and stormwater pollutants, even with minimal maintenance. For instance, one long-term study of a bioinfiltration rain garden at Villanova

[90] MDE, *2012 Integrated Report* (Category 4c waters).
[91] A. Foraste, J. Thrash, R. Goo, and L. Hair, *Measuring Cost-Effectiveness of LID and Conventional Stormwater Management Plans Using Life Cycle Costs and Performance Metrics* (paper presented at the September 2011 LID Symposium in Philadelphia sponsored by the Mid-Atlantic Research Consortium).

University found no sign of decreased phosphorus removal performance over the entire nine-year monitoring period.[92]

A study of alternative, lower-cost mixes of ESD practices in Montgomery County proposed the use of a wider variety of innovative and tree-based ESD practices to enable the county to meet its MS4 imperviousness restoration requirement based on ESD.[93] The alternative ESD practices included: trees in dry ponds (conversion of ponds to ESD); riparian reforestation; and urban tree plantings in parks and residential yards. The study also highlighted five categories of lower-cost ESD measures (that have been overlooked by MDE), including expansion of parkland no-mow zones, that can save money over the long term in avoided mowing and labor costs. This costing analysis found that the unit cost of a mix of alternative ESD techniques declined over the county's currently planned, more expensive ESD mix, by 20% for a conservative scenario and close to 50% for a best-case scenario (the latter assumed that less expensive tree- and native-plant based practices were technically feasible for a wider range of urban and suburban sites). MDE should undertake a similar but more in-depth study of least-cost ESD practices, and should promote a range of methods for municipal permittees to reduce ESD costs.

(6) ESD is more versatile than other stormwater management approaches and is able to fit within both the space constraints and the local culture of dense urban neighborhoods.

For instance, consultants working with the city of Philadelphia have created a green street retrofit protocol and project that enables linear rain garden street planters to accommodate space constraints, maintenance, and competing needs for use of densely urbanized streetscapes.[94] In a New York City public housing complex, a team of stormwater retrofitters installed 3,400 square feet of bioretention cells and tracked the methods they used to overcome space limitations, underground utilities, and other ultra-urban constraints.[95]

A graduate design project in the University of Maryland Landscape Architecture Department crafted an innovative, community-based ESD-Green Infrastructure revitalization plan for Baltimore's McElderry Park.[96] This collaborative design plan calls for specific ESD technologies to revitalize an older community of rowhouses in central Baltimore. The ESD technologies include: rainwater harvesting, bioretention planters along streets and in public

[92] J. Komlos and R. Traver, *Long-Term Performance of a BioInfiltration Rain Garden for Phosphate Removal* (paper presented at the September 2011 LID Symposium in Philadelphia sponsored by the Mid-Atlantic Research Consortium).
[93] D. Cameron, J. Zeidler, and D. Sheveiko, *Green Stormwater Retrofits*.
[94] J. Hendrickson and Rod Ritchie, *Green Streets and Regional Stormwater Management Within the Public Right-of-Way: Creative Streetscape Stormwater Management Concept Prototypes within the American Street Industrial Corridor in Philadelphia* (paper presented at the September 2011 LID Symposium in Philadelphia sponsored by the Mid-Atlantic Research Consortium).
[95] M. Jones et al., *Implementation and Evaluation of Green Stormwater Retrofits to Reduce Combined Sewer Overflows at a Public Housing Facility in New York City* (paper presented at the September 2011 LID Symposium in Philadelphia sponsored by the Mid-Atlantic Research Consortium).
[96] Zoe Clarkwest, MLA Thesis, March 2012, University of Maryland Landscape Architecture Department.

areas, and an ESD water service and facility maintenance collective. The design concept was conceived over the course of dozens of meetings and conversations between the designer and local residents. The McElderry Park Project provides a model that MDE should seriously consider as a way to achieve widespread community support for ESD retrofits in dense, older towns and cities throughout Maryland.

In summary, ESD must be required as the sole technology-based approach for the Draft Permit because it is the most effective approach at pollution prevention and reduction and the only approach for volume reduction, restoration of more natural stream flow regimes, and protection of diverse aquatic biological communities. These capacities and performance abilities of ESD are unmatched by any other type or category of stormwater practice, and other commonly-used practices that MDE currently allows, particularly detention ponds, have been shown to be both ineffective in achieving key water quality and pollution prevention objective and causes of detrimental impacts downstream. Only ESD meets the Clean Water Act's mandate to control urban stormwater to the maximum extent practicable.

Accordingly, the Pollution Control Hearings Board of Washington State ruled in 2008 that green infrastructure (ESD) techniques represent the MEP, and that a permit not requiring those techniques falls short of the MEP standard.[97] The Board found: "The primary focus of detention standards is on mitigating the worst impacts of large storm events. These standards have little or no effect on small storm events, which can also cause damaging increase in flows. Stated another way, the flow control standard addresses large stormwater flow rates only, which occur only a small percentage of time (1%), and provides only residual control to runoff the remainder of the time."[98] As a result, the Board ruled that "[t]he permit's reliance on a flow control standard as the primary method to control stormwater runoff from MS4s fails to reduce pollutants to the federal MEP standard."[99]

The Board concluded, based on numerous scientific studies presented by expert witnesses, that "in order to reduce pollution in urban stormwater to the maximum extent practicable…it is necessary to aggressively employ LID [*i.e.*, ESD] practices in combination with conventional stormwater management methods."[100] Ultimately, the permit at issue in the case "fail[ed] to require that the municipalities control stormwater discharges to the maximum extent practicable…because it fail[ed] to require more extensive use of low impact development (LID) [*i.e.*, ESD] techniques."[101]

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[97] *Puget Soundkeeper Alliance et al. v. State of Washington Dep't of Ecology*, PCHB Nos. 07-021 et seq. (Aug 8, 2008), *available at* http://www.eho.wa.gov/searchdocuments/2008%20archive/pchb%2007-021,07-026,07-027,07-028,07-029,07-030,07-037%20phase%20i%20final.pdf.
[98] *Id.* at 29.
[99] *Id.* at 57.
[100] *Id.* at 58.
[101] *Id.* at 6.

As a result, in order to comply with the federal MEP standard, MDE cannot leave to the permittee the option of using restoration technologies that are less effective. Rather, MDE must require that Baltimore City use ESD wherever possible to fulfill its restoration requirement under the permit. Such a requirement is also necessary to comply with the state of Maryland's own policy in favor of implementing ESD as the preferred method of stormwater management.

Specifically, we request that the Draft Permit include the following provisions:

- The scope of required restoration must include both the 20 percent of Baltimore City's poorly controlled impervious area *and* any previously obligated but incomplete restoration;
- That the restoration of the entire inventory of required impervious acres to be restored shall be undertaken using ESD, to the extent that MDE, based on the data, reasonably determines is the MEP – the maximum extent practicable taking technical and cost considerations into account;
- That the restoration efforts shall be designed to reduce stormwater volume to a minimum standard of 1 inch of on-site retention (runoff reduction); and
- That the restoration requirement apply to the full MS4 area, not only to impaired watersheds.

Additionally, we ask that MDE revise its restoration guidance document ("Accounting for Stormwater Wasteload Allocations and Impervious Areas Treated") to require ESD, and to provide technical guidance on the use of ESD practices, in a transparent process open to all public and private stakeholders.

2. *The permit fails to meet the MEP standard because its vague requirements and lack of MDE review do not ensure that the permittee will <u>in fact</u> reduce discharges to the maximum extent practicable.*

As stated above, the Clean Water Act requires that MS4 permits contain controls to reduce the discharge of pollutants to the MEP. This requirement means that the permitting authority must include provisions in permits that will ensure that the permittee does *in fact* reduce discharges to the maximum extent practicable.[102]

However, the Draft Permit, by containing vague requirements for the permittee's programs and then failing to provide for MDE review of those programs, cannot ensure that Baltimore City will *in fact* meet the MEP standard. This result is at odds with federal law. It is not enough for a permit to direct a permittee to make a plan, on its own without regulatory and public oversight, to reduce discharges to the MEP; the permitting authority must verify that the permittee's plans

[102] *See EDC*, 344 F.3d at 855.

actually do meet the MEP standard. Rather, "[S]torm water management programs that are designed by regulated parties must, in every instance, but subject to meaningful review by an appropriate regulating entity to ensure that each such program reduces the discharge of pollutants to the maximum extent practicable."[103]

Permitting authorities must verify that all permittee plans and programs meet the MEP standard because the contents of those programs are themselves effluent limitations.[104] As a result, the contents of those plans must be reviewed by the permitting authority to ensure that they meet the legal standards applying to all effluent limitations – including, in the MS4 context, the MEP standard.[105] This legal requirement is thwarted when a permit does not contain the substantive management requirements that are to be imposed by the permit or when some or all of the requirements are left unspecified for future development by the permit applicant without review by MDE. The Draft Permit, in this regard, gives Baltimore City discretion to develop many critical control requirements with only vague guidance and directives. For example, the Draft Permit directs the permittee to develop a stormwater management program implementing Maryland's Stormwater Management Act; a public outreach and education campaign; a program to reduce pollutants associated with maintenance activities at City-owned facilities; and more.[106] Moreover, while the Draft Permit requires the permittee to submit its watershed restoration plans for MDE review and approval, no such requirement exists for the permittee's stormwater management programs developed under Part III.E of the Draft Permit.

When, as here, a permit's requirements are impermissibly general, and the programs developed pursuant to those requirements are not reviewed by the permitting authority, there is nothing to stop a permittee from "misunderstanding or misrepresenting its own stormwater situation and proposing a set of minimum measures for itself that would reduce discharges by far less than the maximum extent practicable."[107] Without clear directives for what must be included in the permittee's management plans and programs, there is no assurance that the permittee's decisions will be reasonable, in good faith, or sufficient to meet the MEP standard, or that if they do fall short of MEP, that the permit is enforceable.

Permittee self-regulation and lack of direction are well-known and acknowledged problems. As EPA Region 9 has stated, "In our review of MS4 programs…we have found that it is common for permits to rely on the development of plans to achieve certain permit objectives, rather than including prescriptive requirements in the permits…. [T]he plans often result in a reliance on qualitative provisions rather than specific measurable criteria. As a result, we have found that

[103] *Id.* at 856.
[104] *Waterkeeper Alliance v. EPA*, 399 F.3d 486, 501 (2d Cir. 2005).
[105] *Id.*; *see also EDC*, 344 F.3d at 854-56.
[106] Draft Permit at III.D.
[107] *EDC*, 344 F.3d at 855.

there is often uncertainty among both the MS4 permittees and the permitting agencies as to specific permit expectations."[108]

The Draft Permit must be modified to prevent this outcome by including more specific and objective requirements for Baltimore City's stormwater management programs, and by ensuring that MDE exercises meaningful review authority over those programs. "Specific measurable criteria" must set expectations for the plans and allow MDE and the public to measure the permittee's progress. Without such oversight, the program amounts to "impermissible self-regulation,"[109] and will not guarantee the MEP standard is met or water quality is protected.

Numerous provisions in the Draft Permit include requirements that are too vague to be enforceable. For example:

- The Draft Permit directs the permittee to use "appropriate" enforcement measures for eliminating illicit discharges without providing criteria for what "appropriate" measures would be.[110]

- The Draft Permit directs the permittee to "reduc[e]" the use of pesticides, herbicides, fertilizers, and deicing materials without specifying by how much or by which approaches or how to evaluate achievement of this goal.[111]

- The Draft Permit directs the permittee to "implement a program to reduce pollutants associated with maintenance activities at City-owned facilities" which shall include "street sweeping" and "inlet inspection and cleaning," but the Draft Permit does not provide any criteria for how often the sweeping, inspection, or cleaning should be performed, much less say how much these programs must "reduce pollutants" discharged.[112]

- The Draft Permit lacks numeric requirements similar to the green infrastructure (green roof and tree planting) requirements in the District of Columbia's MS4 permit, which are necessary to ensure objective progress toward water quality goals.[113]

These provisions (and absent provisions) provide perfect examples of what EPA's *MS4 Permit Improvement Guide* instructs agency officials *not* to do when writing permits. That Guide

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[108] Letter from Douglas E. Eberhardt, EPA, to Dale Bowyer, San Francisco Bay Regional Water Quality Control Board (April 3, 2009), at 2, *available at* http://www.swrcb.ca.gov/rwqcb2/water_issues/programs/stormwater/muni/mrp/02-11-09/comments/US_EPA.pdf.
[109] *EDC*, 344 F.3d at 843.
[110] Draft Permit at III.D.3.d.
[111] Draft Permit at III.D.5.b.
[112] Draft Permit at III.D.5.b.
[113] See EPA Region III, Permit for the District of Columbia Municipal Separate Storm Sewer System, NPDES Permit No. DC0000221, at Part 4.1.6-4.1.7 (effective Oct. 7, 2011), *available at* http://www.epa.gov/reg3wapd/pdf/pdf_npdes/Wastewater/DC/DCMS4permit2011.pdf.

recognizes that "clear, specific, measurable, and enforceable" provisions are necessary in order for permitting authorities to assess compliance and take enforcement action, if necessary.[114] The *Guide* recommends that permits "include specific deadlines for compliance, incorporate clear performance standards, and include measurable goals or quantifiable targets for implementation," recognizing that without such provisions, permitting authorities may not be able to adequately assess compliance or enforce violations.[115]

The vagueness pervasive throughout the Draft Permit provisions governing Baltimore City's implementation plans is particularly problematic because the BMPs to be contained in those plans are, in effect, the Draft Permit's *only* effluent limits. Because the Draft Permit contains no requirement for the Permittee to meet numeric effluent limits, its BMP requirements are its only pollutant limits.[116] However, the Draft Permit does not include the BMP requirements in the permit text itself but rather delegates the task of developing many BMPs to the permittee in its stormwater management program plans. Under the Draft Permit's mandates, the permittee could come up with a plan that is colorably responsive to the generalities of the Draft Permit and is thus immune from challenge or enforcement action, yet that is insufficient to achieve compliance with the MEP standard.

The Draft Permit thus fails to meet the requirements of federal law. It must be modified to include more specific requirements and to provide for MDE review of *all* plans and programs developed as post-permit effluent limitations.

V. The Draft Permit's Monitoring Requirements Are Inconsistent with the Clean Water Act and Otherwise Arbitrary and Capricious

Under the Clean Water Act, all NPDES permits are required to contain monitoring provisions sufficient to assure compliance with permit conditions, "including conditions on data and information collection, reporting, and such other requirements as [the permitting authority] deems appropriate."[117] Specifically, the Act states:

> Whenever required to carry out the objective of this chapter, including but not limited to…(2) determining whether any person is in violation of any such effluent limitation, or other limitation, prohibition or effluent standard, pretreatment standard, or standard of performance…(A) the Administrator shall require the owner or operator of any point source to…(iii) install, use, and maintain such monitoring equipment or methods

[114] U.S. Environmental Protection Agency, *MS4 Permit Improvement Guide* 5 (2010), *available at* http://www.epa.gov/npdes/pubs/ms4permit_improvement_guide.pdf.
[115] *Id.* at 5-6.
[116] Clean Water Act regulations anticipate that BMP controls may serve as a permit's effluent limits by authorizing their use where numeric limits are infeasible, as well as by defining the term "effluent limitations" to include "*any restriction*" on pollutant discharges. 40 C.F.R. § 122.44(k); 40 C.F.R. § 122.2 (emphasis added).
[117] 33 U.S.C. § 1342(a)(2).

(including where appropriate, biological monitoring methods)…as he may reasonably require.[118]

Accordingly, federal regulations require all NPDES permits to contain monitoring requirements "to assure compliance with permit limitations."[119] Stated differently, these monitoring requirements must be of the "type, intervals, and frequency sufficient to yield data which are representative of the monitored activity."[120]

In violation of these requirements, the Draft Permit contains monitoring requirements that are completely insufficient to yield data representative of Baltimore City's stormwater discharges, or to assure compliance with the limitations contained within the Draft Permit. MDE itself admits, "To build on existing information and to better track progress toward meeting TMDLs, better data are needed on ESD performance and BMP efficiencies and effectiveness."[121] However, the Draft Permit's monitoring requirements are inadequate to produce such data. The Draft Permit requires the permittee to comprehensively monitor only *one* water body (and, for that water body, only at *one* outfall and associated in-stream station), in addition to limited stream restoration monitoring in *one* other watershed.[122] As the Draft Permit's fact sheet states, "The City will be required to continue monitoring *an* approved watershed to determine the effectiveness of stormwater management practices for channel protection."[123]

This requirement is insufficient to track the performance of the permittee's restoration programs and consistent attainment of water quality standards and TMDLs. Monitoring one single water body simply cannot provide meaningful information about the overall effectiveness of Baltimore City's selected BMPs at reducing pollutant loadings and runoff volumes. This lack of information hinders the overall enforceability of the permit, particularly its requirement that the permittee "evaluate and document the progress toward meeting all applicable stormwater WLAs included in EPA approved TMDLs," including "[e]stimated pollutant load reductions from all completed structural and nonstructural water quality improvement projects, enhanced stormwater management programs, and alternative stormwater control initiatives" and "[a] comparison of the pollutant load reductions detailed above with the established benchmarks, deadlines, and applicable stormwater WLAs."[124] Numerous Baltimore City water bodies beyond Moores Run

[118] 33 U.S.C. § 1318(a).
[119] 40 C.F.R. § 122.44(i).
[120] 40 C.F.R. § 122.48(b). Maryland law confirms: "A discharge authorized by a discharge permit shall be subject to any monitoring requirements the Department deems necessary." Md. Code Regs. § 26.08.04.03(A)(1).
[121] Draft Permit at III.F.
[122] Draft Permit at III.F.1-2.
[123] Maryland Dep't of the Environment, Fact Sheet, Permit Number 11-DP-3315 / MD0068292 at 7 (June 2012), *available at* http://www.mde.state.md.us/programs/Water/StormwaterManagementProgram/SedimentandStormwaterHome/Documents/Baltimore%20City%20NPDES%20Fact%20Sheet.pdf.
[124] Draft Permit at III.E.4.

and Stony Run are subject to TMDLs, yet the Draft Permit does not require the permittee to monitor *any* of those other water bodies.[125]

As a result, MDE's decision to include these weak requirements is both inconsistent with the Clean Water Act and also arbitrary and capricious under principles of administrative decision making. As courts have noted, monitoring is essential to the entire NPDES program. "The NPDES program fundamentally relies on self-monitoring."[126] "Clearly, unless there is some method for measuring compliance, there is no way to ensure compliance."[127]

Consequently, EPA policy heavily emphasizes the importance of comprehensive monitoring requirements (in stormwater permits in particular). "The NPDES permit must also specify the monitoring necessary to determine compliance with effluent limitations. … Where effluent limits are specified as BMPs, the permit should also specify the monitoring necessary to assess if the expected load reductions attributed to BMP implementation are achieved (e.g., BMP performance data)."[128] Additionally, "EPA recommends that such permits require collecting data on the actual performance of the BMPs. These additional data may provide a basis for revised management measures. The monitoring data are likely to have other uses as well. For example, the monitoring data might indicate if it is necessary to adjust the BMPs."[129]

In requiring comprehensive monitoring in only one watershed, MDE ignores EPA's policy guidance in the Draft Permit. Instead, the Draft Permit includes monitoring provisions that will not provide information on the effectiveness of the permittee's overall programs, such that there will be no way to determine whether those programs or working or how they need to be adjusted. Moreover, there will be no way to determine with the permittee is attaining WLAs in *all* receiving waters. These monitoring requirements undermine the effectiveness of the Draft Permit and are arbitrary, capricious, unreasonable, and without rational basis.

VI. The Draft Permit's Public Participation Requirements Are Inadequate and Unlawful

Under state and federal law, MDE must provide for public review of both the Draft Permit and the programs that the permittee develops to implement that permit. As discussed above, the Draft Permit currently requires Baltimore City to develop, at a later date, many of the essential

[125] *See* MDE, *2012 Integrated Report* (listing Baltimore City water bodies other than Moores Run and Stony Run as Category 4 waters with TMDLs).
[126] *Sierra Club v. Union Oil Co.*, 813 F.2d 1480, 1491 (9th Cir. 1987), *vacated on other grounds*, 485 U.S. 931 (1988), *reinstated*, 853 F.2d 667 (9th Cir. 1988).
[127] *Champion Int'l Corp. v. EPA*, 648 F.Supp. 1390, 1395 (W.D.N.C. 1986), *vacated on other grounds*, 850 F.2d 182 (4th Cir. 1988) (upholding EPA's objection to a state-issued NPDES permit that failed to include adequate monitoring provisions, among other issues).
[128] U.S. EPA, *Establishing Total Maximum Daily Load (TMDL) Wasteload Allocations (WLAs) for Storm Water Sources and NPDES Permit Requirements Based on Those WLAs* at 2 (2002), *available at* http://www.epa.gov/npdes/pubs/final-wwtmdl.pdf (internal citations omitted).
[129] *Id.* at 5.

components of the permit's pollution control requirements. Both MDE *and* the public must review these later-developed effluent limitations.

Maryland law states that MDE must solicit public comment and hold a public hearing (when requested) regarding all tentative NPDES determinations, i.e., draft permits.[130] This requirement conforms to the federal Clean Water Act policy that permitting authorities "shall provide for, encourage, and assist the participation of the public."[131] As the Second Circuit has explained, "Congress clearly intended to guarantee the public a meaningful role in the implementation of the Clean Water Act."[132] This pivotal role is enshrined in the Act's express command that "[p]ublic participation in the development, revision, and enforcement of any regulation, standard, effluent limitation, plan, or program established by the Administrator or any State under this Act shall be provided for, encouraged, and assisted by the Administrator and the States."[133]

The public has had an opportunity to comment and testify at hearings regarding this Draft Permit. The Draft Permit, however, does not itself contain all of the substantive requirements with which the permittee must comply; rather, it defers the development of those requirements until later, when the permittee is authorized to devise its own stormwater management programs (the contents of which are themselves effluent limitations, as described above). As a result, MDE must provide for another public participation opportunity at the point when those programs are actually developed. As the Ninth Circuit has held, permittee-developed documents "that contain the substantive information about how the operator of [an] MS4 will reduce discharges to the maximum extent practicable" must be "subject to the public availability and public hearings requirements of the Clean Water Act."[134]

The Draft Permit does provide for public notice and comment after Baltimore City has developed its watershed assessments and restoration plans.[135] The Draft Permit specifies that "the City shall allow for public participation in the TMDL process, solicit input, and incorporate any relevant ideas and program improvements that can aid in achieving TMDLs and water quality standards."[136] This provision is commendable, though it should be further strengthened to specify that the permittee will hold *regular* (e.g., monthly or bimonthly) stakeholder meetings throughout the development of all restoration plans.

However, the Draft Permit does not provide for public hearings on such assessments or plans. In addition, the Draft Permit makes no provision at all for public input on the permittee's stormwater management programs developed pursuant to part III.D of the permit. These

[130] Md. Code Regs. § 26.08.04.01-2(B).
[131] 40 C.F.R. § 25.3.
[132] *EDC*, 344 F.3d at 856.
[133] 33 U.S.C. § 1251(e).
[134] *EDC*, 344 F.3d at 857.
[135] Draft Permit at III.E.3.
[136] *Id.*

management programs are to contain numerous effluent limitations with which the permittee must comply – a stormwater management program implementing Maryland's Stormwater Management Act; a public outreach and education campaign on trash; a program to reduce pollutants associated with maintenance activities at City-owned facilities; and more.[137] The public must be given the opportunity to comment and testify at hearings regarding any programs developed to implement these provisions. A permit that fails to provide this requisite degree of public participation in the development of these programs and plans violates federal and Maryland law.

VII. Conclusion

As these comments indicate, the Draft Permit requires significant improvements before it is ready to be approved, and consequently, NRDC, Anacostia Riverkeeper, Anacostia Watershed Society, Assateague Coastal Trust/Assateague Coastkeeper, Audubon Naturalist Society, Chesapeake Bay Foundation, Clean Water Action, Community & Environmental Defense Services, Friends of Lower Beaverdam Creek, Maryland Chapter of the Sierra Club, Mattawoman Watershed Society, and Patuxent Riverkeeper are strongly opposed to approval of the Draft Permit in its current form. We urge MDE to strengthen the Draft Permit in accordance with the requirements and recommendations set forth in these comments, and to bring the Draft Permit into compliance with all applicable legal requirements. Making these changes will help ensure that Baltimore City does its part to clean up local water bodies and the Chesapeake Bay.

[137] Draft Permit at III.D.

Sincerely,

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ATTACHMENT A

Proposed WLA and WQS Language for Baltimore City MS4 Permit

~~Strikethrough = deleted text~~
Underline = new text

Section III.E ("Restoration Plans and Total Maximum Daily Loads"), introductory paragraphs:

Section 402(p)(3)(B)(iii) of the Clean Water Act (CWA) states that municipal storm sewer system permits must require stormwater controls to reduce the discharge of pollutants to the MEP. By regulation at 40 CFR §122.44, EPA further requires that BMPs and programs implemented pursuant to this permit must be consistent with applicable WLAs developed under EPA approved TMDLs (see list of ~~impaired waters~~ TMDLs and their WLAs attached and incorporated as Attachment B). The ~~goals~~ requirements of Maryland's NPDES municipal stormwater permit program are to control stormwater pollutant discharges by implementing the BMPs and programs required by this permit, ~~show progress toward meeting~~ to meet WLAs, and ~~contribute to the attainment of~~ to attain water quality standards according to the CWA.

In pursuit of these ~~goals~~ requirements, Baltimore City shall annually provide watershed assessments, restoration plans, opportunities for public participation, and TMDL compliance status. A systematic assessment shall be conducted and a detailed restoration plan developed for all watersheds within Baltimore City. As required below, watershed assessments and restoration plans shall include a thorough water quality analysis, identification of water quality improvement opportunities, and a schedule for BMP and programmatic implementation to meet stormwater WLAs included in EPA approved TMDLs, by a date certain.

Section III.E.2.c (within "Restoration Plans"):

c. Within one year of permit issuance, Baltimore City shall submit to MDE a restoration plan for each stormwater WLA approved by EPA prior to the effective date of the permit, each of which is hereby incorporated by reference and listed in Attachment B of this permit. The City 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, including milestones, benchmarks, and final dates for attainment of applicable WLAs. The City shall fully implement the plan upon MDE approval. If the City 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 City shall post the most current version of the plan on the City's website. As part of these restoration plans, Baltimore City shall:

i. Include a schedule for attainment of WLAs that includes final attainment dates along with numeric interim milestones and benchmarks which shall specify annual pollutant load and/or stormwater volume reductions and the control actions that will be used to achieve those reductions, all of which shall be enforceable under this permit. 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;

ii. Include a detailed schedule, addressing all significant subwatersheds, for implementing all structural and nonstructural water quality projects, enhanced stormwater management programs, and alternative stormwater control initiatives necessary for meeting applicable WLAs, along with a demonstration using modeling of how each applicable WLA will be attained using the chosen projects, programs, and controls, by the date for ultimate attainment;

iii. Provide detailed cost estimates for individual projects, programs, controls, and plan implementation;

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

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

Section IV.A ("Annual Reporting"):

A. Annual Reporting

1. Annual progress reports, required under 40 CFR 122.42(c), will facilitate the long-term assessment of Baltimore City's NPDES stormwater program. The City shall submit annual reports on or before the anniversary date of this permit, and post such reports and all attachments to such reports on the City's website, that include:

a. The status of implementing the components of the stormwater management program that are established as permit conditions including:

[i-ix omitted]

b. A narrative summary describing the results and analyses of data, including monitoring data that is accumulated throughout the reporting year, as well as the raw data itself;

c. Expenditures for the reporting period and the proposed budget for the upcoming year;

d. A summary describing the number and nature of enforcement actions, inspections, and public education programs;

e. The identification of water quality improvements and documentation of ~~progress toward meeting~~ attainment and/or progress toward attainment of milestones, benchmarks, and applicable WLAs developed under EPA approved TMDLs; and

f. The identification of any proposed changes to the City's program when WLAs, and/or any associated milestones or benchmarks, are not being met.

[2. Omitted]

3. Because this permit uses an iterative approach to implementation, the City must evaluate the effectiveness of its programs in each Annual Report. BMP and program modifications shall be made within six (6) months if the City's Annual Report does not demonstrate compliance with this permit and ~~show progress toward meeting~~ meet WLAs developed under EPA approved TMDLs and their milestones, benchmarks, and final deadlines.

Water Quality Standards Language – New Section in Part III

Water Quality Standards

Discharges from the Baltimore City MS4 that cause or contribute to the violation of water quality standards are prohibited. The City's stormwater management programs, control measures, and other actions to reduce pollutants in the City's discharges shall be designed to achieve compliance with all receiving water limitations.

If the City is fully in compliance with its schedule for attainment of a WLA, as set forth within an MDE-approved restoration plan, along with all other requirements set forth in this Permit, the City will be considered not to be causing or contributing to the violation of the applicable water quality standard. [*Note: this final sentence should only be included if all of the strengthening changes to the "Restoration Plans" section detailed above are adopted.*]