

**Maryland Department of the Environment
Water and Science Administration
Basis for Final Determinations to Issue National Pollutant Discharge Elimination System
Municipal Separate Storm Sewer System Permits for**

**Anne Arundel County (MDE Permit No. 20-DP-3316, NPDES Permit No. MD0068306)
Baltimore City (MDE Permit No. 20-DP-3315, NPDES Permit No. MD0068292)
Baltimore County (MDE Permit No. 20-DP-3317, NPDES Permit No. MD0068314)
Montgomery County (MDE Permit No. 20-DP-3330, NPDES Permit No. MD0068349)**

November 5, 2021

Introduction

The Maryland Department of the Environment (the Department) has issued Final Determinations regarding the National Pollutant Discharge Elimination System (NPDES) municipal separate storm sewer system (MS4) permits for Anne Arundel County, Baltimore City, Baltimore County, and Montgomery County. The federal Clean Water Act (CWA), Code of Federal Regulations (CFR), and guidelines of the U.S. Environmental Protection Agency (EPA) provide the legal framework for permit requirements. In addition, the MS4 permits rely on long-established Statewide programs under the Environment Article, Annotated Code of Maryland (Environment Article), Code of Maryland Regulations (COMAR), and policies and guidelines of the Department.

Maryland is delegated the authority by EPA to administer the federal NPDES permit program through a Memorandum of Agreement (MOA) signed in 1974 and reaffirmed on May 18, 1989 (See also, COMAR 26.08.04.07). Final stormwater regulations adopted by EPA in November 1990 and codified in 40 CFR § 122.26 required owners of storm sewer systems serving populations greater than 100,000 to apply for Phase I NPDES MS4 permits. Baltimore City, Anne Arundel County, Baltimore County, and Montgomery County (the Permittees) are classified by 40 CFR § 122.26(b)(4) as large municipal separate storm sewer systems under Phase I because they own or operate storm sewer systems and have populations greater than 250,000 based on 1990 U.S. Census data.

The final determination permits (Final Permits) for the Permittees are effective for a five-year term unless administratively continued by the Department. The Final Permits require implementation of programs and best management practices (BMPs) that reduce the discharge of pollutants in stormwater that flows into, through, or from storm drain systems to the maximum extent practicable (MEP). Public education and outreach, property management, and illicit discharge detection and elimination (IDDE) programs reduce the input of pollutants to the Permittees' MS4s. Erosion and sediment control, and stormwater management programs control stormwater and pollutant discharges to the Permittees' MS4s from new development and redevelopment through the implementation of BMPs. Combined with restoration and monitoring, these management programs provide a comprehensive and adaptive approach to improve and restore local water resources and the Chesapeake Bay. For a more detailed description of individual programs, fact sheets for each permit are available on the Department's [website](#).

Since the early drafting of the Final Permits, the Department has held numerous meetings with the MS4 community, non-governmental organizations (NGOs), the public, and EPA. These meetings resulted in permits that will further advance Maryland's efforts to improve water quality and restore the Chesapeake Bay. The Final Permits establish impervious acre restoration benchmarks, incentivize green stormwater infrastructure and BMPs with climate resiliency co-benefits, prioritize outfall screenings, require salt management plans to address chlorides, provide an opportunity to participate in pooled monitoring, and establish an updated Accounting Guidance that utilizes the latest science and the Phase 6 Chesapeake Bay Watershed Model.

The following sections establish the legal framework that forms the foundation of permit requirements and discusses relevant information incorporated into the permit development process.

Legal Framework for MS4 Permit Requirements. The Department incorporates the legal framework in the CWA, CFR, Environment Article, COMAR, and EPA and Department guidelines to develop MS4 permit requirements. The compliance framework for MS4 permitting is referred to as the MEP standard and is established under the CWA at 33 USC § 1342 (p)(3)(B)(iii). This statute mandates that the Department “require controls to reduce the discharge of pollutants to the maximum extent practicable, including management practices, control techniques and system, design and engineering methods, and such other provisions as the administrator or the State determines appropriate for the control of such pollutants.” The CWA does not define the MEP standard; however, broad discretion is afforded to permitting authorities to set controls they deem necessary to protect water quality.

EPA offered greater clarity regarding the flexibility in determining the MEP standard in MS4 permits when publishing the Phase II NPDES stormwater regulations in the Federal Register on December 8, 1999. 64 Fed. Reg. 68722 (Dec. 8, 1999). Specifically, the agency did not provide “a precise definition of MEP to allow maximum flexibility in MS4 permitting. MS4s need the flexibility to optimize reductions in storm water pollutants on a location-by-location basis.” 64 Fed. Reg. 68754. Therefore, the pollutant reductions that represent MEP may be different among regulated jurisdictions.

On December 9, 2016, the EPA published regulation changes in the Federal Register affecting NPDES small MS4 permits, known as the “Remand Rule” (81 Fed. Reg. 89,320 (Dec. 9, 2016)). The Remand Rule was promulgated in response to a decision from the U.S. Court of Appeals for the Ninth Circuit in *Environmental Defense Center et al. v. EPA*, 344 F.3d 832 (9th Cir. 2003). While applicable to small MS4 regulations, the Remand Rule is instructive to permitting authorities for the purpose of determining the MEP standard. Specifically, the Ninth Circuit found that EPA's Phase II MS4 regulations must be revised to preclude permittees from determining their own actions necessary to meet the MEP standard. The preamble to the Remand Rule, 81 Fed. Reg. 89320, 89333 – 89334, explains that these revisions were placed to “reinforce the fact that the permitting authority is the entity responsible for establishing the terms and conditions necessary to meet the MS4 standard.” 81 Fed. Reg. 89333. In addition, the Remand Rule clarifies that MS4 permit requirements must be expressed in clear, specific, and measurable terms.

In addition to establishing the MEP standard, the CWA provides that MS4 permits can include requirements that are more stringent than the MEP standard. These requirements are often associated with total maximum daily loads (TMDLs) for impaired waters that were approved by EPA after the Department or EPA determined that additional controls were necessary to meet water quality goals. Accordingly, 40 CFR § 122.44(d)(1)(vii) states: “when developing water quality-based effluent limits under this paragraph the permitting authority shall ensure that... [e]ffluent limits developed to protect a narrative water quality criterion, a numeric water quality criterion, or both, are consistent with the assumptions and requirements of any available wasteload allocation....” Therefore, the Department is required to consider local water quality and wasteload allocations (WLAs) when promulgating MS4 permit requirements.

Maryland’s MS4 Permits and Judicial Review. The Maryland Court of Appeals (COA), the highest court in the State, has reviewed and upheld several previously issued Phase I MS4 permits in *Maryland Department of the Environment v. Anacostia Riverkeeper, et al.*, 447 Md. 88 (2016), and *Maryland Department of the Environment v. County Commissioners of Carroll County*, 465 Md. 169 (2019).

The Final Permits are consistent with these decisions.

Background on Permit Requirements. The Department has carefully developed the Final Permits in consideration of the CWA’s legal mandate, applicable case law, and EPA guidance. Accordingly, the Final Permits reflect the MEP standard, as well as effluent limits consistent with applicable TMDLs and wasteload allocations. See, e.g., 40 CFR § 122.44(d)(1)(vii). The Department’s decision is also informed by State water quality goals, the mix of available BMPs, public participation, past performance, and analyses submitted by the Permittees.

1. Chesapeake Bay and Local Total Maximum Daily Loads

The EPA established the Chesapeake Bay TMDL in 2010 for the six Chesapeake Bay States (Delaware, Maryland, New York, Pennsylvania, Virginia, and West Virginia) and the District of Columbia. The TMDL describes the level of effort necessary to reduce pollution, meet water quality standards, and restore the Chesapeake Bay. In order to implement the TMDL, the Department has developed a Watershed Implementation Plan (WIP). The WIP assigns different pollutant reductions to different sectors of dischargers in Maryland, including MS4s. The WIP has gone through three iterations, each of which has been reviewed and approved by EPA. The Department relies on the current, Phase III WIP to establish MS4 permit requirements that are consistent with the Chesapeake Bay TMDL.

Maryland’s Phase II WIP established a 20% impervious area restoration requirement as an Interim Target Strategy for the stormwater sector to achieve the necessary nutrient and sediment load reductions to meet the Chesapeake Bay TMDL. This 20% impervious area restoration requirement was incorporated into prior Phase I MS4 permits, which were also affirmed by the COA. Moreover, the COA referred to the WIP as a “well-developed and vetted strategy” for the purpose of helping to restore the Chesapeake Bay (*Anacostia Riverkeeper*, 447 Md. at 127). The Department has incorporated the latest version of the WIP

into the Final Permits' requirements. *See* Maryland's Phase III Watershed Implementation Plan to Restore Chesapeake Bay by 2025 and discussion in Section 5 of this document below. Therefore, the Phase III WIP continues to inform the Department's process to determine restoration requirements for the Final Permits consistent with the Chesapeake Bay TMDL.

The Phase III WIP strategy will result in restoration requirements and BMP implementation that will make progress toward reducing urban stormwater pollution consistent with the Chesapeake Bay TMDL. The restoration programs developed under the Final Permits will provide stormwater controls that are proven to reduce nutrients, sediments, and other pollutants such as trash, PCBs, bacteria, mercury, and chlordane. Accordingly, compliance with restoration criteria and management programs, outlined in the Final Permits, constitutes adequate progress toward compliance with Maryland's receiving water quality standards and EPA-approved stormwater WLAs for the Chesapeake Bay TMDLs.

2. *Chesapeake Bay Program Partnership*

The Department is a partner with the Chesapeake Bay Program (CBP), which is dedicated to advancing restoration objectives in the Chesapeake Bay. The CBP Partnership provides technical support for TMDL development, local restoration implementation, and tracking progress toward pollutant reduction goals. The Department's participation includes membership on the Water Quality Goal Implementation Team (WQGIT) and the Urban Stormwater Workgroup (USWG). The CBP Partnership uses a science-based approach to identify best practices to reduce pollutants from stormwater runoff. The CBP Partnership includes all jurisdictions within the Chesapeake Bay watershed, ensuring that technical standards are implemented consistently across the region.

The CBP Partnership convenes expert panels that undertake a scientifically rigorous review of proposed new or updated BMPs. The expert panel reports provide recommended pollutant reductions achieved by specific BMPs and are subject to an approval process by the USWG and the WQGIT. These reports include BMP design criteria that must be met to achieve pollutant reductions. The Department relies on the CBP expert panel recommendations to develop criteria for acceptable BMP implementation and credits to meet restoration requirements.

3. *Maryland and CBP BMP Design Criteria and Performance Standards*

The Final Permits require the Permittees to implement a stormwater management program in accordance with the Environment Article, Title 4, Subtitle 2, Annotated Code of Maryland and COMAR 26.17.02 to address discharges from new development and redevelopment projects. Therefore, implementation of the Final Permits is tied to the administration of well-established State stormwater programs. The State's Stormwater Management Law, passed in 1982, requires the implementation of BMPs to maintain after development, as nearly as possible, the pre-development runoff conditions. Over the years, this program has undergone significant revisions and enhancements. The 2000 Maryland Stormwater Design Manual, Vol. I & II (the Design Manual) was developed to establish minimum performance standards

for stormwater management for new development. The Stormwater Management Act of 2007 advanced Maryland's stormwater program by establishing requirements for environmental site design (ESD) to the MEP. These requirements incorporate improvements including the use of natural drainage patterns, vegetation, and non-structural and small-scale practices to more effectively manage stormwater runoff at its source. Combined with other permit requirements, these controls address the discharge of pollutants from new development and redevelopment to the MEP. In addition, the Final Permits require the Permittees to address the discharge of pollutants for existing impervious areas with little or no stormwater management.

The Final Permits require the Permittees to retrofit existing impervious areas with little or no stormwater management. The criteria for acceptable new development and redevelopment restoration BMPs are based on the water quality treatment standards in the Design Manual. However, the Design Manual does not include the full suite of practices that MS4 permittees may use toward restoration. Therefore, the Department has developed the 2021 *Accounting for Wasteload Allocations and Impervious Acres Treated* (Accounting Guidance) to provide a comprehensive set of tools that MS4-permitted jurisdictions can use to achieve restoration requirements. The Accounting Guidance has been updated since the June 2020 version and is based on engineering principles and scientific research that document BMP efficiencies for nutrient and sediment reduction defined by the Design Manual and CBP's recommendations. The Accounting Guidance includes alternative BMPs that have been assigned pollutant reductions by the CBP WQGIT-approved expert panels, such as stream restoration and tree planting. These approved pollutant load reductions provide the basis for determining equivalent impervious acre (EIA) credits used to achieve compliance with the Permits' ISR requirements. The EIA credits for the alternative practices are specified in the Accounting Guidance.

The Accounting Guidance was developed with significant public engagement, including a committee of stakeholders. The committee included representatives from environmental NGOs, MS4-permitted jurisdictions, and EPA. Prior to the release of the tentative determination permits, the Department also received and considered additional comments on the Accounting Guidance from larger coalitions of MS4s and NGOs. Improvements made as a result of this stakeholder engagement include incentivizing green stormwater infrastructure (GSI), increased volume management to address climate change and the flooding from higher intensity storm events, and forest conservation. The Department's responses to specific comments related to the Accounting Guidance may be found in Appendix A below.

4. *Jurisdiction-Specific Determination of Restoration Requirements*

The Department provided guidance for the Permittees to develop local data that reflected each jurisdiction's restoration capabilities. This was accomplished with input from the University of Maryland's Environmental Finance Center (EFC). The Permittees' submissions included a Restoration Project Portfolio (BMP Portfolio), Physical Capacity Analysis (PCA), and Financial Capacity Analysis (FCA).

The Permittees compiled the information noted above and submitted a comprehensive list of restoration projects to be planned, designed, and constructed during the next permit term. This list of BMPs included project-specific information on nutrient reductions and impervious acres treated. The PCA considered various limitations such as constraints on procurement and permitting, budget approvals, availability of contractors, project scheduling, and project complexity. The Permittees also provided data on community economic characteristics, including an estimate of costs and restoration expenditures per household, as well as information on the jurisdiction's ability (e.g., bond ratings) to pay for stormwater-related services. The Department reviewed this information carefully. The Department's analysis included: verification that submitted BMPs were in conformance with design criteria and the Accounting Guidance; assessing the potential for additional credits; and gauging compliance with Chesapeake Bay restoration goals. The results of the MEP analysis were used to inform the Department's determination of each Permittee's ISR requirement.

Administrative Process. The Department made tentative determinations to issue the Permittees' NPDES MS4 permits on October 23, 2020. Public notice of the Department's tentative determinations appeared in the Baltimore Sun for Baltimore City, and Anne Arundel and Baltimore Counties on October 23 and 30, 2020, as required by Maryland's Administrative Procedures Act (APA). Public notice of the Department's tentative determinations appeared in the Washington Post for Montgomery County on October 23 and 30, 2020. Additionally, the Department maintains an interested party list for NPDES MS4 permits that includes federal, State, and local municipal officials, environmental NGOs, and numerous citizens of the counties, the City, and Maryland. Individuals on this list were notified of the tentative determinations on October 23, 2020.

After issuance of the tentative determinations, the Department held public hearings to accept testimony and comments regarding the draft MS4 permits. Montgomery County's public hearing was held on November 16, 2020. At the hearing, testimony was given by Montgomery County, the Audubon Naturalist Society, and a resident of Montgomery County. Anne Arundel County's public hearing was held on November 17, 2020. At the hearing, testimony was given by Anne Arundel County, the Chesapeake Bay Foundation, and Arundel Rivers Federation. Baltimore County's public hearing was held on November 19, 2020. At the hearing, testimony was given by Baltimore County, the Chesapeake Bay Foundation, the Maryland League of Conservation Voters, and Blue Water Baltimore. Baltimore City's public hearing was held on November 20, 2020. At the hearing, testimony was given by Baltimore City, the Chesapeake Bay Trust, the Maryland League of Conservation Voters, a Baltimore City resident, and two representatives from Blue Water Baltimore. The transcript and video recording of the proceedings for each public hearing is available on the Department's website (i.e., [Maryland's NPDES Municipal Separate Storm Sewer System Permits](#)).

After the hearings, the public record regarding the four tentative determination permits remained open until January 21, 2021 to accept additional public comments. The Department received comments on all four tentative determination permits from the Carroll County Department of Land and Resource Management, Chesapeake Bay Foundation, Chesapeake Accountability Project, Choose Clean Water Coalition, and the Maryland Municipal Stormwater Association. Comments specific to Anne Arundel County's permit were received from Anne Arundel County.

Comments specific to Baltimore County’s permit were received from Baltimore County, Blue Water Baltimore, and a Baltimore County resident. Comments specific to Montgomery County’s permit were received from Montgomery County and the Stormwater Partners Network of Montgomery County. Comments specific to Baltimore City’s permit were received from the Baltimore City Department of Public Works, the Baltimore City Department of Recreation and Parks, Blue Water Baltimore, CityScape Engineering, LLC., the Farm Alliance Bureau, the Waterfront Partnership, and a resident of Clarksville, Maryland.

The Basis for Final Determinations provides the Department’s rationale for issuing the Final Permits and addresses the comments received during the public process. Notable issues raised during the public comment period pertained to environmental justice, climate change, the ISR metric, the MEP standard, anti-backsliding, TMDLs, the BMPs outlined in the Accounting Guidance, nutrient trading, monitoring requirements, and enforcement. The Department’s response to these comments is discussed below.

Response to Comments

1. Global Issues

The Department received comments requesting that environmental justice and climate change be emphasized in various permit requirements (e.g., impervious surface restoration or “ISR”, TMDLs, BMPs). For example, commenters requested that the Department promote environmental justice and climate change as determining factors in the design and location of local restoration efforts. Commenters also suggested that the tentative determination permits did not meet State or federal requirements because these two issues were not more fully incorporated into permit requirements.

Environmental Justice. The Department is committed to promoting environmental justice, the concept that all people – regardless of race, color, national origin, or income – are able to enjoy equal environmental protection. Numerous NGOs highlighted concerns that marginalized communities lack green spaces and green infrastructure. These NGOs expressed concern that the tentative determination permits do not include restoration requirements that will specifically seek to improve underserved communities.

Commenters suggested that “the Department include provisions in this permit to...equalize the distribution of environmental, public health, and economic benefits from restoration efforts.” NGOs added that marginalized communities should be accounted for in BMP implementation “through ... inclusive public outreach efforts.” One NGO urged the Department to incorporate the [Report of the Senate President’s Advisory Workgroup on Equity and Inclusion](#). This report recommended more trees in urban communities, “the use of environmental justice data [in the Department’s] daily operations ... [and] further investigation into programs and policies that promote green infrastructure in underserved urban communities.”

The Department’s mission is to protect and restore the environment for the health and well-being of all Marylanders. The Department recognizes that historic and systemic racism has impacted communities throughout the state and is committed to responding to the local and nationwide call

to address Environmental Justice throughout its authority. The MDE Environmental Justice Policy and Implementation Plan adopted in 2020 states: “as MDE implements state laws and programs to protect and restore the environment, it is the Policy of MDE to implement environmental laws and programs wherever possible in a manner that reduces existing inequities and avoids the creation of additional inequities in EJ Communities. Further, as the lead agency staffing the Commission on Environmental Justice and Sustainable Communities (CEJSC), the Department is engaged in a dialogue with communities to learn about environmental health concerns as well as locally identified solutions.

This permit requires, incentivizes and supports actions by local governments and community leaders that collaborate to prioritize restoration in marginalized communities. The Final Permits require continual outreach to solicit public input regarding restoration plans [PART IV.D.5 Public Education; PART IV.F.4 Stakeholder Outreach on Stormwater TMDL Implementation Plans] specifically to foster the inclusion of diverse communities. The Department further notes additional solutions within the Final Permits that address inequities associated with flooding or deteriorating infrastructure in environmental justice (EJ) communities. Green infrastructure includes more than tree planting and the permit highlights the opportunity for EJ communities to benefit from urban soil restoration, urban tree canopy planting, street trees, impervious surface reduction, and street sweeping, for instance.

In addition to green infrastructure, the Department encourages planning and implementation that integrates social and environmental co-benefits of restoration efforts along with local goals and infrastructure improvements. Permit requirements promote opportunities consistent with the Department’s mission to emphasize environmental protection for all communities. The Accounting Guidance promotes flexibility to implement projects that meet multiple local planning goals.

The Department is working with Federal agencies and local governments to continue to improve the understanding of and response to equity in environmental permitting. The permit includes opportunities to improve its Environmental Justice response over time.

Climate Change. The Department recognizes the urgency needed to address climate change and this permit empowers local governments to build infrastructure that meet both today’s storm conditions and the future climate with more intense events. The Department is committed to adapting Maryland’s stormwater program. Numerous environmental NGOs stated that the tentative determination permits do not take climate change into consideration. As discussed in the CBP’s memo, “Review of Current Stormwater Engineering Standards and Criteria for Rainfall and Runoff Modeling in the Chesapeake Bay Watershed” (*see* Wood, D. 2020), acquiring the most up-to-date precipitation data and science is an important first step to address the impacts of climate change.

The Department is updating precipitation data and integrating updated flood control standards into the erosion and sediment control, and stormwater management programs. Inclusion of resources that use future casting and multiplier effects is under review. These programs are incorporated by reference into the Final Permits, so changes made to the Department’s regulations and guidance to address climate change will also apply to the Final Permits.

1. *Climate Change and the Phase III WIP:*

Maryland is committed to a restored Chesapeake Bay and has developed a robust strategy to achieve nutrient reduction goals. One environmental NGO asserted that nutrient and sediment loads are increasing because of climate change. This commenter further stated that the tentative determination permits do not account for these increases, so Maryland is not on track to meet goals established in the Phase III WIP. To correct this, the commenter asserts that the State must accelerate stormwater pollution reductions and revisit the restoration requirements established in the tentative determination permits.

The CBP has allocated additional nutrient and sediment loads associated with climate change. The Department has taken steps to address these increases through the Phase III WIP, which exceeds nutrient planning targets. More specifically, the Phase III WIP “...surpasses the statewide nitrogen and phosphorus targets by 1,000,000 pounds per year and 440,000 pounds per year, respectively. Reductions achieved beyond the targets will be used to meet future reduction requirements, including those due to climate change.” (See Chapter IV, pp. 31-32). The surplus reductions reflected in the Phase III WIP were adopted to compensate for the inherent uncertainty of projecting future pollutant loading increases. These additional nutrient and sediment reductions will be applied across all sectors, including each jurisdiction’s stormwater permit. The Department’s approach balances the uncertainty of future projections with current, available data consistent with the Department’s iterative process to ensure progress towards improving water quality.

2. *Localized Flooding:*

Multiple NGOs stated that the reduction of BMP design efficiencies associated with climate change contribute to the failure of local stormwater infrastructure. The commenters tied these failures to local flooding that, in turn, contributes nutrient pollution to receiving waters. For this reason, it was recommended that the Department incorporate design changes into the Final Permits to address climate change and local flooding.

Increased local flooding associated with climate change is a public safety and health concern and so a top priority for the Department. According to the EPA Climate Change Adaptation Resource Center (ARC-X), climate change leads to greater variability in rainfall patterns, air temperature and corresponding water temperature increases, and higher rates of sedimentation and erosion (See [EPA ARC-X website here](#)). These changes threaten water quality by increasing stormwater runoff, washing sediment, nutrients, pollutants, trash, animal waste, and other materials into water. More frequent and intense downpours can overwhelm the design capacity of local stormwater management systems. This can lead to backups and overflows that cause localized flooding and/or lead to greater runoff of contaminants such as trash, nutrients, sediment or bacteria into local waterways.

To address local flooding and its associated water quality impacts, a comprehensive watershed approach is needed that characterizes the existing stormwater conveyance systems, determines where upgrades are needed, identifies regional management solutions, and develops alternative management strategies including watershed specific stormwater

management criteria for land development projects.

In its report, *Advancing Stormwater Resiliency in Maryland, Maryland's Stormwater Management Climate Change Action Plan* or "A-StoRM" (MDE, 2021), the Department has proposed short and long term actions to address climate change and flooding including: updating stormwater management standards; identification and characterization of recent flooding events; targeting grant funds for watershed studies and recommended solutions; educating the public on stormwater management and flooding; and establishing a standing committee of stormwater stakeholders to provide recommendations on regulatory changes to address climate change impacts. Any regulatory changes will be incorporated into the Final Permit under PART IV.D.1.

2. Impervious Surface Restoration

The Final Permits establish impervious surface restoration (ISR) requirements with associated pollutant reductions that are consistent with Maryland's Phase III WIP for the Chesapeake Bay TMDL and 2025 nutrient and sediment load targets. When developing the Phase III WIP, the Department used the impervious surface metric, which was established in the previous MS4 permits, supported by EPA, and upheld by the Maryland Court of Appeals (see discussion below), to define an annual pace of restoration implementation. The resulting target of annually restoring two percent of each jurisdiction's impervious surface areas that currently have little to no stormwater treatment was used in the Phase III WIP for estimating stormwater sector nutrient and sediment load reductions. Commenters expressed concerns regarding the ISR metric, suggesting that it be replaced with numeric nutrient and sediment load reductions.

Impervious Surface Restoration Requirement is an Appropriate Water Quality Surrogate. Several environmental NGOs suggested that the ISR metric should be replaced. Specifically, an environmental NGO stated that "[t]he ISR metric is fundamentally flawed and should be replaced with a pollution reduction metric..." In lieu of the ISR metric, commenters suggested that the Department establish "a clearer, more enforceable, and more results-driven approach to permit requirements to meet WLAs [wasteload allocations] that does not rely exclusively on impervious surface restoration."

The ISR metric is an appropriate metric and should continue to be used in MS4 permits. An EPA memorandum "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 LAs" by Sawyers and Best-Wong, 2014 (available online here: [Sawyers and Best-Wong, 2014](#)) promotes Maryland's use of the impervious surface restoration requirement in MS4 permits as a model example for establishing numeric effluent limitations to meet water quality and TMDLs. The Department's approach is supported by other EPA guidance for permitting authorities to address TMDLs and WLAs in stormwater discharges. These guidance documents recognize the impervious cover surrogate as an appropriate, clear, measurable, and enforceable metric to address water quality-based effluent limits (WQBELs). For example, in the EPA memorandum "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" (Hanlon and Keehner, 2010 and [available online here](#)), EPA promotes impervious surface restoration as a "more straightforward way to regulate stormwater contributions to waterbody impairment." Additionally, EPA has approved Maryland's MS4 permits that incorporate the ISR requirement.

The Maryland Court of Appeals upheld the Department's approach of using an ISR surrogate for reducing pollution discharges in *Maryland Department of the Environment v. Anacostia Riverkeeper, et al.* Specifically, the Court noted that while the ISR does not control pollution directly, instead "it is through restoring impervious surfaces with management practices that the Counties will reduce pollution." *Anacostia Riverkeeper*, 447 Md. at 123. The Court also noted that "MDE chose a standard that relates to the very problem the 20% restoration requirement serves to abate: the increase in stormwater runoff and the discharge of pollutants because of the increase in impervious surfaces." *Anacostia Riverkeeper*, 447 Md. at 125. The ISR strategy is a clear, specific, and measurable metric to address TMDL WLAs.

Impervious Surface Restoration Strategy and Nutrient and Sediment Load Reductions.

Several environmental NGOs suggested that the ISR strategy allows permittees to implement practices that do not adequately contribute to water quality goals. As an example, a commenter stated that "[t]he Draft Permit does not actually have specific nutrient pollutant load reductions, but rather only an impervious acre restoration standard, which can be met in a variety of ways, some of which are unrelated to stormwater." A commenter also suggested that the impervious area surrogate alone is insufficient to reduce stormwater pollution to ensure adequate water quality protection, and therefore should be replaced with a pollutant reduction metric.

The Department's ISR strategy is strengthened by incorporation of the Design Manual, Accounting Guidance, and related documents into the Final Permits. These documents establish the effectiveness of BMPs and related practices recognized by the CBP and the Department, and underpinned by the best available science, thereby ensuring that Permittees' ISR strategies will be effective and measurable. The Final Permits further require the Permittees to monitor (PART IV.G) and maintain these practices (PART IV.D.1.d), thereby ensuring their continued efficacy. The ISR requirement will result in BMP implementation and pollutant load reductions from stormwater discharges. Affirming the Department's approach of using the impervious surface restoration surrogate, the COA noted that, by incorporating the Design Manual into the permits, the ISR requirement ensures implementation of BMPs with specific design and performance standards that result in reduction of pollution discharges. *See Anacostia Riverkeeper*, 447 Md. at 122-23, 125-26. Additionally, the COA recognized that incorporating the Accounting Guidance allows permittees to "assess progress in achieving WLAs and also assess restoration of impervious surface areas through a credits-to-acres approach." *Anacostia Riverkeeper*, 447 Md. at 109. This approach is consistent with the Department's iterative process for continual, ongoing progress to attain water quality standards. Further discussion related to specific BMP implementation for ISR requirements is provided in Section 6 of this Response to Comments document.

3. MEP Analysis and Permit Requirements

Numerous commenters questioned the Department's approach for using an MEP analysis when determining the ISR requirement for each permittee. The Department's analyses and subsequent determination of permit requirements are consistent with guidance from EPA, the CWA, and case law.

Maryland Court of Appeals (COA) Ruling and MEP. Environmental NGOs expressed concern that the Department's MEP analysis is counter to existing case law. One commenter stated: "[t]he MEP standard represents the minimum amount of pollution reduction that the Department must require. If additional reductions are needed to meet water quality standards, including through TMDL implementation, then the Department must impose additional pollution reduction requirements, which could take the form of an additional ISR requirement." The commenter further stated: "it is counter to the Court's holding to now claim that the MEP standard controls and constrains the Department's water quality based ISR condition in the Permit."

The COA's ruling in *Department of the Environment v. County Commissioners of Carroll County*, 465 Md. 169 (2019), 222-25, 238, authorizes the Department to include water quality-based effluent limits in MS4 permits in addition to limits established according to the MEP standard.

The Department has developed permit conditions that follow an iterative approach to work toward water quality standards. MEP establishes the minimum amount of pollution reduction required in the Final Permits. The Department may include additional pollution controls to ensure consistency with the Phase III WIP. As described above, the ISR is a WQBEL derived from the Chesapeake Bay TMDL and consistent with the Phase III WIP. The Department also believes that the application of the ISR is consistent with each jurisdiction's MEP as discussed below.

Stakeholder Process During Permit Development. An NGO representing local governments commented that the Department should defer to the Permittees to determine what constitutes MEP. In contrast, an environmental NGO expressed concern with the Department's MEP stakeholder process, noting that the Permittees expressed a desire to constrain requirements based on their interpretation of the MEP standard. The environmental NGO noted the Department had discussed options to meet restoration requirements that were revised after further discussions with the regulated jurisdictions and stated its belief that the process was similar to "asking a regulated entity how much regulation it would like to be subject to....". These discussions were included in records disclosed by the Department in response to a Public Information Act ("PIA") request.

The Department solicited information and input from regulated jurisdictions regarding ideas, concerns, and available data related to restoration implementation. These discussions were an open, ongoing dialogue with the regulated community relating to restoration practices and permit requirements over several years. This process was one of many venues through which the

Department solicited information and provided feedback to interested parties throughout the development of the tentative determination MS4 permits.

The records cited by the environmental NGO reflect the Department's role as a regulatory agency that exchanges and evaluates information from the regulated community as part of an iterative process. Any information or discussion ultimately relied upon by the Department to issue the Final Permits is part of the administrative record. However, the Final Permits reflect the Department's regulatory decisions as applied to each permittee and applicable law. While the NGO representing local governments believes the Department should have deferred to the MEP determination voiced by Permittees, this approach is not consistent with the Remand Rule. The Department's decisions reflect a careful analysis and balancing of the suggestions from the regulated community and the environmental NGOs.

Scope and Purpose of BMP Portfolio Reviews. Several environmental NGOs believe that the BMP Portfolio review process was inappropriate, and state that the Department did not use proper authority under the CWA to issue a permit that is both protective of water quality and practicable to implement. These commenters noted that the MEP analysis should not be limited to fiscal analysis and should be science-based with greater focus and attention to water quality impacts. The NGOs also suggest that the Final Permits' requirement to replace water quality trades--used to meet certain ISR requirements under the Permittees' previous MS4 permits--with BMPs, should not be considered as part of the MEP analysis.

The permit requirements need to be consistent with pollution reduction targets outlined in the Chesapeake Bay Phase III WIP. The Department's analysis focused on conformity with the MEP standard, fiscal capacity, opportunities for BMP implementation, and commitments to maintain BMPs implemented in the previous MS4 permits. Each of these factors is appropriate in an MEP analysis and consistent with EPA's recommendations. 64 Fed. Reg. 68,754. The Department then also considered the pollution reduction goals necessary to meet Chesapeake Bay TMDLs.

The Financial Capacity Analysis (FCA) is one component of the Department's record of decision for the Final Permits. The FCA is partly based on EPA's publications "*Combined Sewer Overflows – Guidance for Financial Capability Assessment and Schedule Development*" and "*Small Drinking Water Systems Variances – Revision of Existing National-Level Affordability Methodology and Methodology to Identify Variance Technologies that are Protective of Public Health*", 1997 and 2006, respectively), which describe the use of financial capacity indicators (e.g., bond ratings), socioeconomic factors (e.g., unemployment), and costs as a percent of median household income (MHI). The EPA's guidelines validate the Department's approach to use this information as part of the Department's determination. However, the Department's review also considered local initiatives, priorities, and challenges for meeting Bay and local pollution reduction goals.

The Department's determination of an appropriate ISR requirement for each locality was informed by local priorities, water quality goals, and proposed BMP Portfolios. The following factors were evaluated as part of each permittee's MEP submittal:

- Confirmation that appropriate crediting methodologies from the Accounting Guidance were proposed and that practice-specific data supported the nutrient reductions reported;
- Local water quality objectives and TMDL goals addressed by the suite of proposed BMPs;
- The types of practices, pace of implementation, total cost, and cost per acre of proposed restoration versus previous Phase I MS4 permits;
- Project scheduling, budget process, and contracting limitations;
- The cost of maintaining existing BMPs implemented under previous MS4 permits; and
- The cost of program initiatives and BMP implementation necessary to meet other MS4 permit requirements.

The Department’s determination of a permittee’s restoration requirement also considered the State’s targets noted in the Phase III WIP:

“Recent MS4 implementation and trend analysis indicates that permittees (nine counties, Baltimore City and the State Highway Administration) should be capable of annually restoring two percent of their impervious surface areas that currently have little or no stormwater treatment. While this level of implementation will be used in the Phase III WIP analysis for estimating load reductions, the Department will continue to work with permittees on an MEP analysis that will indicate what is feasible. This MEP analysis will take into consideration the physical and financial capacity of a jurisdiction to perform restoration, and the need for making significant and continual progress toward Bay and local water quality improvements. The analysis will also consider the impact of updated BMP efficiencies approved by the CBP Partnership. Permittees will also have the flexibility to meet a portion of their restoration requirements through water quality trading. As progress must continue past 2025 for certain sectors to meet the WLAs assigned in the Bay TMDL, it is anticipated that significant restoration requirements will be maintained in the sixth- and seventh-generation permits. This will be done through subsequent MEP analysis that will be conducted at the outset of each permit term to update the pace based on the latest information available.”

The Department’s final determination on the level of impervious surface restoration in each permit considers the jurisdiction’s MEP analysis and the pollutant load reduction targets necessary to meet the Chesapeake Bay TMDL by 2025. Some NGOs also suggested that the Department’s MEP analysis should not consider whether a jurisdiction was able to trade. However, the Department finds that it is appropriate to consider water quality credit trading as one of the many factors because trading is part of the planning strategy detailed in the Phase III WIP. Moreover, the replacement of water quality trades with on-the-ground programs and practices will require new efforts by individual permittees to perform additional construction, hiring, procurement, and related functions.

Location Specific Pollution Control Requirements. One NGO representing local governments questioned whether two percent per year in impervious surface restoration (ISR) is achievable. The commenter noted that, in some cases, permittees may have already implemented projects that were “low-hanging fruit,” leaving fewer options for future restoration projects. In addition, this commenter questioned the Department’s decision to revise a local restoration project portfolio, suggesting that “Anne Arundel County submitted a portfolio with 1,641 acres of

restoration; MDE revised that goal, nearly doubling it to 2,998 acres.” In addition, Baltimore County and Baltimore City requested that the Department reconsider their ISR requirements.

In contrast, some environmental NGOs expressed concern that Baltimore County’s ISR requirement was not consistent with the Phase III WIP. Furthermore, these NGOs suggested that Baltimore County’s new MS4 permit should require at least 20% of the jurisdiction’s untreated impervious area to be restored to keep pace with projections that pollutant loads from the stormwater sector will continue to increase.

The Department’s review of each permittee’s MEP analysis is consistent with EPA guidance and considered location specific data to tailor restoration requirements to meet Maryland’s water quality goals. The EPA provides specific guidance that clarifies the flexibility afforded to permitting authorities when developing MS4 permit provisions. Specifically, EPA states that “MS4s need the flexibility to optimize reductions in storm water pollutants on a location-by-location basis.” 64 Fed. Reg. 68,754. EPA then describes the factors that permitting authorities should consider when evaluating the MEP standard. These factors include but are not limited to specific local concerns, water quality conditions, ability to finance the program, and capacity to perform operation and maintenance. 64 Fed. Reg. 68754. The Department’s decision-making included a wide range of factors, scientific documentation, and numerous stakeholder meetings over a three-year period.

1. Anne Arundel County MEP Analysis:

Anne Arundel County’s BMP Portfolio proposed a total of 1,641 acres of restoration. The Department investigated the portfolio for additional opportunities for pollution reductions. Several factors led to the decision that more restoration was likely achievable. In making this determination, the Department examined the following:

- The County expressed an interest in using additional green infrastructure and watershed management credits above what was reported in its BMP Portfolio. These additional credits will become available as the County implements adaptive management strategies to maximize the use of these practices.
- The County expressed an interest in utilizing new BMPs from the updated Accounting Guidance (e.g., urban soil restoration, floating treatment wetlands, riparian buffers, and forest conservation). These credits will become available as the County reviews planned restoration efforts.
- The County has documented future plans for septic denitrification BMPs and septic connections in their Financial Assurance Plans submitted to the Department. These plans were not included in the County’s BMP Portfolio, and the Department has determined that additional restoration credit is available when implementing these programs.
- The County did not report any credits associated with future redevelopment projects in its BMP Portfolio. The Department has determined that additional credits will be available for future redevelopment projects that comply with Maryland’s stormwater regulations.

- The County did not propose water quality credit trading to meet new restoration requirements under the reissued permit. However, additional pollutant reductions are available through the water quality credit trading option and several local wastewater treatment facilities may be used for this purpose.

Based on these findings, the Department has determined that Anne Arundel County's ISR requirement is actually 2,998 impervious acres, which is 1,357 acres greater than the County's MEP analysis. The Department has set the ISR requirement in the permit accordingly. This level of restoration will keep the State on track to meet the annual restoration goal detailed by the Phase III WIP. The Department documented these understandings in a July 13, 2020, letter to the County.

2. *Baltimore City MEP Analysis:*

Baltimore City proposed a robust, locally-driven, BMP Portfolio for implementation that included the restoration of 3,696 impervious acres. The ISR proposal submitted by the City is significantly more than the restoration goal established in the Phase III WIP. The process by which the City's ISR requirement was determined included multiple conversations with the City, the City's BMP Portfolio submittals, and the Department's recommendations and review of all submitted documentation.

Baltimore City's Department of Recreation and Parks recommended that the Department reconvene with the City to "reassess the feasibility" of meeting the ISR requirement, citing the limited amount of City-owned property. The City's BMP Portfolio, however, identified a suite of BMPs it determined to be feasible while considering local conditions and priorities. Restoration is not limited to City-owned property and the City makes use of other opportunities such as programmatic BMPs (i.e., street sweeping, inlet cleaning), external partnerships, and redevelopment BMPs implemented by the private sector. The Department has determined that the City's BMP Portfolio takes into consideration several factors that go beyond property ownership.

Multiple environmental NGOs expressed concern that street sweeping will be used to meet a significant portion of the City's restoration requirement. The Department asserts that jurisdictions should have the flexibility to implement BMPs that are practicable and will best address local impairments and benefit local constituents. When evaluating pollution reduction targets for the Chesapeake Bay and local TMDLs, the Department considers the full suite of practices that are available, including programmatic practices. Programmatic practices (e.g., street sweeping, inlet cleaning) will result in pollutant reductions as defined by the CBP's expert panel recommendations and will also address local TMDL requirements, including the trash reduction goals established in the Baltimore trash TMDL.

In addition to programmatic practices, the City's BMP Portfolio included a variety of restoration BMPs, such as stream restoration, rainwater harvesting, bioretention, impervious surface removal, micro-bioretention, and forest planting. The City's BMP Portfolio indicated that GSI and watershed management (WM) practices would be incorporated into future planning strategies. As a result of this holistic and locally-driven approach, the City's suite of

restoration strategies detailed in their BMP Portfolio will achieve pollutant load reductions associated with restoration of 3,696 acres of impervious area. This level of implementation will keep the State on track to meet the restoration goal detailed in the Phase III WIP. Therefore, the Department incorporated Baltimore City's proposed level of restoration into its MS4 permit. The Department documented these understandings in a July 13, 2020, letter to the City.

3. *Baltimore County MEP Analysis:*

Baltimore County proposed a total of 2,451 acres of impervious surface restoration in its BMP Portfolio and subsequent correspondence. The Department identified opportunities for the County to achieve additional impervious surface restoration and pollution reductions. Further correspondence with Baltimore County concluded that more restoration is achievable. In making this determination, the Department looked at several factors:

- The County did not propose any redevelopment projects for the upcoming permit term. However, the Department determined that the County will get additional credit for redevelopment, comparable to that achieved through the previous permit term, when implementation continues through 2025.
- The County did not propose any GSI or WM credits in its BMP Portfolio. However, the Department determined that additional credits as described in the updated Accounting Guidance will be available as the County implements adaptive management strategies to maximize the use of these credits.
- The County's BMP Portfolio shows annual costs of \$240,000 for Watershed Association Grants to fund restoration projects. However, the County did not report acreage associated with these expenditures. The Department determined that additional credits will be available as the County implements these grant-funded projects.
- The County did not propose the continuation of its annual practices from the last permit term. However, the Department determined that the County has the capability to continue these annual practices and gain additional credits.
- The County did not include restoration from the elimination of discovered nutrient discharges from grey infrastructure (e.g., conventional piped drainage and water treatment systems). However, the County used this BMP to achieve ISR requirements in the last permit term and is capable of continuing these efforts to achieve additional restoration.

Based on these findings, the Department has determined that Baltimore County's ISR requirement is actually 2,696 impervious acres, which is 245 acres greater than the County's MEP analysis. The Department has set the ISR requirement in the permit accordingly. This level of restoration will keep the State on track to meet the restoration goals detailed by the Phase III WIP. The Department documented these understandings in a July 13, 2020, letter to the County.

Baltimore County provided comments on the tentative determination permit and requested that the Department re-evaluate the County's ISR requirements. The County explained that

since the March 2020 submission of its BMP Portfolio, it has revised calculations of ISR credits completed during FY 2019. Specifically, four of the County's stream restoration projects were designed prior to the CBP Expert Panel protocols and therefore would use the default rate, resulting in fewer acres of restoration credit for those projects.

The Department understands that planning procedures must be adaptive to stay on track with pollution reduction goals. The Department writes MS4 permits with the expectation that there will be planning changes by each jurisdiction as needed over the permit term. As with prior MS4 permits, Baltimore County will use adaptive management to address any necessary changes or alternative options to achieve compliance goals. The Department will work with the County to clarify proper calculation procedures and to determine which projects currently under design or planning may receive credit under the old protocols versus those that may be subject to the new protocols.

4. *Montgomery County MEP Analysis:*

Montgomery County proposed a total of 1,649 acres of restoration in its BMP Portfolio. The Department compared this information with the pollution load reduction targets for the Chesapeake Bay TMDL established in the Phase III WIP. The Department identified additional opportunities for the County to achieve impervious surface restoration and pollution reductions. More restoration is achievable based on several factors including:

- The County proposed redevelopment projects for the first four years of the permit term (2021-2024), but not the fifth year (2025). The Department determined that the County could get additional credit for redevelopment if implementation continued at the same pace through 2025.
- The County expressed an interest in using additional GSI and WM credits in its BMP Portfolio. These additional credits will be available as the County implements adaptive management strategies to maximize the use of these credits.
- The County proposed a significantly lower implementation rate of annual practices in this permit term compared to the previous term (approximately 580 acres last term, and 33 acres this term). It is the Department's determination that the County has the capability to maintain past implementation efforts of annual practices and gain additional credits.
- The County utilized the planning rate to estimate pollutant reductions for stream restoration projects in its BMP Portfolio. However, the planning rate may underestimate actual pollutant reductions.
- Additional credits may be available to the County via the option of water quality credit trading.

Based on these findings, the Department has determined that Montgomery County's ISR requirement is actually 1,814 impervious acres, which is 165 acres greater than the County's MEP analysis. The Department has set the ISR requirement in the permit accordingly. This level of restoration will keep the State on track to meet the annual restoration goal detailed by the Phase III WIP. The Department documented these understandings in a July 13, 2020 letter to the County.

Maryland’s Iterative Process Toward Meeting Water Quality Goals. EPA advises that MEP in reissued permits is iterative and “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.” (64 Fed. Reg. 68,754). The Department has performed a comprehensive review of each Permittee’s MEP submittal, consistent with federal guidelines, and recognizes that pollutant reductions from ISR requirements will be different among the regulated jurisdictions.

The Department has determined that the two percent per year goal identified in the Phase III WIP to achieve pollution reduction targets will be met cumulatively by all Phase I Large MS4 permittees. This strategy, along with the local data that show restoration capacity for individual jurisdictions, was used to determine the collective load reductions achieved under the Final Permits for the Phase 1 Large jurisdictions. This allows for consistency with the State’s TMDL goals.

Collectively, the level of restoration for the reissued permits will exceed the Phase III WIP goal, resulting in cumulative restoration of 2.3% per year of all Phase I Large jurisdictions’ untreated impervious area. The Department’s process for establishing ISR requirements not only considered each jurisdiction’s data, but also ensured consistency with the Phase III WIP goals. The Phase III WIP strategies specify that significant restoration requirements will continue in future MS4 permits. Therefore, the Department’s approach is consistent with the Phase III WIP goal to make continuous progress toward achieving water quality standards in each successive iteration of MS4 permits.

4. Anti-Backsliding

Maryland’s prior MS4 Phase I permit issued to each jurisdiction required the restoration of 20% of untreated impervious area in that jurisdiction. This Final Permit includes an impervious surface area restoration consistent with the Phase III WIP target of 2% per year. This permit condition requires additional BMP implementation and more pollutant load reductions than those that were required under previous permits.

Anti-Backsliding and the Impervious Surface Restoration Requirement. Certain environmental NGOs suggested that the requirement to restore a total of only 10% of additional impervious surface area over the next permit term represents backsliding. Specifically, one commenter noted that it is “legally impermissible to lower the ISR standard rather than maintaining or increasing it.” Another commenter suggested that “the new impervious surface restoration requirement constitutes impermissible backsliding and must be at least twenty percent.”

The Department disagrees with the suggestion that effluent limits in the Final Permits are less stringent than prior permits. The CWA provision governing the NPDES program contains an anti-backsliding requirement at 33 U.S.C. § 1342(o). This states that “a permit may not be renewed, reissued, or modified ... to contain effluent limitations which are less stringent than the

comparable effluent limitations in the previous permit....” An effluent limitation is defined under 33 U.S.C § 1362(11) as any restriction on quantities, rates, and concentrations of pollutants in stormwater discharges. Therefore, the anti-backsliding provision requires that pollutant restrictions in the Final Permits be no less stringent than prior Phase I MS4 permits.

The Final Permits require that all existing stormwater BMPs and restoration practices be maintained and continue to be implemented. The Final Permits also require that annual practices used to meet the prior MS4 permits’ ISR requirements be continued at the same level of implementation or be replaced with permanent practices. These permit provisions ensure that the effluent limits required under the prior Phase I MS4 permits are maintained as part of the terms and conditions of the Final Permits.

The Final Permit not only conforms with the anti-backsliding provisions under the CWA, but additional pollutant reductions will be achieved with the implementation of new practices. In addition to maintaining effluent limits from prior MS4 permits, the Final Permits require additional BMP implementation to increase impervious surface restoration. Therefore, the Final Permits represent a net increase in pollutant reductions beyond the prior Phase I MS4 permits.

Anti-Backsliding and Water Quality Credits. One commenter suggested that the water quality credit trading provisions in the Final Permits will not produce pollutant reductions commensurate with what would have been achieved in their absence. The commenter concluded that these provisions represent backsliding from the prior water quality-based restoration requirements. However, the anti-backsliding provision in the CWA does not speak to the level of restoration accomplished by the various restoration options including trading; instead it requires that the level of pollutant reductions achieved in the prior permit shall not decrease under the terms of the new permit. The Final Permits stipulate that trades from previous permits must be sustained during this permit until replaced with stormwater BMPs. Additional water quality credits may be acquired for meeting the new ISR requirement. Accordingly, any trades executed under the Final Permits will not impact pollutant reductions achieved in prior Phase I MS4 permits, and, therefore, these provisions conform with the anti-backsliding regulations under the CWA.

Trading in the Final Permits is further addressed in the Water Quality Credit Trading section in this document.

5. TMDLs

The Department received numerous comments on the tentative determination permits regarding TMDLs, a requirement found in § 303(d) of the CWA. A TMDL establishes the maximum amount of an impairing substance that a waterbody can assimilate and still meet water quality standards. That amount, or a pollutant load, is then allocated among pollution contributors (e.g., factories, wastewater treatment plants, nonpoint sources), and is known in MS4 permits as the stormwater WLA. The Final Permits require each jurisdiction to implement specific programs (e.g., illicit discharge detection and elimination, property management, restoration) that are designed to control stormwater discharges to the maximum extent practicable and reduce the amount of pollutants that may enter these watersheds from their MS4s. Additionally, the permit requires each jurisdiction to follow the Department-approved TMDL restoration plans for the

watersheds listed in Appendix A of the permit. These plans include the construction of upland BMPs and stream restoration projects, and ongoing street sweeping and inlet cleaning programs to reduce the amount of pollutants entering these watersheds. By implementing these programs, each jurisdiction is working toward improving water quality and ecological health in the receiving waters.

Several comments reflected concerns with how the tentative determination permits incorporated Maryland's Phase III WIP, local TMDL implementation plans, growth, and watershed assessments. The following discussion addresses comments regarding the tentative determination permits and TMDLs. In this document, the Department does not address comments on the Phase III WIP itself because that plan was finalized on August 23, 2019, and included its own public participation process.

Comments Regarding the Chesapeake Bay WIP.

1. Maryland's MS4 Permits are consistent with the Phase III WIP:

Several environmental NGOs expressed concern that the tentative determination permit is not consistent with the stormwater WLAs enumerated in the Phase III WIP. Specifically, one environmental NGO stated, “[w]e question the language in Part IV.E. of the permits: ‘[t]he impervious acre restoration requirements and associated pollutant reductions described below...are consistent with Maryland’s Phase III Watershed Implementation Plan (WIP) for the Chesapeake Bay TMDL and 2025 nutrient load targets...’ This conclusion is not supported by the permits or the fact sheet.”

The level of restoration indicated in the Phase III WIP corresponds to the level of restoration found in the tentative determination permits and is explained in the fact sheet. Specifically, the Phase III WIP states that, “[r]ecent MS4 implementation and trend analysis indicates that permittees...should be capable of annually restoring two percent of their impervious surface areas that currently have little or no stormwater treatment.” The impervious acre restoration requirement is a surrogate metric used in both the Final Permits and the Phase III WIP to reflect stormwater WLAs and pollutant load reductions. The COA rulings in *Anacostia Riverkeeper*, 447 Md. 88 (2016), and *Carroll County*, 465 Md. 169 (2019), validated the Department’s use of an impervious acre metric as a surrogate for Chesapeake Bay stormwater WLAs.

Table 1. Impervious Surface Restoration (ISR) Requirements

MS4	ISR Requirement in Permit (Acres)	ISR Goal from Phase III WIP (Acres)
Anne Arundel	2,998	2,498
Baltimore City	3,696	2,146
Baltimore	2,696	3,018
Montgomery	1,814	1,889
Total	11,204	9,551

Some commenters claim that the Department requires some jurisdictions to over-perform and allows other jurisdictions to under-perform in relation to the WIP pollutant reduction targets. The Department disagrees with this assertion. The Department reviewed the jurisdictions’ MEP analyses and held meetings to discuss the implementation of their BMP portfolios. The Department then made a determination for the level of restoration that each jurisdiction would need to complete over the course of its five-year permit term. Jurisdictions differ in size, physical capacity, and financial capacity, so each Final Permit’s level of restoration is unique and proportionate to each jurisdiction’s capacity. Because the Phase III WIP is a statewide plan, the Department also had to ensure that collectively the Phase I MS4s would meet the two percent per year level of restoration that is necessary to reduce stormwater pollutant loads and aid in meeting Maryland’s Chesapeake Bay TMDL allocations by 2025. Maryland’s Phase III WIP acknowledges this restoration strategy: “[a]s progress must continue past 2025 for certain sectors to meet the WLAs assigned in the Bay TMDL ... it is anticipated that significant restoration requirements will be maintained in the sixth- and seventh-generation permits. This will be done through subsequent MEP analyses that will be conducted at the outset of each permit term to update the pace based on the latest information available.”

The MEP analysis also requested information from jurisdictions on their comprehensive stormwater management programs. This included infrastructure projects that are designed primarily for flood control, as well as smaller green infrastructure practices that can provide many co-benefits. These types of practices, and other important stormwater management program elements (e.g., BMP inspections, maintenance, enforcement) are invaluable in reducing flooding and pollution in older, heavily urbanized, and often disadvantaged neighborhoods.

2. *CAST shows that Maryland's Stormwater Projected BMP Implementation will result in progress toward achieving TMDLs:*

Relying exclusively on CAST and the Phase 6 Chesapeake Bay Watershed Model to track progress in the urban stormwater sector does not paint a complete picture of the restoration work completed under Maryland's Phase I MS4 permits. However, several environmental NGOs suggested that “[w]hen converted by CAST into load estimates, Maryland shows an increase in nitrogen and sediment. If these permits do not ensure significant on-the-ground reductions, Maryland will allow more polluted runoff from the urban sector.”

While the Department believes that CAST is a powerful tool to track overall progress toward Maryland's Chesapeake Bay TN, TP, and TSS targets, problems arise when using it to track progress in individual source sectors, particularly urban stormwater. As discussed in the Department's response to the Environmental Integrity Project (*See Appendix B, Stormwater Backup in the Chesapeake Region, Russ et. al, 2020*), load estimates from earlier models (e.g., 2009) are not comparable because of changes to the Chesapeake Bay Phase 6 model and improvements in data reporting.

The CAST model does not provide a comprehensive assessment of BMP implementation in the urban stormwater sector, particularly historic BMPs. Many of the restoration BMPs implemented under the prior Phase I MS4 permits are attributed to the natural sector, (e.g., stream restoration, trees). CAST also includes the effects of growth and the conversion of natural and agricultural lands to urban areas. Growth masks much of the progress achieved in the urban stormwater sector. Because of these issues with tracking sector-specific progress, Maryland has developed a Chesapeake Bay Restoration Progress Tracker, which provides a more accurate means of tracking progress towards Bay goals in specific sectors ([Maryland's Chesapeake Bay Annual Progress](#)).

The State was required by EPA to achieve aggregate targets for all sectors rather than sector specific targets. Maryland's projected 2025 Phase III WIP loads by source sector targets were based on a projected 2025 land-use scenario, thereby incorporating the effects of growth and a larger urban footprint. The Department anticipates that the agricultural and wastewater sectors will provide the bulk of the reductions to get to 2025 goals. BMP implementation in the urban stormwater sector will be key to offset projected growth in loads from the wastewater sector beyond the 2025 Chesapeake Bay TMDL deadline.

Comments Regarding Local TMDL Implementation. Numerous environmental NGOs believe that the methods in the Accounting Guidance to address impervious surface requirements (i.e., the ISR) and progress toward meeting the Bay TMDL show reductions in nutrients and sediments, but do not show progress toward other local TMDLs.

The Department disagrees with this assessment. In fact, the Department increased the restoration requirements in the tentative determination permit to ensure consistency with local TMDL implementation plans. Reducing pollutants is achieved through requiring implementation plans for all local TMDLs. The plans must contain a list of stormwater BMPs and other activities to be implemented to reduce pollutants for the TMDL; a description of the County's analyses and

methods; and final implementation dates and benchmarks to meet the TMDL's applicable stormwater WLA.

Approved TMDL implementation plans must be incorporated in a Countywide TMDL Stormwater Implementation Plan. This plan includes an annual summary of all completed stormwater BMPs and other actions that provide reductions for each TMDL, and an analysis and table summary of the net pollutant reductions achieved annually and cumulatively for each TMDL with stormwater WLAs. Also included is an updated list of proposed actions to demonstrate adequate progress toward meeting the Department's approved benchmarks and final stormwater WLAs.

The Department included all local TMDLs and the pollution allocation required in Appendix A in the Final Permit. When pollutants identified in an existing TMDL are not specifically addressed by the impervious acre restoration requirement, the Department has added permit requirements. For example, for jurisdictions with trash TMDLs, the Final Permit requires specific reporting on efforts to meet the trash WLAs, the effectiveness of public education and outreach efforts, and any modifications necessary to improve source reduction and proper disposal.

Bacteria TMDLs are ubiquitous throughout most jurisdictions, so identifying specific sources of bacteria in a watershed is integral to any management plan. Accordingly, the Final Permits require new bacteria trend monitoring programs to detect wildlife and domestic animal sources (PART IV.G.2.b.ii). Additionally, the Illicit Discharge Detection and Elimination (IDDE) permit conditions require outfall screening during dry weather (PART IV.D.3.b) that identify wastewater contributions that may contain human sourced bacteria.

The Final Permits also include a new PCB monitoring requirement. This requires Permittees to develop a source tracking monitoring plan for all watersheds where PCB reductions are required to meet water quality standards (PART IV.G.3). Jurisdictions must submit results and provide updates annually on their efforts to locate PCB sources in the landscape and reduce loads to affected waterbodies.

Comments Regarding Watershed Assessments. One environmental NGO commented that the Final Permits should require the Permittees to update the watershed assessments required in previous MS4 permits. Another commenter requested that the watershed assessments be used to update local TMDL implementation plans. These environmental NGOs highlight the importance of these assessments in planning restoration activities within the permitted jurisdictions. The Department agrees; these assessments are implemented through the Countywide TMDL Implementation Plan.

The Final Permit does require each jurisdiction to document progress toward meeting local TMDLs as part of its Countywide Stormwater TMDL Implementation Plan (see PART IV.F.3). The watershed assessments referenced by commenters were developed in previous MS4 permit terms at appropriate scales (e.g., Maryland's hierarchical eight or twelve-digit sub-basins) based on State TMDL or equivalent local water quality analysis. Permittees used these watershed assessments to develop implementation plans to address Chesapeake Bay and local TMDLs.

Each jurisdiction's Countywide Stormwater TMDL Implementation Plan requires a summary of actions implemented, as well as analyses of net pollutant reductions achieved annually and cumulatively for each TMDL and its associated stormwater WLA. The Plan also requires an updated watershed assessment including a list of BMPs, initiatives, and other practices needed to demonstrate adequate progress toward meeting final WLA implementation dates.

6. Best Management Practices

The Department received numerous comments regarding the best management practices available to MS4 jurisdictions for achieving restoration requirements. The comments related to both the tentative determination permits and impervious acre credits outlined in the Accounting Guidance. The following discussion addresses the major comments received on BMPs and the credits available to meet the impervious acre restoration requirements and the Chesapeake Bay and local TMDLs. Additional minor comments and clarification on technical aspects of the Accounting Guidance are addressed in Appendix A of this document.

Green Stormwater Infrastructure Incentives. Several environmental NGOs expressed concern that the tentative determination permits do not go far enough to incentivize using green stormwater infrastructure to reduce stormwater runoff in urban environments. While supporting the new incentive credits in the Accounting Guidance, these organizations argue that these incentives will be insufficient to ensure increased implementation of green stormwater infrastructure during the permit term. To correct this issue, these commenters argue that the Final Permits should require minimum levels of green stormwater infrastructure.

The Department agrees that, where reasonable to do so, using green stormwater infrastructure practices to manage stormwater runoff is preferred. The CBP adjustor curves (see Schueler, T. and Lane, C. 2012a.) show that runoff reduction practices, including green stormwater infrastructure, are more effective in removing pollutants associated with urban development. The Department also agrees that green stormwater infrastructure has many positive co-benefits. For these reasons, stormwater management designs for new development and redevelopment projects statewide must incorporate green stormwater practices (i.e., environmental site design or "ESD") to the maximum extent practicable (MEP).

There are ample opportunities to incorporate green stormwater infrastructure into the overall design of new and redevelopment projects because there is physical space available for their implementation. However, implementing restoration in urban environments presents numerous challenges as existing features (e.g., buildings, streets, underground utilities) limit available space and increase construction costs. Therefore, the Department does not consider it reasonable to require minimum thresholds on the use of green stormwater infrastructure in the Final Permits.

Nevertheless, the Department is encouraging the use of green stormwater infrastructure through the new GSI credit in the Accounting Guidance. This allows the Permittees to increase the credit for impervious surface restored for areas treated by green stormwater infrastructure by 35%. This increase correlates to the improved pollutant removal performance of runoff reduction or "RR" practices from conventional stormwater treatment or "ST" practices as shown in

“Recommendations of the Expert Panel to Define Removal Rates for New State Stormwater Performance Standards” (Schueler, T. and Lane, C. 2012a) Because this incentive was not available in previous MS4 permits, the Department expects that these new GSI credits will become more widely incorporated into local restoration plans as part of implementation efforts under the Final Permits.

According to EPA, green infrastructure includes stream restoration and shoreline stabilization. More specifically, the CBP states that green infrastructure includes restoration of existing natural areas (e.g., stream restoration and shoreline stabilization) that help mitigate flood risks, provide habitat, and address stormwater.¹ Based on MEP portfolios provided by each permittee, it is estimated that 75% of the impervious acres restored through this permit will be from green infrastructure.

Alternative BMPs as a Tool to Achieve Restoration Requirements

1. Effectiveness of Alternative BMPs:

Multiple environmental NGOs commented that alternative practices are not leading to expected water quality improvements. For example, one NGO noted “[i]t cannot be considered adequate progress to meet the stormwater WLA if the practices selected do not actually manage stormwater.” The NGO further stated “[i]f practices such as street sweeping, which made up most of Baltimore City’s previous MS4 Permit, were a viable solution for reducing nitrogen, phosphorus, and sediment, then we should be seeing in-stream improvements in these water parameters.” In addition, two NGOs stated that street sweeping receives an “out-sized credit” for pollution reductions.

The Department disagrees with the commenters’ position that these credits are not reasonable. The practices allowed in the Accounting Guidance are consistent with the CBP expert panels for urban stormwater BMPs. The expert panel recommendations are based on scientific review and research on the performance of these practices. Expert panels have assigned pollutant load reductions and established the methods by which to calculate reductions for alternative practices, such as street sweeping, stream restoration, and shoreline management. These alternative practices are then incorporated into the Chesapeake Bay Watershed Model with the pollutant load reductions assigned by the expert panels. Accordingly, the Final Permits incorporate reasonable assumptions that are supported by expert scientific assessment of available practices to address pollution that are consistent with the Chesapeake Bay Watershed Model.

2. Alternative BMPs and Local Priorities:

Several environmental NGOs expressed their position that the draft MS4 permits allow the use of alternative BMPs that do not manage runoff or contribute to the control of more intense rainfall or flooding. Multiple environmental NGOs requested that a cap be placed on the amount of restoration credit that can be used to meet permit requirements by practices,

¹ Johnstone, Caitlynn, “Seeing Green in Infrastructure”, U.S. EPA Chesapeake Bay Program January 2018 and found here: www.chesapeakebay.net/news/blog/seeing_green_in_infrastructure

such as stream restoration and street sweeping, that the commenters believe provides little reduction in stormwater runoff volume. For example, commenters acknowledge that street sweeping may be a cost-efficient strategy for jurisdictions that also have trash reduction goals, but the commenters believe this practice does not achieve reductions in stormwater runoff volume. NGOs expressed concern that an MS4 could fulfill its entire restoration requirement by these alternative practices.

As part of a comprehensive stormwater management plan, alternative BMPs are often an effective and necessary tool to address local flooding. These practices offer important benefits related to adequate conveyance of stormwater runoff. For example, inlet cleaning and street sweeping remove trash and debris that can block storm drain systems. Keeping storm drain systems free of debris improves the capture and conveyance of runoff and effectively reduces local flooding. Stream restoration will reconnect degraded channels to floodplains, provide floodplain storage and treatment, and increase the ability of natural systems to convey stormwater runoff safely.

Stream Restoration.

1. Stream Restoration Implementation:

Multiple commenters expressed concern about the successful implementation of stream restoration. Concerns included inconsistent results, falling short of nutrient reduction expectations, the loss of existing trees and forest, and the need to control stormwater at its source to prevent the degradation of streams and project failure. One local government agency commented specifically on Baltimore City's stream restoration implementation, stating "[c]onstruction access disturbances reduce the benefits provided by established public forests...." Another commenter suggested requiring the demonstration of biological uplift to receive credit, including "the retroactive 'claw-back' of any partial credit awarded at any intermediate milestones." Additional recommendations included ensuring projects are not exempt from forest conservation laws, additional tree replanting criteria, and enhanced monitoring and management.

The Department relies on numerous federal, State, and local regulatory programs that provide substantial oversight into the design, permitting, construction, and post construction process for all stream restoration projects. The Department's Wetlands and Waterways Program reviews all stream restoration projects and requires documentation demonstrating that restoration is proposed due to functional impairment of biology and geomorphology of current stream conditions. The review process includes close coordination with the Army Corps of Engineers, EPA, the U.S. Fish and Wildlife Service, and Maryland's Department of Natural Resources (DNR). In addition, these projects are subject to local erosion and sediment control plan review and approval requirements that are enforced through construction inspections by the local jurisdiction as well as the Department.

Additional oversight is provided through the Department's MS4 permits and Accounting Guidance. Permittees are required to adhere to the technical specifications in the Accounting Guidance to receive credit toward ISR requirements. The Accounting Guidance is consistent

with the CBP expert panel reports (Burch, J et. al. 2019, Wood, D. & Schueler, T. 2020) and associated qualifying criteria for BMP implementation. These include a requirement to maintain or expand riparian vegetation, compensate for any riparian losses, and consider unintended consequences.

The Department also reviews Permittees' annual reports, which is required in the Final Permits. This review includes an evaluation of these projects to ensure that the restored streams meet the required criteria. Stream restoration that fails will not receive credit in accordance with CBP recommendations. CBP's guidance for making those determinations is found in *Recommended Methods to Verify Stream Restoration Practices Built for Pollutant Crediting in the Chesapeake Bay Watershed* (Burch, J. et al. 2019).

2. *Stream Restoration Planning Rate*

Multiple NGOs requested that the planning rate credit for stream restoration be reduced from 0.02 to the 0.01 acres per linear foot restored that was assigned in the *2014 Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated Guidance for National Pollutant Discharge Elimination System Stormwater Permits*, stating that the CBP stream restoration expert panel report does not support the increased credit. One commenter noted that the additional credit should be limited to projects with verified pollutant reductions (e.g., through onsite monitoring). This commenter also stated that "while we recognize that this represents a planning rate recommended by the CBP Expert Panel and that permittees will be required to verify post-construction adherence to stream restoration protocols, we are nonetheless highly concerned that increasing the planning rate will increase the incentive."

The Department follows the CBP expert panel reports and associated qualifying criteria requiring that load reductions must be calculated based on site-specific conditions and therefore, changing the planning rate will not change actual restoration achieved. As one commenter acknowledged, the rate is recommended for planning purposes by the CBP expert panel and permittees will be required to verify adherence to the protocols. The load reductions will be calculated by the pre-construction data collection and post-construction verification required by the protocols. The final credit calculations could result in a rate lower than, equal to, or higher than 0.02 equivalent impervious acre per linear foot. Accordingly, the Department does not allow the planning rate to be used to claim impervious acre credits as stated in the Accounting Guidance and the associated credits are consistent with recommendations by the CBP expert panels.

7. **Water Quality Credit Trading**

The Department allows the use of water quality credits (nitrogen, phosphorus, and sediment) as an option to meet the Final Permit conditions. The State's Water Quality Trading Program (Trading Program) was established in 2018 by COMAR 26.08.11 after in-depth, public discussions by the Maryland Water Quality Trading Advisory Committee made up of stakeholders across multiple sectors including local and regional government, private industry, and environmental NGOs. Additionally, the State worked closely with EPA to ensure the Trading Program is consistent with the CWA and the Bay TMDLs. The regulations created a

program for credit generation and exchange to ensure real pollution reductions are achieved based on sound science, as well as procedures for credit verification, and a marketplace that is transparent to the public. Maryland's Trading Program provides a restoration option with the potential to "...achieve results faster and at a lower cost, accelerating efforts to restore and improve water quality." (COMAR 26.08.11.01A). Trading may be done by partners from the agricultural, stormwater, wastewater, and on-site sewage disposal sectors. The Accounting Guidance outlines additional criteria for applying credits toward impervious surface restoration and TMDLs.

For the tentative determination permit, the Department received comments expressing concern about how credit trading will be accomplished, including the following topics: the legality of applying credits to MS4 restoration; concern of double counting pollution reduction in the Chesapeake Bay Watershed Model when applying credits from wastewater treatment plants (WWTPs); whether trading creates further pollution reductions (i.e., additionality); the administrative burden and uncertainty of trading; the timeline to replace credits; environmental justice; co-benefits; and the portion of restoration that may be accomplished through trades and specifically from WWTP credits.

The Legality of Trading to Meet the Restoration Requirement. Environmental NGOs commenting on the permits suggested that permittees may not trade to meet the new ISR requirement. The commenter indicated that COMAR 26.08.11.09(D) prohibits credits from being used to comply with technology-based effluent limitations. Therefore, because the Department calculated the ISR "...based on MEP, which is a technology-based effluent limitation...", they claimed that trading to meet this provision should not be allowed.

The prohibition in COMAR does not apply. The stormwater sector and NPDES MS4 permittees are both named in the regulation as eligible to trade, and COMAR does not place a restriction on applying credits to impervious surface restoration. As discussed in the MEP Analysis and Permit Requirements sections, the ISR is a water quality-based effluent limit, and not a technology-based effluent limitation. TMDLs were established to achieve water quality standards where implementing technology-based controls is inadequate. The ISR was confirmed to be an acceptable surrogate to address TMDL WLAs while also maintaining consistency with each jurisdiction's determination of MEP.

Accounting for Pollution Reduction in the Chesapeake Bay Watershed Model when Applying Credits from Wastewater Treatment Plants to Stormwater Restoration.

Commenters suggested that credits generated by WWTPs and applied to other sectors are double counted in the Chesapeake Bay Watershed Model, and therefore do not create additional pollution reduction.

There is no mechanism at this time for incorporating water quality trading into the Chesapeake Bay Watershed Model. Trades are not currently incorporated into the accounting system for demonstrating Maryland's progress toward meeting the targets established in the Chesapeake Bay TMDL. Therefore, water quality trades are not double counted by the MS4 permits. State water quality trading rules mandate that a WWTP is eligible to trade only after achieving and complying with all applicable WLAs in its discharge permit to be consistent with the Bay TMDL

and/or State TMDLs. The WWTP must evaluate the impact of any trade on projected sewer allocations and local growth plans. Furthermore, WWTPs trading with MS4s are restricted to trading performance-based credits that are generated by actual pollution reductions determined using concentration-based benchmarks, and are not generated by an estimate of treatment capacity.

Similarly, environmental groups were of the opinion that because no WWTP trades to date “...have any proven additionality...”, trading with this source sector should be limited, and that the Department should “...require that any credits from wastewater treatment plants be generated by new pollution-control upgrades...” to avoid backsliding. One commenter stated that these efforts have “...no corresponding on the ground benefit...” and produce “...pollutant reductions that may not cover the underlying impervious surface obligation.”

The Trading Program requires that credits are generated on an annual basis so that reductions made in past years are not eligible; only a WWTP’s pollution reduction credits below the benchmark in the most recent calendar year are used. Credits are generated by implementation of pollution controls that demonstrate load reductions below established baselines. These Trading Program procedures ensure pollutant reduction additionality and are enforced in all trades including those involving MS4 permittees.

Water quality credits acquired to meet prior permit conditions must be continued until they are replaced by new BMPs while those acquired under the Final Permit may only be applied to new restoration. This ensures that only the additional pollution reductions (i.e., credits acquired under the Final Permit) are applied to permit targets. Trading may not be used to replace BMPs constructed under a previous permit term. Therefore, consistent with the anti-backsliding provision of CWA, pollution reductions accomplished in the prior permit shall not decrease within the reissued permit.

The Administrative Burden of Trading and Public Transparency. Environmental NGOs claimed that trading creates an administrative burden and reduces transparency. It was further asserted that trading creates an overly complicated process that ultimately delays the installation of urban stormwater BMPs for restoration. One commenter stated that the annual verification and acquisition of credits “...creates an ongoing, annual administrative burden for the permittees and for the Department...”

The Department disagrees and believes that the Trading Program is transparent and administratively efficient. Far from being a cumbersome option that delays attainment of water quality goals, water quality trading enables permittees to create efficiencies in labor and cost and accelerate the pace of pollution reduction across all sectors. The Department requires Permittees to maintain a current database of installed BMPs with information such as maintenance and inspection dates. Permittees must also report planned restoration projects. These data are submitted to the Department in annual progress reports. Similarly, any acquired water quality trading credits must be reported with these reports to provide a full picture of their restoration efforts to date. The annual reports provide transparency required in the permit. Furthermore, all credits generated and exchanged are posted on the trading program’s Register and Market Board

(available at www.mdnutrienttrading.org). Credits are verified by an independent agent to confirm the installation of pollution control measures. Reporting and verification ensure permit activities are real and transparent to the public.

The Timeline to Replace Credits. Commenters asked about the timeline for replacing credits in future permits.

The Final Permit requires that any credits acquired through the Trading Program under the prior MS4 permits must be replaced with urban stormwater BMPs in the reissued permits. Similarly, the guidelines to replace credits acquired during the Final Permit term will be outlined in future permits. Credits acquired through trading must be verified per the regulations, and if credits are generated through annual practices, the effort must continue until replaced with a permanent stormwater BMP.

Environmental Justice and Trading. Commenters expressed concern that water quality trading is one way in which environmental justice is hindered and inequity is furthered, through the outsourcing of pollution reduction benefits away from local communities.

The Department disagrees and supports initiatives undertaken at the local level to address inequities. As the Permittee develops its overall restoration strategy, the Department encourages projects with the greatest impact on water quality and co-benefits such as flood control, green space creation, and aesthetic value. When selecting among the credit trading partners available in the marketplace, the Permittee should consider opportunities to direct resources to under-resourced communities. A cross-sector approach that considers water quality goals, as well as community needs, will result in decisions that address historical and existing inequities. The Department will work with all stakeholders, including the MS4 communities, to help fund projects in an equitable manner across jurisdictions.

Co-Benefits and Trading. Commenters suggested that acquiring water quality credits through trading does not provide co-benefits such as reduction of other pollutants, as directly implementing stormwater BMPs does and that credits are "...simply not equivalent to BMPs..."

The State's Trading Program only allows credits to be generated by installing local pollution controls that create a measured, verified pollution reduction. The marketplace encompasses a variety of sectors from which credits may be acquired, and Permittees may apply credits only within local watershed boundaries as described in the Trading Program rules. The program only generates credits from the three pollutants limited by the Chesapeake Bay TMDL (nitrogen, phosphorus, and sediment). Although additional co-benefits are possible, reductions from these pollutants may be confidently estimated using the best available science. The State Trading Program was approved by EPA and has incorporated its framework to ensure real pollution reductions.

One commenter expressed a related concern that allowing trading would cause Permittees to "...mak[e] less of an effort to reduce stormwater..." and "...reduc[e] other pollutants to the Maximum Extent Practicable." A guiding principle of the Trading Program is to reduce

workloads by creating efficiencies. This will help to achieve results beyond what would have been accomplished within individual sectors.

Limits to Trading Within the Permit. The reissued permits place a limit on the number of water quality credits obtained from trades with WWTPs. Environmental NGOs supported the limiting of impervious surface restoration through water quality credit trading but also felt that allowing permittees to apply WWTP credits to restoration targets “...undercuts the credit trading market...” and disincentivizes other credit generating sectors such as agriculture. Alternatively, NGOs representing local governments were of the opinion that water quality credit trading should not have been significantly limited in the reissued permits.

The permit terms balance the priorities of multiple stakeholders, including the State’s commitment to cross-sector water quality credit trading as an option for accomplishing regulatory and environmental goals. Cross-sector trades are not intended to be permanent solutions to stormwater management and must be replaced over time with local stormwater BMPs. The Department supports the ability of Permittees to utilize the marketplace to acquire credits and apply them within the parameters of the State’s Trading Program.

Water quality credit trading was established by the State program. Individual permits outline further details on how jurisdictions may trade to ensure the State WIP goals are kept on track. Trading provides an option that encourages cross-sector collaboration and innovation. Public transparency and accountability will be ensured through reporting alongside other restoration efforts in annual reports.

8. Stormwater Monitoring

The Department received a few comments from environmental NGOs regarding the Assessment of Controls (Part IV.G) section of the tentative determination permit. Commenters expressed concern that monitoring requirements were insufficient, and that the State’s monitoring data should be incorporated into the Department’s adaptive management approach. Commenters also requested greater transparency in sharing monitoring data with the public.

Monitoring Requirements in the Permit. An environmental NGO suggested that the Department should require monitoring beyond offering the choice of participating in the pooled monitoring approach or continuing to monitor at one in-stream location and one outfall location in the jurisdiction. The Department’s response to this concern is outlined below.

The Final Permits establish statewide monitoring requirements that align with CWA goals to “... restore and maintain the chemical, physical, and biological integrity of the nation’s waters...”. The objective of the BMP Effectiveness monitoring in the permit is to evaluate the cumulative effects of stormwater retrofits and alternative urban BMPs on a sub watershed scale. In addition, the objective of the Watershed Assessment monitoring requirement is to evaluate the condition of local TMDLs, and stream health and integrity by assessing the biology of aquatic systems and their relationships with habitat and water quality. Results of both monitoring requirements will be used to evaluate BMP implementation efforts

while also understanding overall stream health and biological response to restoration in these watersheds.

Individual permittees have two options to meet the intent of the BMP Effectiveness and Watershed Assessment requirements outlined in the permit. They may perform focused monitoring as outlined in the permit, to assess the performance of individual restoration practices and evaluate local water quality conditions for local adaptive management, and to calibrate models. This focused monitoring strategy is supported by the NRC's *Achieving Nutrient and Sediment Reduction Goals in the Chesapeake Bay: An Evaluation of Program Strategies and Implementation* (NRC, 2011). Specifically, NRC recommends that “[t]argeted monitoring programs in representative urban and agricultural watersheds and subwatersheds would provide valuable data to refine BMP efficiency estimates, particularly at the watershed scale, and thereby improve Watershed Model predictions.” Alternatively, permittees may contribute to a pooled funding program that performs targeted research on local water quality and restoration efforts implemented statewide that can assess stream health and inform adaptive management strategies to meet the goals of the CWA.

Offering MS4 jurisdictions the option of the pooled approach for meeting permit monitoring requirements provides the optimal management outcome for the State. This is consistent with the intent of the EPA *Interpretive Policy Memorandum for Reapplication Requirements on Municipal Separate Sewer Systems*. 61 Fed. Reg. 41698-01 (August 9, 1996). In this memo, EPA recommends that permitting authorities (e.g., the Department) work with permittees to determine if stormwater monitoring efforts are “appropriate and useful.” EPA further recommends that changes be proposed to make these monitoring programs more useful. The Department’s targeted monitoring approach and decision-making, which is in accordance with the EPA memo, was affirmed in *Maryland Department of the Environment v. Anacostia Riverkeeper, et al.*, 447 Md. 88 (2016). The court affirmed that monitoring requirements in NPDES permits are “sufficient to yield data which are representative of the monitored activity.” 40 C.F.R. § 122.48(b).”

The Policy memo also notes that habitat assessments, bioassessments, or other methods other than end-of-pipe chemical monitoring can be acceptable monitoring approaches to meet CWA goals. Thus, the pooled monitoring program provides an alternative option to meet NPDES monitoring requirements to yield data representative of stream health and various management strategies implemented in the State. This approach is consistent with the COA decision noted above, whereby representative data becomes informational and useful when examined in aggregate along with a continuum of monitoring efforts within the State.

The pooled monitoring approach, administered by the Chesapeake Bay Trust (CBT), is appropriate and useful because it provides a vehicle to combine financial resources from a group of funding partners with similar research interests. Scientists and other stormwater professionals whose projects are funded by the program can combine resources and tools to evaluate BMP performance and water quality outcomes on a scope that may not be feasible for an individual jurisdiction. Information on past research projects provide data representative of a variety of BMPs along with broader recommendations to

assist permittees in program implementation (See: <https://cbtrust.org/grants/restoration-research/>).

The pooled approach offers flexibility to permittees so that they can choose the most cost effective option for meeting permit requirements. As an example, MS4 permittees already have local monitoring programs to evaluate BMP effectiveness. They may choose to continue these programs or use the money dedicated to these efforts to contribute to the pool to provide additional information that local monitoring may not address. Furthermore, the Watershed Assessment monitoring in the permit is a new requirement. The pooled option offers flexibility for permittees to determine whether it would be more advantageous to develop this program from scratch. Alternatively, participating in the pooled option provides an existing research framework that can be structured to provide county-specific watershed information, in accordance with the MS4 Monitoring Guidance and criteria, on local stream health and TMDL impairments.

Research deliverables funded under the program have enhanced the stormwater community's knowledge on a variety of BMPs such as stream restoration, urban tree planting, shoreline erosion, or environmental site design practices and water quality conditions. The data can be used to link observed or measured outcomes such as biological integrity, resource trade-offs, or pollutant load reductions with improved practice design and other tools to inform local restoration programs. As a result, the research funded through this program can assist the State and local governments in refining restoration strategies, modifying design approaches, and understanding site specific factors that improve stream health. This is a valuable and necessary tool for cost effective planning and projections for meeting water quality goals. This will not only expand the results of jurisdiction specific monitoring efforts but help enhance overall adaptive management strategies to restore the waters of the State and meet the goals of the CWA.

Adaptive Management Approach and Sharing of Monitoring Data. An environmental NGO suggested that monitoring data should be included as part of the Department's adaptive management approach. The Department agrees there is a need for greater transparency and has recently made monitoring data publicly available via StormwaterPrint on its website. Additionally, the Department maintains a repository database, called the Ambient Water Quality Monitoring System (AWQMS), which is a web-based data management system for ambient water quality data. This system has been designed for compatibility with EPA's Water Quality Exchange Network (WQX), which is used as the method to share water quality data between the EPA and its partners throughout the United States. More information can be found on the AWQMS here: <https://mde.maryland.gov/programs/water/TMDL/MD-AWQMS/Pages/awqms.aspx> and EPA's WQX here: <https://www.epa.gov/waterdata/water-quality-data>.

PART V.A of the MS4 permit requires the permittee to submit annual reports on or before December 31st of each year. Each Permittee is also required to post these reports on their website. The Department will post links to all the individual Permittees' web sites via a single portal to facilitate this process.

9. Enforcement

The Department received comments from multiple environmental NGOs and local governments regarding the enforcement of the Final Permits. These comments included several general concerns, such as defining adequate progress, benchmarks, and a request for a force majeure clause in the permits. There were also several comments about the technical details of resolving the Illicit Discharge Detection and Elimination (IDDE) investigations and the lack of performance goals and deadlines (see PART IV.(D)(5)). Finally, local governments commented on the tentative determination permit's requirement to address outstanding comments on existing TMDL implementation plans.

Comments on Adequate Progress, Benchmarks, and ISR. One environmental NGO commented that the adequate progress standard established in PART III.3 of the reissued permit is not sufficiently strong to enforce compliance with ISR requirements and local TMDLs. To correct this, the commenter suggested that permittees be held accountable for meeting the benchmarks listed in Table 1 (see PART IV.(E)(4) and (7)). The environmental NGO recommended that failure to meet a benchmark should "...trigger corrective action steps...with specific consequences for failure to meet that goal." Conversely, an NGO representing local governments commented that the Department clarified within the permits that benchmarks represent goals and are not enforceable. This commenter noted that "MDE is absolutely correct that benchmarks are non-enforcement tools used in a clean water context to signal to a permittee that it should make future adjustments to its BMPs programs [*sic*], etc. They are appropriate feed-back loops that drive adaptive management."

The Department has defined a benchmark in the permit as "...a quantifiable goal or target to be used to assess progress toward the impervious acre restoration requirement or WLAs, such as a numeric goal for stormwater control measure implementation" (see PART IV(E)(4)). In this context, benchmarks are an adaptive management aid and should not be considered as enforceable requirements. The Department used language recommended by EPA and also used in the recently reissued permit for Washington, D.C. (see Appendix A, pp. 43 - 44, U.S.EPA, NPDES Permit No. DC0000221).

The Department uses benchmarks in the permits as a tool to track progress and provide guidance to Permittees to adjust interim goals when necessary (i.e., adaptive management) and ensure compliance with permit requirements. This process takes place through annual report reviews that provide continuous oversight of program progress and targets. The Department's use of the term "benchmark" in the permit is appropriate and in accordance with EPA recommendations. The EPA's 2017 NPDES Compliance Inspection Manual provides additional guidance to permitting authorities regarding the use of benchmarks as a compliance tool. Specifically, the 2017 Manual states that "[p]ermitting authorities should also consider including numeric benchmarks for stormwater control measures...". EPA's guidance indicates that "...not meeting the benchmark is not generally a permit violation...[but]...would typically require the permittee to take additional action, such as...implementing and/or modifying stormwater control measures...."

Enforceability of Future Comments and Changing Permit Requirements. A comment from a local government expressed concern over language contained within Part IV.F.1 requiring permittees to address all comments required by the Department for approval of any outstanding TMDL implementation plans within one year of the permit's effective date. The commenter stated that this "[r]aises concern regarding enforceability of/uncertainty with future comments and changing permit requirements."

TMDL implementation plans need to be iterative and adaptive. This permit condition allows the Department to ensure that the normal process of review and comment is continued for these TMDL plans. The condition also establishes a time frame to resolve any outstanding issues that are delaying approval of these plans.

Comments on Enforcement and the IDDE Program. One environmental NGO commented that the language concerning IDDE enforcement (see PART IV(D)(3)) is "...insufficiently precise to assure proper compliance with the CWA." The commenter stated that when a suspected illicit discharge is either originating from or discharging to an adjacent MS4, the requirement is only to "resolve the investigation" rather than eliminate the illicit discharge. There is no standard for sufficient investigation, which "...leaves the permittee and adjacent MS4 to determine when the suspected illicit discharge has been resolved." The commenter recommended that the permittees and any adjacent MS4s should be required to "...resolve the *violation* and eliminate the illicit discharge, if any, discovered." The commenter also stated that the permit should include a definition of "significant discharges" (e.g., numeric or detailed narrative standard) to avoid "...inconsistent application of this requirement, with permittees reporting to the Department discharges of extremely varied severity and many discharges going unreported because permittees do not think they rise to the threshold level of significance."

The Final Permit requires each Permittee to have an ordinance that prohibits illicit discharges into the storm sewer system (see PART IV(D)(3)(e)). The enforcement mechanisms to require the elimination of illicit discharges by violators are described within the local ordinance. In addition, the language in PART IV(D)(3)(g) requires each Permittee to use "...the appropriate enforcement procedures for investigating and eliminating illicit discharges, illegal dumping, and spills." As not all suspected dry weather discharges will be determined to be illicit (e.g., ephemeral streams), the language "resolve the investigation" is appropriate. Furthermore, the Department provides IDDE program oversight through annual report reviews. Permittees annually document the illicit discharge investigations and submit detailed findings to the Department for review. Through this process, the Department determines whether a jurisdiction's actions to investigate and eliminate illicit discharges are consistent with State and federal regulations.

The Department offers the following clarification on reporting significant discharges to the Department. Significant discharges include those that threaten human health or the environment, are suspected to require a NPDES permit, or are required to be reported to the Department by State or federal regulations. If a Permittee determines that a stormwater discharge from an individual facility may require a NPDES permit (e.g., the industrial general stormwater permit), the Permittee shall notify the respective program (e.g., WSA, Compliance Program). Information on individual programs can be accessed on the [Maryland Water Permits website](#). If assistance is

needed in determining the appropriate program, the Permittee can contact its MS4 permit administrator in the Stormwater, Dam Safety, and Flood Management Program. More specific reporting requirements for discharges that threaten human health or the environment are found under the Emergency Reporting Requirements section of the permit (PART VII.C).

Force Majeure. The Department received comments from Permittees and an NGO representing local governments requesting that the Department include a “force majeure” clause in the permit. The Department does not believe that a force majeure clause is appropriate in a discharge permit. While extraordinary events or circumstances beyond a Permittee’s control may occur that result in a Permittee’s noncompliance with permit requirements, the Department may exercise its enforcement discretion authority to adequately evaluate events that may result in non-compliance.

Appendix A. Technical Comments on the Accounting Guidance

1. Elimination of Discovered Nutrient Discharges from Grey Infrastructure

- **Comment:** One permittee stated that restoration achieved by eliminating discovered nutrient discharges from grey infrastructure should not be limited by “broad and general assumptions” from the expert panel report. The permittee noted that there is variation across jurisdictions and that pollution reductions are calculated using field monitoring observations. The permittee further suggested local jurisdictions should be able to propose alternative methodologies for determining a maximum that takes into account local conditions.
- **Response:** Multiple considerations lead to the Department’s decision to set a maximum impervious acre restoration credit that could be achieved by implementing this BMP. CBP's Watershed Technical Workgroup recommended a cap for nutrient reductions if the grey infrastructure loads were not explicitly simulated in the Phase 6 Watershed Model. These loads were not simulated, and therefore, the Department relied on assumptions established by the 2014 grey infrastructure expert panel report (Schueler, T. et al. 2014). In addition, the protocols for crediting the elimination of individual discharges allow for default concentrations and estimated flow volumes in place of field measurements, and the expert panel report recognized future research needs due to “major scientific gaps” in characterizing illicit discharges. The expert panel recommended convening a new panel once more data and updated modeling are available. Therefore, the Department is taking a conservative approach until more data become available.
- **Comment:** One permittee noted that the maximum credit calculation in Table 18 of the Accounting Guidance is incorrect because of an error in unit conversion (i.e., annual vs. cumulative). This error results in reducing the maximum credit by 50%.
- **Response:** The Department concurs that the maximum achievable restoration should not be reduced by 50% because the nutrient loads attributable to grey infrastructure are annual. The example calculation in Table 18 in the Accounting Guidance represents the maximum sum total equivalent impervious acre credit that can at no point be exceeded. The Department has clarified this calculation in the Accounting Guidance.

2. Forest Planting

- **Comment:** Two commenters recommended reducing the minimum acreage required to receive credit for forest planting, one noting that “sometimes areas less than 1 acre are planted next to forested areas, in effect extending an existing forested land use.” The commenters noted space constraints in highly developed or urban areas. Clarification was also requested on whether trees must be native to the Chesapeake Bay region.

- **Response:** The one acre requirement for forest planting was based on the Phase 6 model. However, other land cover conversion BMPs do not have an acreage requirement, and implementation of forest plantings less than one acre can produce hydrologically functioning forest cover. Therefore, the Department will decrease the required minimum size for the forest planting BMP to 0.5 acres. Tree planting projects are encouraged to use a selection of native species (Law, N. & Hanson, J. 2016).
- **Comment:** One local government agency recommended a new BMP, Professional Forest Conservation Management, to account for active forest management and tree planting that fills forest canopy gaps, and highlighted Baltimore City’s Forest management efforts. This commenter also noted that an improvement in a riparian acre should receive full credit.
- **Response:** The urban canopy expansion and forest planting BMP expert panel report (Law, N. & Hanson, J. 2016), considers management plans to be part of a well-implemented forest planting BMP. There is no current research that indicates a nutrient or sediment water quality benefit resulting from understory management. In addition, trees that are planted to fill in existing forest gaps smaller than 0.5 acres are not eligible for credit because these areas are already considered forested within the Phase 6 model.
- **Comment:** One local government agency recommended that a higher credit be given to forest planting “with an associated long-term IVM [Integrated Vegetation Management] commitment or maintenance plan” to account for an increased probability of survival. This commenter also requested clarification that the credit for riparian forest planting excludes plantings that are implemented to mitigate construction disturbance.
- **Response:** The forest planting BMP assumes a survival rate of 100 trees per acre, which includes a built-in mortality rate of 2.5-5% (i.e., mortality of no more than five trees). There is not currently any research that indicates a denser tree planting would result in additional water quality benefits. Should research arise that suggests more dense forest planting has hydrologic benefits beyond the current BMP, this information can be submitted in accordance with Section VIII of the Accounting Guidance. Projects that are implemented to mitigate construction disturbance are not eligible for credit.

3. Conservation Landscaping

- **Comment:** Two government agencies requested clarification on the definition of “unmanaged”. They stated that some management is required to maintain these areas (e.g., minimal mowing and spot treating with herbicides to maintain a native landscape). One of the commenters also asked if all species used must be native to the Chesapeake Bay region and how this region is defined. The commenter asked if removal of invasive species is necessary for maintenance.
- **Response:** The “unmanaged meadow condition” is intended to emphasize the difference from the “managed turf” condition, which assumes frequent mowing

and fertilizer use. In order to qualify for conservation landscaping, the area should be infrequently mowed and not have any fertilizer application. However, some level of management is necessary; therefore, the term will be changed to “meadow condition.”

The Chesapeake Conservation Landscaping Council has developed Conservation Landscaping Guidelines (2013) that define it as a practice which uses “locally native plants that are appropriate for site conditions”. The Department requires any planted material intended for the conservation landscaping BMP to be native to the Chesapeake Bay region, i.e., the Chesapeake Bay drainage area. Removal of invasive species is not required, but encouraged for maintenance.

- **Comment:** One commenter asked if turf converted to mulched areas with native vegetation, or replacement of invasive species with native species in a mulched area qualifies.
- **Response:** Mulched areas do not qualify as conservation landscaping. Mulch may be used during construction, but this BMP cannot rely on mulch to suppress weeds over the long term (Schueler, T. and Wood, D. 2018).
- **Comment:** One commenter asked if “...Riparian Forest Buffers and Riparian Conservation Landscaping need to meet the same requirements as Upland Forest Planting and Conservation Landscaping, such as native species, plant densities, etc?”
- **Response:** The same criteria are required for both, with the exception of the minimum acreage required for non-riparian forest planting. The riparian forest planting instead requires a minimum buffer width of 35 feet.
- **Comment:** One commenter asked if other types of BMPs (e.g., rain gardens) can receive additional credit for being installed in riparian areas.
- **Response:** Only riparian forest buffers and riparian conservation landscaping are eligible for enhanced credits at this time.
- **Comment:** One commenter asked if “the transitional landscape between meadow and forest (shrub/scrub) be considered Conservation Landscape...[a]nd once this meets the Forest Planting requirements, can the credit then be converted to Forest Planting?” Similarly, the commenter asked, “[c]an credit be claimed for natural regenerative forest? How is credit provided in the land use / land cover update in the bay model?”
- **Response:** Scrub/shrub areas that are created and lightly managed in the transitional landscape between meadow and forest can be considered conservation landscaping. If the permittee documents that a previously implemented conservation landscaping BMP undergoes succession to forest canopy cover with a density consistent with the forest planting BMP within the permit term, the Department will review whether the BMP can receive additional credit.

4. Impervious Surface Reduction

- **Comment:** One NGO requested that urban agriculture be included in the impervious surface reduction BMP. The commenter stated that urban farms and community gardens are more sustainable than street sweeping and represent low-cost and long-term solutions.
- **Response:** The impervious surface reduction BMP is applicable for practices where impervious cover is removed and converted to turf. Conversion to an agricultural use will likely include the application of fertilizer, which may negate any nutrient and sediment reduction achieved by impervious surface removal. In addition, urban agriculture is currently not a CBP-approved urban BMP. Section VIII of the Accounting Guidance allows for the submission of innovative BMPs for review and consideration by the Department.

5. Street Trees

- **Comment:** One local government agency stated that “Street Trees planting credit should be maximized for Baltimore City where planting feasibility is more challenging than bordering jurisdictions...” and requested that street tree pits receive double credit for both removing the impervious surface and planting the tree.
- **Response:** The street tree BMP is a conversion of impervious surface to tree canopy over impervious (i.e., trees planted in tree pits adjacent to impervious surface). Adding an impervious surface removal credit would not be applicable because that BMP assumes that the trees are planted over turf, which is not the case for street trees. The hydrologic benefit of street trees is provided mainly through the interception of precipitation through canopy cover, and not through the small area of open soil under the tree. Subsequent model land use updates would classify these areas as canopy over impervious.
- **Comment:** An NGO requested clarification that street trees will be credited for pollution reductions in the TMDL.
- **Response:** Street trees are a CBP-approved BMP and are credited for TMDL reductions.
- **Comment:** One permittee requested clarification on whether there is an inspection protocol for each land conversion BMP (e.g., forest planting, urban tree canopy, impervious surface reduction), and questioned whether inspecting street trees and urban tree canopy every three years is practical.
- **Response:** The inspection for these practices is a visual check to verify the survival of any planted material. Tree planting BMPs have a survival requirement and it is imperative to identify and rectify tree mortality to ensure water quality benefits.

6. Urban Tree Canopy

- **Comment:** One permittee requested additional credit for urban tree canopy planted in riparian areas because they provide “greater water quality and co-benefits” than when implemented in upland areas.
- **Response:** Tree planting that establishes trees over turf is not eligible for enhanced credit. Riparian buffer BMPs are only available for forest planting and meadow conditions as CBP-approved BMPs. Trees planted adjacent to streams, but still over a managed and fertilized turf, do not realize the “buffer” credit that the enhanced riparian land cover conversion credits are intended to provide.

7. Forest Conservation

- **Comment:** One environmental NGO submitted multiple questions on how the forest conservation credit is calculated. For example, the commenter asked for clarification on how the Phase III WIP 2025 base land-use condition will be used to determine the baseline that permittees must exceed to receive credit for forest conservation, what effect State and local policy changes will have on calculating the baseline or qualifying for credit, and how crediting is assigned for local ordinances above state requirements. In addition, clarification was requested on what a “Land Use Conservation BMP” is, as referenced in Table 12 of the Accounting Guidance.
- **Response:** Maryland’s Phase III WIP is based on a modeled 2025 scenario, which includes the projected impact of continued forest conservation actions at the State and local level due to the Forest Conservation Act and other specific Forest Conservation easement programs. The 2025 scenario (i.e., baseline) assumes that those programs will continue to be implemented at the same rate and was used to determine the additional implementation requirements for this credit. Changes in forest conservation policy will not be incorporated into the 2025 WIP scenario.

Counties with local forest ordinances are able to obtain credit for the difference between the state-level Forest Conservation Act requirements and the local ordinance, which is verified through easement boundaries submitted by permittees. If State policy changes (e.g., a revision to the Forest Conservation Act adds new requirements), permittees would not be eligible for forest conservation credit for those actions taken to meet state law. “Land Use Conservation” is a typo that has been corrected to “Land Use Conversion BMP”

8. Urban Soil Restoration

- **Comment:** One local government agency commented that the urban soil restoration credit should “...apply to any scenario where soils are stressed due to compaction.” A permittee commented that the technique (i.e., soil ripping) would not be useful in Piedmont areas where rock may be encountered at shallow depths. This commenter also stated that more detailed information (e.g., specifications, details) should be provided prior to making this credit available.

- **Response:** The urban soil restoration credit is a new BMP that the Department has included in the Accounting Guidance to encourage reconditioning of compacted urban soils, provide runoff retention, groundwater recharge, and as a result, significantly reduce urban runoff. The current specifications and criteria are based on transforming compacted soils and impervious areas into functioning hydrologic soil group (HSG) A, B or C soils. As the implementation of urban soil restoration expands, the Department, with help from the regulated community and academia, can assess the effectiveness of the BMP and further refine the design criteria and specifications for eventual use in new development applications.

9. Street Sweeping

- **Comment:** One permittee requested clarification on how many weeks spring and fall are for street sweeping implementation.
- **Response:** Spring is considered March to April and fall is October to November.

10. Floating Treatment Wetland

- **Comment:** A permittee asked for clarification on whether the calculations to determine equivalent impervious acres for a floating treatment wetland (FTW) installed in a pond would change if the wet pool does not achieve full water quality volume.
- **Response:** The FTW credit is not based on water quality volume. An FTW installed on an undersized pond is still eligible for the full credit in Table 8, which is based on the percent of the pond's permanent wet pool that the FTW covers and the impervious acres draining to the pond.

11. Septic Practices

- **Comment:** A permittee requested clarification on the reason the credit for septic practices in the 2020 Accounting Guidance was reduced from both the 2014 and draft 2019 Accounting Guidance documents.
- **Response:** Equivalent impervious acre credits for septic pumping and denitrification practices are based on efficiencies consistent with the Chesapeake Scenario Assessment Tool (CAST). The change in the septic connection credit between the 2019 and 2020 versions of the Accounting Guidance was due to a change in calculation methodology consistent with the Phase III WIP.
- **Comment:** A permittee commented that the Accounting Guidance language concerning the comprehensive program for pumping septic systems seems to require that the septic systems are inspected annually for maintenance verification. The permittee questioned the need for annual inspections and is not aware of any jurisdiction that inspects systems this frequently.
- **Response:** The Department has approved comprehensive programs with the requirement that qualifying septic systems are inspected annually. An alternative

option for reporting annual septic pumping is provided if a permittee's program does not meet the comprehensive program requirements.

12. Stream Restoration

- **Comment:** A permittee requested clarification on the application of the protocols for the dry channel regenerative step pool stormwater conveyance referenced in Table 2. Stormwater BMPs for Upland Practices in the Accounting Guidance. The permittee questioned whether protocol 4 is applicable to in-stream practices.
- **Response:** Protocol 4 applies to the upland dry channel step pool conveyance that is referenced in Table 2 and is not applicable to in-stream practices. Protocol 4 utilizes the adjuster curves previously mentioned (Schueler, T. and Lane, C. 2012a.). The in-stream step pool conveyance practices would utilize protocols 1, 2, or 3, and outfall stabilization is addressed in protocol 5 (Burch, J et al. 2019, Wood, D. 2020, Wood, D. and Schueler, T. 2020, Hanson, J. et al. 2019).
- **Comment:** One permittee requested the Department add issue dates for the stream restoration expert panel reports. The permittee also requested that language be added regarding the grandfathering of stream restoration under the previous protocols.
- **Response:** Dates are provided in Section X. References in the Accounting Guidance. The prevented sediment stream restoration expert panel report (Wood and Schueler, 2019) provides grandfathering language referenced by the commenter and therefore, does not need to be added to the Accounting Guidance.
- **Comment:** One permittee requested clarification on whether the calculation of the stream restoration planning rate is based on the existing stream length.
- **Response:** The length of the existing stream channel that is proposed for restoration is used in the calculation.

13. Upland BMPs and Green Stormwater Infrastructure

- **Comment:** One environmental NGO commented that green stormwater infrastructure may deliver greater load reductions depending on where it is located within a watershed. This commenter further stated that the Accounting Guidance does not recognize or encourage optimization of BMP location; BMPs have the same efficiency regardless of location.
- **Response:** As discussed previously, pollutant removal efficiencies for the different BMPs are based on the CBP protocols; for upland BMPs, the CBP uses the pollutant removal adjuster curves found in Schueler, T. and Lane, C. 2012a & 2012b. The CBP protocols for upland BMPs and, therefore, the Department's crediting of those BMPs are based only on rainfall captured.
- **Comment:** A permittee stated that the vegetation requirement for implementing green stormwater management on a pond is impractical and is more applicable to wetlands.

- **Response:** Comment noted.
- **Comment:** One environmental NGO stated opposition to considering dry wells as green stormwater infrastructure because they do not mimic natural processes and are not recognized by the U.S. EPA.
- **Response:** Dry wells are considered runoff reduction (RR) practices by the CBP. The GSI credit applies to any practice included in Chapter 5 of the 2000 Maryland Stormwater Design Manual, which specifies criteria for Environmental Site Design that mimics natural hydrological conditions. Infiltration practices provide water quality benefits and, when designed per specifications in the Manual, the pollutant removal capability of dry wells is directly proportional to the amount of runoff that is stored and allowed to infiltrate.
- **Comment:** A permittee requested clarification that delivery factors are not used to calculate upland BMP impervious acre restoration credit.
- **Response:** Delivery factors are not used in this calculation.

14. Urban Nutrient Management

- **Comment:** One permittee stated that neither the urban nutrient management (UNM) BMP nor how to apply the Fertilizer Act is included in the Accounting Guidance. The permittee requested guidance on how the UNM BMP "...affects impervious surface restoration and local TMDL WLA attainment" and noted that "[t]his BMP is an important part of the Chesapeake Bay Watershed Model and is an important driver of MS4 nutrient loadings..."
- **Response:** The Fertilizer Act is directly simulated in CAST, and therefore, is taken into account in the WIP. The expert panel (Schueler, T. and Lane, C. 2013) limited Maryland localities' application of UNM plans to unfertilized lawns.

15. General Comments

- **Comment:** Several environmental NGOs expressed the opinion that in-stream water quality data collected by Blue Water Baltimore demonstrate that the current restoration programs in Baltimore City and Baltimore County are not adequate to improve water quality.
- **Response:** The analysis referenced does not reflect the effectiveness of MS4 program implementation, due to confounding factors in the watershed such as precipitation patterns, land use changes, fertilizer application, and sanitary infrastructure variables that each contribute to in-stream water quality conditions. The Department has found that other analytical techniques are generally more appropriate for evaluating MS4 programs and recent studies have found that the MS4 programs are effective and that there have been observed decreases in pollutant concentrations and loads. These results have been documented in Pilot Analysis of Maryland Phase I MS4 Permit Water Quality Data (Jepsen, R. and Caraco, D. 2020) released by the Interstate Commission on the Potomac River

Basin, which included recommendations on how to develop a testing program to evaluate program effectiveness.

- **Comment:** An association representing local governments requested that the Department offer meetings with the permittees to answer questions related to the Accounting Guidance and Monitoring Guidelines so that staff and consultants can ask questions and receive “explicit guidance on expectations.”
- **Response:** The Department has provided outreach and training, including responding to questions submitted in writing and holding a live training session on December 22, 2020, that included question and answer periods related to the Accounting Guidance. The Department is committed to continuing to provide technical assistance.

- **Comment:** A permittee asked if the geodatabase will be updated to accommodate additional reporting requirements.
- **Response:** The Department is collaborating with permittees to update the geodatabase.

- **Comment:** One commenter requested that web links to referenced documents be included in the Accounting Guidance. Another commenter asked if future CBP reports will be posted on the Department’s website.
- **Response:** The Department has added available web links to the Accounting Guidance. Links to the expert panel reports are not provided on the Department’s website but are available on the Chesapeake Bay Program’s website. If new expert panel reports are approved, the Department will provide guidance on restoration crediting, as applicable.

- **Comment:** An environmental NGO incorporated by reference comments submitted to the Department on February 11, 2020 regarding a 2019 draft of the Accounting Guidance.
- **Response:** The Department refers the commenter to the Department’s written response provided on March 20, 2020.

Appendix B. Specific Comments

1. Water Quality

- **Comment:** The draft permit added a new phrase of “discharges into, *through* or from the MS4”. One permittee referenced PART IV.D.3 of the permit, and interpreted this language as suggesting that the focus should remain on prohibiting illegal discharges. The permittee questioned whether legal focus has shifted from “prohibitions on third parties to affirmative actions by the City to stop or treat discharges” from its MS4?
- **Response:** PART IV.D.3 requires permittees to obtain legal authority to prohibit illicit discharges. Permittees must take action by enforcement or other means to address illegal discharges and their ordinances should establish the legal authority to take such action. Therefore, the language in Part III.1 is consistent with PART IV.D.3. See discussion part titled “Enforcement” above.

2. Permit Administration

- **Comment:** One permittee suggested modifying permit language from requiring a Notice of Intent (NOI) for facilities within the jurisdiction to identifying jurisdiction-owned properties which have already submitted NOIs.
- **Response:** The permit language was updated to clarify that the permittee must report a list of properties that are currently covered under the General Permit For Discharges of Stormwater Associated With Industrial Activity (12-SW or subsequent versions).
- **Comment:** One permittee requested confirmation that stormwater discharges covered by 12-SW are not covered by the MS4 permit and can be excluded from the permit area.
- **Response:** The permittee is not responsible for facility compliance with the 12-SW permit for private facilities separately covered under that permit, nor is the permittee responsible for any restoration required within the 12-SW for private facilities. Any restoration required within the 12-SW permit by facilities owned by the permittee should be counted toward the permittee’s restoration requirement under the MS4 Permit. In this scenario, the untreated area on that property is not required to be restored on site and may be factored into the permittee’s jurisdiction-wide restoration goals. This is consistent with, and unchanged from, the previous permit.

3. Legal Authority

- **Comment:** A permittee requested that the Department consider extending the timeframe to make necessary changes to maintain legal authority (PART IV.B) from 1 year to 2 years.
- **Response:** EPA requested a timeline for addressing legal authority; the Department has enforcement discretion and will work with applicants on correcting these issues.

4. Source Identification

- **Comment:** “All infrastructure” has been added to the list of storm drain features that must be reported. Does “all infrastructure” include all storm drain features or just those owned/operated by the jurisdiction?
- **Response:** This requirement has not changed between the previous permit and the Final Permit for Baltimore City and Anne Arundel and Baltimore Counties. Montgomery County’s permit has been updated to be consistent with those existing requirements. Jurisdictions need to map all infrastructure that is owned or operated by them.
- **Comment:** The geodatabase does not provide the schema necessary to submit the required stormwater infrastructure data. As currently written, permit compliance would not be possible. The language should be revised.
- **Response:** Language has been added to the permit to allow infrastructure data to be submitted as supplemental information.
- **Comment:** Should the reference in IV.C.5 Monitoring Locations be to Part IV.G Assessment of Controls and not Part IV.F Countywide TMDL Stormwater Implementation Plan?
- **Response:** This has been corrected.

5. Stormwater Management

- **Comment:** Waiver reporting should include Water Quantity Volume and information should be more publicly accessible.
- **Response:** The Department gathers this information through the permit’s reporting tool (i.e., the geodatabase) and during the triennial review of local stormwater programs.

6. Erosion and Sediment Control

- **Comment:** In Part IV(D)(2)(b), the MS4 Permit should require more construction site operator training [in Anne Arundel County].

- **Response:** The Responsible Personnel Training (RPC) training is now conducted online through the Department’s website here ([RPC website](#)), and local jurisdictions are required to ensure that site personnel are trained.

7. Illicit Discharge Detection and Elimination

- **Comment:** PART IV(D)(3)(a): an environmental NGO expressed support for requiring permittees to review all outfalls to prioritize screenings but requested clarity on how alternative programs submitted to the Department for consideration would be reviewable by the public.
- **Response:** An alternative program would be submitted as part of an annual report, wherein the permittee is required to make available to the public on its website.
- **Comment:** PART IV(D)(3)(c): written standard operating procedures should be made public.
- **Response:** Written standard operating procedures can be requested from each permittee through a public information request.
- **Comment:** PART IV(D)(3)(e): an environmental NGO expressed support for improved collaboration in Anne Arundel County’s MS4 permit, particularly in relation to the City of Annapolis, and suggested this change be made in other jurisdictions.
- **Response:** PART IV(D)(3)(g) of all four permits require coordination with adjacent MS4s when illicit discharges cross jurisdictional boundaries.
- **Comment:** A permittee expressed concern that the level of effort required to review all outfalls would be significant and requested that this requirement focus on major outfalls.
- **Response:** The potential to pollute is related to more than just the size of the outfall (e.g., land use, age of infrastructure). Permittees are required to submit the process developed to prioritize outfall screenings to the Department for approval with the first year annual report. This requirement allows the permittees to develop a jurisdiction-specific approach that considers local conditions.

8. Property Management and Maintenance

- **Comment:** A permittee commented that the Good Housekeeping Plan (GHP) requirement is unfairly burdensome to local governments and questioned why privately-owned facilities are not also included in this requirement. The permittee asked the Department to consider expanding this requirement to include privately-owned facilities.
- **Response:** PART IV.D.4 a: GHPs are only required to be developed for locations with the activities and materials listed in PART IV.D.4.a. Furthermore, the permittee is able to streamline efforts to develop a single GHP for facilities of one

common type. Many permittees already implement good housekeeping procedures at facilities not covered under the 12-SW.

- **Comment:** In Part IV.D.4 a & b, it is not clear how the same activities that typically trigger permit coverage can be used to identify properties that do not require a permit, but that should have a GHP. Also, how are hazardous materials defined?
- **Response:** The GHP is a significantly simpler plan than is required under the 12-SW permit. The introduction of this new GHP requirement reflects the iterative and adaptive approach to stormwater management within the State. GHPs should be developed where those activities and materials listed in PART IV.D.4.a are present that may cause an unauthorized discharge of pollutants into the MS4.
- **Comment:** A permittee asked the Department to clarify whether evaluation of litter problems applies only to jurisdiction-owned properties.
- **Response:** Evaluation of litter control problems is required where it is found to be associated with discharges into, through, or from portions of its MS4 .
- **Comment:** Please consider modifying the language in the GHP requirement regarding herbicide applications. Also, forest conservation efforts under Integrated Vegetation Management programs should be promoted in this section, with a recognition of the essential use of target-specific, low-volume herbicide applications.
- **Response:** The permit requires basic tracking and reporting of pesticide application with the aim to reduce stormwater pollution over time. Efficient application strategies are encouraged, such as integrated pest management and vegetation management.
- **Comment:** Baltimore City's deicing material data do not reflect ice storms or the influence of snowfall. The Department should identify the standard to be used for roadway usage and demand. Also, language should be added to allow alternative performance metrics to quantify usage of deicing material for storm events outside of snowfall.
- **Response:** The permittee is required to report snowfall and deicing material application rates as outlined in the geodatabase. This is modeled after MDOT SHA's Statewide Salt Management Plan. The Department will take this comment into account when reviewing application rates and the permittee's pollution reduction efforts.
- **Comment:** Salt management plans should not be required until after the COVID-19 pandemic has passed.
- **Response:** A salt management plan is already in use in the majority of permittee jurisdictions to manage deicing application on roads during winter weather events. The Department encourages permittees to develop further best management practices and strategies based on the established practices already in place locally. MDOT SHA's Salt Management Plan can be referenced for the

most current scientific understanding as well as options for best practices and technology. Permittees should utilize this document to explore potential local improvements to reduce stormwater pollution.

- **Comment:** One commenter noted that the three-year time period for the salt study is unclear and seems extensive.
- **Response:** The current version of the permit requires the submission of a salt management plan with the third-year annual report and that the plan be implemented thereafter. The salt management plan is based on the guidance provided on best road salt management practices described in the MDOT SHA's Maryland Statewide Salt Management Plan (see [MDOT-SHA Salt Management Plan](#)). MDOT SHA originally developed a road salt management best practices guidance document in October 2011 that could be used or referenced by local jurisdictions. Given the current efforts undertaken by MDOT SHA and local agencies in this area, and the comprehensive guidance available, three years is sufficient time for permittees to submit local versions to the Department.

9. Public Education

- **Comment:** In Part IV(D)(5)(b)(iv), it is unclear how many more days or locations have been set up for household hazardous waste disposal. Available data on this should be offered.
- **Response:** The permit establishes the requirement for hosting events like the household hazardous waste disposal. However, it is the permittee's responsibility to determine when and where to host these events.
- **Comment:** What is the extent to which public education outreach activities should be reported?
- **Response:** Quantify how many outreach activities were held per medium (e.g., flyers, in-person seminars). Then calculate a total sum of outreach activities conducted for the reporting year. A total cost (for all activities) should also be calculated and reported; individual costs can also be included, but are not required.
- **Comment:** Please clarify what activities qualify as an "outreach effort", given the requirement to do a certain number of outreach efforts.
- **Response:** An outreach effort is any distinct action taken to increase public awareness of the topics listed in PART IV.D.5.c. Considering the activities mentioned therein, one outreach effort could be a piece of new material published on the website, a brochure distribution event, a public flyer posting initiative, a newspaper article, or an in-person or virtual event.
- **Comment:** In Part IV(D)(5), credit application or increased support for Baltimore City public outreach is requested. Also requested is that the requirement extend beyond 15 outreach efforts per year to expand opportunities for engaging private

residents and corporations (e.g., rain barrel distribution, rain garden trainings, plant giveaways, stewardship events and corporate incentives).

- **Response:** Credits are based on modeled nutrient load reductions. While public outreach programs are a critical component of a successful stormwater management program, sufficient scientific evidence is not available for their crediting.
- **Comment:** A commenter suggested that Baltimore City should be required to increase its contribution to the Chesapeake Bay Trust Outreach & Restoration grant program to accelerate implementation of ESD and green infrastructure by utilizing private property owners.
- **Response:** Local governments are responsible for making budgeting decisions for program implementation and ensuring restoration requirements are met.

10. Stormwater Restoration

- **Comment:** The permit language specifies that BMPs reported as water quality improvement projects must be in accordance with the 2020 Accounting Guidance. Does this mean that restoration work from past permits should no longer be reported?
- **Response:** Prior restoration efforts and maintenance need to be reported in the geodatabase to ensure continued performance. New BMPs will be reported using the 2021 Guidance. This will be clarified in the geodatabase.
- **Comment:** Are the annual benchmarks in Table 1 based on calendar year or fiscal year?
- **Response:** This is submitted by fiscal year to coincide with permit reporting requirements.
- **Comment:** Please clarify how redevelopment should be reported in the Urban BMP database.
- **Response:** This will be clarified/specified and guidance provided in the revised geodatabase.
- **Comment:** Please provide guidance on how new permit elements, such as stream restoration protocols 4 and 5, that don't exist in version 1.2 should be reported.
- **Response:** Guidance for reporting stream restoration projects that use the new protocols will be updated with the new geodatabase.

11. Countywide/Citywide Stormwater TMDL Implementation Plan

- **Comment:** (PART IV.F.2) A permittee requested confirmation that the updated implementation plan requirements apply only to future TMDL implementation plans, and not to the implementation plans that have already been submitted to the Department for review.

- **Response:** The referenced permit requirement clearly states that “[w]ithin one year of EPA’s approval or establishment of a *new* TMDL...” [emphasis added]. This clearly applies to TMDL plans approved after issuance of the permit.
- **Comment:** (PART IV.F.2) Permittees requested that the first sentence of this section be revised to “Within one year of EPA’s approval or establishment of a new TMDL *having a stormwater WLA*, [the permittee] shall submit...” [emphasis added], stating that this compliance requirement should recognize that only those TMDLs with stormwater WLAs are subject to these NPDES MS4 Permit requirements.
- **Response:** PART I.B of the permit states that the permit “...covers all *stormwater* discharges into, through, or from the municipal separate storm sewer system (MS4) owned or operated jurisdiction-wide...” [emphasis added]. No further clarification is needed.
- **Comment:** (PART IV.F.2 and 3) Permittees requested clarification that annual revisions to the TMDL Stormwater Implementation Plan would not trigger a 30-day public comment period and recommended that the plan be renamed to “TMDL Stormwater Implementation Progress Report,” to be included with the MS4 annual progress report.
- **Response:** As discussed in Chapter 5 above, the Countywide TMDL Implementation Plan consolidates a jurisdiction’s progress reporting on Department-approved TMDL implementation plans into a single document. The TMDL plans incorporated into this progress report have already satisfied public notification requirements, and therefore, no additional public notice is required. Please note that any new TMDL implementation plans required under PART IV.F.2 will require a 30-day public comment period.
- **Comment:** (PART IV.F.3) Permittees requested clarification whether Appendix A of the permit would be updated when new TMDLs having stormwater WLAs are approved by EPA (constituting a permit modification). The permittees recommend that the draft permit language be modified to indicate all TMDLs listed in Appendix A and any subsequently approved TMDLs having a stormwater WLA are subject to this annual implementation progress reporting.
- **Response:** PART IV.F.2.c already requires that new TMDL implementation plans be incorporated into the Countywide/Citywide TMDL Stormwater Implementation Plan once approved by the Department. This requirement subjects these these plans subject to the annual progress report requirements under PART IV.F.3 of the permit.
- **Comment:** (PART IV.F.3) A commenter requested clarification on whether the Countywide Stormwater TMDL Implementation Plan is an additional separate document or rather a compilation of the individual watershed plans that have been completed and approved, and whether this is reported as part of the annual progress report.

- **Response:** The Countywide Stormwater TMDL Implementation Plan is a compilation of the individual plans approved by the Department and updated yearly as part of the annual progress report.
- **Comment:** (PART IV.F.4) A permittee requested that the phrase, “incorporate any relevant comments that can aid in achieving local stormwater WLAs” be removed, stating that the phrase includes no reference of MEP, feasibility or affordability.
- **Response:** Permittees are required to explain how public comments have been incorporated into their TMDL process. How each jurisdiction addressed comments, including factors such as MEP, feasibility, and affordability and other related elements should be included as part of this explanation.
- **Comment:** (PART IV.F.4) A permittee requested clarification on what is meant by “continual outreach” and if this outreach applies to both the individual implementation plans and to the Countywide TMDL Stormwater Implementation Plan/Progress Report.
- **Response:** Continual outreach means that permittees are responsible for conducting outreach on their plans throughout the permit term. The specific details for outreach are left to each permittee; however, single or solitary approaches to outreach are not acceptable.
- **Comment:** In Part IV(F)(4), given current circumstances related to the global health pandemic, the permit should more clearly outline opportunities and requirements for remote outreach.
- **Response:** This permit requirement is not intended to be that prescriptive; permittees are encouraged to be innovative when pursuing outreach opportunities.
- **Comment:** Multiple NGOs expressed concern that the requirements for the Anacostia Trash TMDL in the Montgomery County Draft Permit would cause backsliding in progress made during the last permit.
- **Response:** The Anacostia Trash TMDL is listed in Appendix A of the Montgomery County permit, and the associated WLAs must be addressed by the permittee. Additionally, there are requirements for meeting trash WLAs across the jurisdiction (see good housekeeping).
- **Comment:** A commenter recommended including collaborative outreach and engagement in the pre-design phases of specific stormwater management practices.
- **Response:** The Department encourages local involvement in pre-design phases; however, the process is subject to local requirements
- **Comment:** A permittee requested clarification on whether the list of BMPs required in the Countywide Stormwater Implementation Plan needs to include specific projects, or if project types would be sufficient.

- **Response:** The list BMPs used to address local TMDLs in the Countywide Stormwater Implementation Plan should include specific information (e.g., project name, type) where possible.
- **Comment:** A commenter requested clarification on what actions would trigger the public interaction process.
- **Response:** The APA outlines actions that would trigger public interaction (e.g., permit modifications).

12. Assessment of Controls

- **Comment:** Please clarify which of the three forms of bacteria (i.e., E.coli, Enterococcus spp., or fecal coliform monitoring) should be sampled.
- **Response:** Jurisdictions are only required to monitor one of the two forms of bacteria listed in PART IV.G.1.b.i of the permit (E.coli or Enterococcus spp.). The jurisdiction can choose either of the first two; however, fecal coliform monitoring is not allowed.
- **Comment:** Part IV. G. 1. a. and 2. A.: (Pooled Monitoring) The date by which enrollment must be demonstrated is shown as “[date to be determined]”. We suggest the enrollment date be no sooner than August 15, 46 days after the beginning of the Fiscal Year.
- **Response:** The permit allows up to four months after permit issuance to opt into the pooled monitoring program; that should be sufficient.
- **Comment:** Will reporting of monitoring locations be required even if the pooled monitoring option is selected?
- **Response:** Monitoring locations are not needed for locations supplanted by pooled monitoring.
- **Comment:** Can Montgomery County continue monitoring at the Breewood Tributary using current chemical monitoring standards and protocols?
- **Response:** The permittee can continue their existing monitor program, however the additional parameters from the new permit should be incorporated into that program. The County may propose an alternative program that meets the intent of the new monitoring requirements in the permit for the Department’s consideration.
- **Comment:** Has a QA/QC protocol for TSS-turbidity/Chloride-specific Conductivity been developed?
- **Response:** The Department has a standard Quality Assurance Plan for chloride specific conductivity monitoring and is working on QAQC procedures for data reporting presently. The Department removed the requirement for monitoring TSS-turbidity from the permit.

- **Comment:** Will monitoring be conducted on a CY basis, and can [Montgomery] County report last year’s data on monitoring to allow for processing/QC time?
- **Response:** The permit’s reporting requirements are based on fiscal year.

13. Program Review and Annual Progress Reporting

- **Comment:** If the permit is issued in late spring or early summer, please explain how jurisdictions should report on a fiscal year that is either not yet complete (late spring) or has just ended (early summer).
- **Response:** Annual reporting is based on the State’s fiscal year. Currently, the permit requires annual reports to be issued on or before the anniversary date of permit issuance. However, to maintain continuity, the Department has changed this to require annual reports to be submitted by December 31 of each year.
- **Comment:** The language in Part V has been changed to read “County must continuously evaluate the effectiveness of its programs and report any modifications in each annual report.” Please clarify the intended meaning of the word “continuously.”
- **Response:** As used in this context, “continuously” means that the permittee will assess program effectiveness without interruption.
- **Comment:** A permittee expressed concern regarding the feasibility of the requirement in PART V.A.3 to modify ineffective programs within 12 months to show progress toward meeting stormwater WLAs developed under EPA approved TMDLs. The permittee recommends that “this type of evaluation be conducted at the end of the permit with no deadline for action or that this requirement only be listed for the watershed restoration (impervious area restoration).”
- **Response:** This is part of the adaptive and iterative process to improve local programs and meet water quality standards throughout the permit term. The Department will work with permittees when modifications cannot be feasibly implemented within the specified timeframe.

14. Emergency Reporting Requirements

- **Comment:** Clarification was requested regarding the types of non-compliance that are included in PART VII.C. Emergency Reporting Requirements, and whether they are over and above those things normally included in stormwater management and soil and erosion control programs.
- **Response:** This requirement applies to non-standard events that are deemed an emergency like chemical spills. These events would be immediately reported to the Department’s Compliance Program with follow-up notices as described in the permit.

15. Permit Revocation and Modification

- **Comment:** A permittee requested confirmation that “the permit effluent limit requirements” for NPDES MS4 permits are expressed as best management practices or other similar requirements consistent with the MEP standard, rather than as numeric effluent limits.
- **Response:** In PART VII.G.1.e, the term “effluent limit requirements” refers to best management practices and programmatic requirements that contribute to the reduction of pollutants in stormwater discharges.

16. Other Comments from Permittees

- **Comment:** Permittees noted that Appendix B includes outdated information and submitted a revised list of planned BMPs for year 1 of the permit term.
- **Response:** Comment noted; the individual permits will be updated as requested.
- **Comment:** A permittee expressed concerns that funding reporting requirements are onerous and duplicative and requests that duplicative reporting be minimized in the new permit.
- **Response:** The Department understands these concerns; however, funding reporting requirements established by State law (i.e., FAP and WPRP) are independent of the permits. The requirements within the permit are necessary to account for costs specific to the permit.
- **Comment:** A permittee requested that the work and resource allocation associated with maintaining and replacing stormwater infrastructure be recognized in the permit.
- **Response:** This was considered by the Department during the review of each jurisdiction’s MEP analysis.
- **Comment:** A permittee requests to use the 2014 Accounting Guidance to determine credits for projects not yet complete but contracted prior to the publication of the 2020 Guidance.
- **Response:** The new permit is based on the Phase 6 watershed model and the 2021 Accounting Guidance. All projects associated with the new permit should follow these guidelines.
- **Comment:** A permittee requests explanation of the requirement of numerical accounting for pollution load changes from New Development in Countywide SW IP and requests flexibility in reporting until “the technical details, guidance, and standards have been resolved.”
- **Response:** A jurisdiction should account for pollutant loads from existing development and the BMPs implemented in these areas, in aggregate with the pollutant loads associated with new development and the stormwater BMPs

implemented to reduce these loads. The reissued permits purposefully direct the permittee to “reflect these policies, programs, and implementation as part of its net WLA accounting as stipulated in PART IV.F.3.b of this permit.” The permit language in Section VI. is sufficient for directing permittees on how to account for statewide planning programs by including new development in pollutant load calculations for showing progress toward stormwater WLAs.

17. Other Comments

- **Comment:** A commenter requested clarification regarding apparent discrepancies in the projected restoration between the financial assurance plan submitted by Anne Arundel County and the practices listed in Appendix B of the draft permit.
- **Response:** The BMPs proposed in the FAPs and Appendix B were submitted to the Department at different times and reflect different periods of implementation. The FAPs should be largely consistent with the MS4 permits, however, actual BMPs implemented for restoration may deviate from those proposed in the FAPs. Because of the iterative and adaptive nature of the permits and updated information, the two may not be in complete agreement.
- **Comment:** A commenter expressed that synthetic turf fields violate several permit conditions and should be banned within the MS4 regulated community.
- **Response:** The permit does not dictate the types of surfaces that may be used for specific purposes like athletics or parking. This is governed by local planning and zoning standards.
- **Comment:** Commenters expressed concern that Baltimore City homes experience sewer backups during storm surges due to an aging system and new development.
- **Response:** The MS4 permit addresses discharges from the storm sewer system. Baltimore City is currently under a consent decree regarding the sanitary sewer system that includes infrastructure improvements that will address sewer backups.
- **Comment:** A commenter requested that reporting requirements for private BMPs be increased to enable financial and performance analyses.
- **Response:** The Department’s authority under COMAR is to oversee local stormwater programs and their implementation. The local jurisdictions are responsible for reporting requirements, including maintenance, for private BMPs within their jurisdiction.
- **Comment:** Commenters expressed concern that a Public Information Act request determined “...there was no coordination or consultation between the Department and the [Commission on Environmental Justice and Sustainable Communities (CEJSC)]...” during the development of the permit.

- **Response:** The Department participates in the Commission and is committed to promoting environmental justice. See discussion in “Global Issues” above.
- **Comment:** A commenter requested clarification that the acres proposed to be treated by street sweeping by Baltimore City in Year 1 (Appendix B) is additional to the sweeping implemented to meet the last permit’s requirements.
- **Response:** The street sweeping listed in Appendix B is additional to the sweeping implemented during the last permit term. The City is required to maintain the same level of sweeping or replace it using stormwater management BMPs, programmatic initiatives, or alternative control practices. (See PART IV.E.1 of the Final Permit.)
- **Comment:** A commenter noted that Baltimore City is utilizing partnerships to implement tree plantings, ESD practices, and stormwater BMPs, and recommends that the City “should be encouraged to better support these partner projects by including a target metric for ‘partner projects’ in each year’s BMP list.”
- **Response:** The City will submit annual BMP portfolios that reflect the opportunities available to meet restoration benchmarks. The Department encourages the City to utilize partnerships as a cost efficient way to achieve restoration and engage in outreach.

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Appendix D. Acronyms and Substitutions

APA - Administrative Procedures Act
AWQMS - Ambient Water Quality Monitoring System
BMP - best management practice
BMP Portfolio - Restoration Project Portfolio
CAST - Chesapeake Assessment and Scenario Tool
CBP - Chesapeake Bay Program
CEJSC - Commission on Environmental Justice and Sustainable Communities
CFR - Code of Federal Regulations
COA - Maryland Court of Appeals
COMAR - Code of Maryland Regulations
CWA - Clean Water Act
Design Manual - 2000 Maryland Stormwater Design Manual, Vol. I & II
Department - Maryland Department of the Environment
EFC - Environmental Finance Center
EJ - environmental justice
ESD - environmental site design
ESC - erosion and sediment control
FCA - Financial Capacity Analysis
FR - Federal Register
FY - Fiscal Year
GSI - Green Stormwater Infrastructure
IDDE - Illicit Discharge Detection and Elimination
MEP - maximum extent practicable
MHI - median household income
MS4 - municipal separate storm sewer system
NGO - non governmental organization
NRC - National Research Council
NPDES - National Pollutant Discharge Elimination System
PCA - Physical Capacity Analysis
PCB - polychlorinated biphenyls
RPC – Responsible Personnel Certification
SWM - stormwater management
TMDL - total maximum daily load
TN - total nitrogen
TP - total phosphorus
TSS - total suspended solids
U.S. EPA or EPA - United States Environmental Protection Agency
USWG - Urban Stormwater Workgroup
WIP - Watershed Implementation Plan
WLA - wasteload allocation
WM - Watershed Management
WQBEL - water quality based effluent limit
WQGIT - Water Quality Goal Implementation Team

Appendix E. List of Comments Received During Public Notice

Commenter	Description
Chesapeake Bay Foundation (CBF)	Letter (5 pages)
Maryland Municipal Stormwater Association (MAMSA)	Letter (7 pages)
Choose Clean Water Coalition (CCWC)	Letter (39 pages) Attachments w/history of comments on 2020 Accounting Guidance and permit
Chesapeake Accountability Project (CAP) – Anne Arundel Co. Permit	Letter (42 pages) Attachments (295 pages)
Chesapeake Accountability Project (CAP) – Baltimore & Montgomery Co. Permits	Letter (44 pages) Attachments (295 pages)
Chesapeake Accountability Project (CAP) – Baltimore City Permit	Letter (45 pages) Attachments (295 pages) Public Information Act (PIA) Request (1,235 pages)
Stormwater Partners Network of Montgomery County	Letter (17 pages)
Blue Water Baltimore (BWB)	Letter (11 pages)
Waterfront Partnership of Baltimore	Letter (3 pages)
Farm Alliance Bureau of Baltimore	Letter (9 pages)
Ms. Sally Jones	Email (2 pages)
Mr. Tom McCord	Email (5 pages)
Anne Arundel County Dept. of Public Works	Letter (4 pages) Attachments: Appendix B (1 page) Excerpts from Annual Report (9 pages)
Baltimore City Dept. of Public Works	Letter (3 pages)
Baltimore City Dept. of Parks and Recreation	Letter (11 pages)
Baltimore County Dept. of Environmental Protection and Sustainability	Letter (10 pages)
Montgomery County Dept. of Environmental Protection	Letter (25 pages)
Carroll County Dept. of Land and Resource Management	Letter (2 pages)
CityScape Engineering, LLC.	Memo (1 page)