This document responds to public comments on the District Department of the Environment’s (DDOE’s) second proposed Stormwater Management Guidebook (SWMG), which provides technical guidance on complying with the second proposed rule for Stormwater Management, and Soil Erosion and Sediment Control. The second proposed rule was published in the June 7, 2013 issue of the *DC Register* (60 DCR 8493). The public review and formal comment period for both documents began on June 7, 2013 and closed on July 8, 2013.

DDOE received seven formal comment letters in response to publication of the second proposed SWMG. These comments were useful and resulted in minor changes to clarify the second proposed SWMG.

This Response to Comments summarizes groups of similar comments into one comment and provides one response instead of responding individually to comments that are similar. For some responses, DDOE refers to the DDOE Response to Comments on the Proposed SWMG or to information provided in the summaries of key changes to previous versions of the SWMG.

Throughout this document, DDOE refers to the version of the rule published on June 7, 2013 as the “second proposed rule” and the accompanying SWMG as the “second proposed SWMG.” DDOE refers to the March 29, 2013 version of the rule as the “revised rule” and the accompanying SWMG as the “revised SWMG.” Finally, the August 10, 2012 rule is referred to as the “proposed rule” and the related SWMG as the “proposed SWMG”. To avoid confusion, this document indicates whether a reference to a section or subsection pertains to the second proposed SWMG, revised SWMG, or proposed SWMG.

Additional information about the SWMG is available on DDOE’s website at [ddoe.dc.gov/proposedstormwaterule](http://ddoe.dc.gov/proposedstormwaterule).
List of Commenters

1. Mary E. Blakeslee (July 2, 2013)
2. Contech Engineered Solutions, LLC, Derek M. Berg, CPSWQ (July 2, 2013)
3. District of Columbia Business Industry Association, David Tuchmann (July 8, 2013)
4. Filterra Bioretention Systems, Chris French (July 5, 2013)
6. Vika Capitol, LLC, Beth Squires, P.E. (July 18, 2013)
7. Washington Metropolitan Area Transit Authority, Regina Sullivan (July 5, 2013)
### Acronyms and Abbreviations

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tr>
<td>ASTM</td>
<td>American Society for Testing and Materials</td>
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<td>BMP</td>
<td>Best Management Practice</td>
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<td>DDOE</td>
<td>District Department of the Environment</td>
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<td>District</td>
<td>District of Columbia</td>
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<td>MTD</td>
<td>Manufactured Treatment Device</td>
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<td>MEP</td>
<td>Maximum Extent Practicable</td>
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<td>MS4</td>
<td>Municipal Separate Storm Sewer System</td>
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<td>SRC</td>
<td>Stormwater Retention Credit</td>
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<td>SWMG</td>
<td>Stormwater Management Guidebook</td>
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<td>SWMP</td>
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<td>SWRv</td>
<td>Stormwater Retention Volume</td>
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<td>TARP</td>
<td>2003 Technology Acceptance Reciprocity Protocol</td>
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<td>TMDL</td>
<td>Total Maximum Daily Load</td>
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<td>TSS</td>
<td>Total Suspended Solids</td>
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<td>VTAP</td>
<td>Virginia Technology Acceptance Protocol</td>
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1. Several commenters commend DDOE on conducting an open and transparent public process and for including various requested changes in the second proposed SWMG.

DDOE Response: DDOE appreciates the public’s participation in this process.

2. Some commenters note that Appendix T indicates that a manufactured treatment device MTD must use VTAP to verify compliance with the nutrient reduction provisions of the Chesapeake Bay TMDL. They contend that it is premature to incorporate VTAP in the SWMG since it has not been finalized for regulatory adoption in Virginia. They recommend striking all references to VTAP until it has been finalized and validated with proven scientific data. They also contend that the second proposed rule allows exemptions for BMPs that would take precedence over the language referring to VTAP.

Additionally, they contend that requiring MTDs to use VTAP to meet provisions of the Chesapeake Bay TMDL and other local TMDLs falls outside the scope of the second proposed rule, which regulates the compliance of individual parcel development with the District’s MS4 permit.

DDOE Response: DDOE agrees to strike references to the VTAP as the protocol has not been finalized. Additionally, DDOE agrees that it outside the scope of the District’s MS4 permit to require MTDs to meet TMDLs. DDOE notes the inclusion of this section was an editorial error.

3. In Appendix A, some commenters request adding specific design examples to address sites with numerous constraints that are specific to densely developed areas of the District:

   a. One commenter’s analysis of a 100 percent impervious major land disturbance site considers a green roof as the only BMP for all stormwater compliance components. The Commenter suggests 71 percent of the site requires a green roof at a depth of 18.5 inch media to meet both the retention and detention requirements and asks DDOE to provide a similar example.

DDOE Response: DDOE examined a similar design scenario to demonstrate compliance with a green roof at a major land disturbing site with lot line to lot line construction. For clarity, DDOE has added this example to Appendix A. DDOE found retention compliance could be achieved with a 6-inch media covering 45 percent of the roof area. The significant difference between the commenter’s and DDOE’s conclusions is found in the assumption used to select the design equation factor for the “media water retention.” The commenter uses the lowest value possible, 0.15, the baseline default used when there is no ASTM verified data, while DDOE selects a typical manufacturer’s value of 0.40 that has been commonly used in green roof plan submission for many years. Considering storage volumes required to meet the detention obligation, DDOE does not recommend oversizing the green roof depth to meet that component of the regulation. Instead, consider rooftop storage (see Appendix I) as a cost-effective method to achieve this detention volume, if space is available, and the design configuration can be created that routes the green roof to the rooftop storage. Alternatively, the required detention storage...
volume could be achieved via a tank located elsewhere in the building. The porosity described in the guidebook is a default, not a recommendation. Using a higher porosity would greatly reduce the required green roof sizes. Rooftop detention or detention tanks maybe a more cost effect method for managing two-year detention obligations than oversizing BMPs sized for annual retention obligations.

b. When utilizing only a rainwater harvesting tank for the previous scenario, one commenter was unable to size the tank to accommodate the detention volume and asks DDOE to provide an example of rainwater harvesting and detention storage that meets all stormwater compliance components.

DDOE Response: DDOE examined a similar design scenario to demonstrate compliance utilizing a rainwater harvesting tank at a major land disturbance site with lot line to lot line construction. For clarity, DDOE has added this example to Appendix A. DDOE found retention compliance could be exceeded with an 80,000 gallon tank providing 75 percent of the daily flushing demands from 1,600 people. This sizing provides an excess SWRv of approximately 2,200 gallons that the owner may choose to certify as SRCs for the SRC trading market. Considering storage volumes required to meet the detention obligation, DDOE recommends oversizing the rainwater harvesting tank by an additional 20,000 gallons. Alternatively, if stage-storage routing is performed on the tank for a 2-year storm event, beginning with the average daily volume in the tank, the detention volume may be decreased significantly. Retention value does not increase proportionally to the size of the tank when the retention value approaches 100%. You cannot exceed 100% of the 1.7-inch storm with the Cistern Design Spreadsheet.

c. One commenter’s analysis of a 100 percent impervious major land disturbing site provides a design solution with a combination of a green roof that covers 50 percent of the roof area at a depth of 19 inches, and a 76,000 gal RWH tank. The commenter posits that this solution is the only way to meet the retention and detention requirements for the project and asks DDOE to demonstrate otherwise.

DDOE Response: DDOE does not recommend using a rainwater harvesting system as a second practice in series with a green roof. The green roof will retain much of the runoff from smaller storms forcing the rainwater harvesting system to rely on potable water except in less frequent large events. A more appropriate approach would be to use the green roof to achieve the SWRv and use a detention tank with an orifice or pump that drains to the storm system to meet the 2-year detention requirements.

- The Rain Water Harvesting Spreadsheet is not set up to accommodate rainwater harvesting being the second practice in a series. This is a change DDOE has noted to consider in future versions of the spreadsheet.
- Using rainwater harvesting as the second practice in a series is not recommended. The first practice in the series will retain much of the runoff from all of the smaller storms, leaving very little to fill up a cistern on a regular basis. The cistern would only receive runoff from larger storm events, which makes it hard to effectively utilize the water.
d. The commenter contends that their analysis raises concerns that the design solutions available to comply with the proposed stormwater retention and detention obligations could inhibit development within the District and/or prevent other social benefits associated with future development, such as

- Creating outdoor livable areas (e.g., open space for community gardens and roof top amenities)
- Inhibits other environmentally beneficial designs (e.g., use of rooftops for solar panels and beehives)
- Monopolizing land ownership & development, as the cost of such developments far exceed single family budgets and/or small business development

DDOE Response: DDOE finds ample design evidence that supports the compatibility between outdoor livable spaces such as community gardens and the stormwater best management practices detailed in Chapter 3 of the SWMG. When considering the claim of lost opportunities for alternate environmental benefits provided by non stormwater practices such as solar panels, and beehives DDOE again respectfully disagrees and can point to robust rooftop designs that incorporate all these elements. Please see the small sample of the many websites available to illustrate these design approaches. Finally, DDOE points to the SRC trading program that provides options for compliance off site, allowing the developer to use on-site areas for alternative purposes.

- http://www.greenroofs.org/index.php/about/greenroofbenefits

4. A commenter contends that the list of suggested native plants contains many species that are not suitable for urban landscapes since they have no cultivars. The Commenter contends that this approach to plant selection would limit plant options, could lead to establishment of mono-cultures that could be wiped out by invasive pests, and would reduce the bio-diversity necessary to provide a healthy eco-system for insects that serve as pollinators and/or food for other species.

DDOE Response: DDOE notes planting lists are suggested and that the SWMG points to references outside the manual for more extensive resources.

5. A commenter notes that the link to plant sources for the Prince Georges County no longer exists and that the new web page, http://www.princegeorgescountymd.gov/sites/SustainabilityServices/Resources/FAQ/Pages/default.aspx, contains links to several other websites for plant lists. The Commenter also recommends including the National Park Service’s website.
http://www.fws.gov/chesapeakebay/bayscapes.htm, which provides an overview and a link to the Chesapeake Bay native plants database.

DDOE Response: DDOE thanks the commenter for pointing out the broken link. The correct link has been located and incorporated. DDOE agrees to include the suggested website. Additionally, DDOE has added relevant native plant references to the resources appendix.


6. A commenter contends that, except for tree planting, the SWMG relies almost totally on engineered best management practices to reduce stormwater runoff and should be modified to include Bayscaping as an approved BMP. The commenter contends that homeowners in MS4 areas with significant amounts of lawn (including cooperatives and condominiums) are not likely to install engineered BMPs since the permitting, inspection, and maintenance requirements are costly and without counter balancing benefits. The commenter contends that these barriers will prevent homeowners from contributing to the District’s stormwater retention efforts and participating in the credit trading program.

DDOE Response: DDOE disagrees with the commenter. The conversion of grass and landscaped land cover (referred to as compacted cover throughout the SWMG) to a natural land cover such as a meadow or a forest (Appendix O) can generate Stormwater Retention Credits. DDOE directs the commenter to the SRC Calculator and Chapter 7 in SWMG for examples of this calculation. DDOE also recommends the commenter attend future training sessions on the SRC trading program planned for the fall 2013. DDOE will develop outreach materials to educate all types of property owners about the Stormwater Retention Credit trading program.

7. A commenter contends that, despite the wide variety of BMP technologies that DDOE has approved, the options available to any given site will be quite limited due to lack of space, added structural capacity, or because they are untested and untrusted by developers. The commenter suggests that DDOE increase the number and variety of options available in multiple ways:
• Allow for more extensive use of mature retention technologies, such as green roofs and rainwater harvesting
• Relax the strict design and construction parameters established for many BMPs to allow regulated sites the flexibility to maximize their retention performance
• Provide incentives for the adoption of more experimental BMPs, at least until they become more commonplace in the District, perhaps through assigning greater retention values to innovative technologies
• Provide a clear pathway for the approval of additional BMPs to ensure that there are multiple BMPs available to any given type of development in the District.

DDOE Response: DDOE maintains the design and construction parameters of many BMPs presented in Chapter 3 of the SWMG have been modified throughout the drafting process in response to previous comments to provide wider use and greater flexibility. DDOE points to the SRC trading program that provides the option for compliance off site. DDOE has provided further clarification in this draft on the approval process for proprietary practices to provide a clear approval pathway for innovative technologies. DDOE also notes the agency will be hosting training sessions throughout the transition period on the compliance process and will seek to incorporate innovation highlights into those trainings.

8. A commenter contends that the stormwater retention value for ponds, wetlands, and open channels is undervalued at 0% and suggests that it should account for some retention via evaporation and evapotranspiration.

DDOE Response: DDOE heard this comment in previous rounds of the drafting process and adopted increased retention value for the three types of open channel BMPs discussed in Chapter 3.9 in the second proposed draft of the SWMG.

9. In Section 3.2.4, a commenter notes that the green roof stormwater retention calculation has a 0.25 default maximum retention value when there is no ASTM test result, but the storage volume calculation that immediately follows (Equation. 3.1) says 0.15. The commenter requests that DDOE correct this inconsistency in the final rules.

DDOE Response: DDOE thanks the commenter for pointing out the inconsistency. The 0.25 was an error. The body of the text has been revised to be consistent with the equation.

10. In Appendix E, a commenter states a need to specify when in the planning process regulated sites may apply for relief under the MEP standard or from extraordinarily difficult site conditions. The commenter notes that relief from extraordinarily difficult site conditions will only be granted upon submission of a complete SWMP and contends that this creates an inevitable "Catch-22" for regulated site applicants, who will inevitably have to revise their SWMPs to incorporate the relief granted. The commenter suggests that DDOE clarify in the final rules that it will either permit on-site retention to the MEP or grant relief from extraordinarily difficult site conditions, as applicable, during the initial planning stages based on initial surveys of site conditions.
DDOE Response: DDOE thanks the commenter for pointing to the lack of specificity on the timing of submission for a “request for the relief of extraordinarily difficult site conditions”. To clarify the process DDOE has added the phrase “in advance of the submission of the final SWMP but not before the 65% design phase” to the passage on submission requirements.

11. A commenter contends that the second proposed rule would require regulated sites to leave underground BMPs open for inspection for excessive periods of time. Leaving such BMPs exposed could present worker-safety issues and mitigate BMPs’ environmental benefits. The commenter requests that DDOE provide guidance for how regulated sites should prepare underground retention facilities for inspection without creating safety issues or hindering their performance.

DDOE Response: DDOE disagrees with the commenter and notes this is a requirement under the existing regulations that sites currently comply with. This requirement is consistent with standard construction practices. OSHA standards and DCRA Building Construction Codes provide guidance on safe construction site standards. Additionally, underground BMPs typically have access points which can be closed pending inspection to mitigate safety issues and damage to BMP. Lastly, historically DDOE has and will continue to promptly inspect BMPs to minimize delays in construction or eliminate the need for BMPs be left open for inspection for excessive periods of time.

12. A commenter suggests that DDOE should provide guidance on how to complete final compaction in areas around a building parameter that contains BMP facilities, such as stormwater disconnection areas or permeable pavement. DDOE should expressly exempt such areas from final compaction requirements.

DDOE Response: Each infiltration based BMP in Chapter 3 contains requirements and recommendations relative to the specific BMPs needs for limited compaction to ensure design infiltration rates are preserved. In cases when an adjacent use has structural a demand, such as a curb, or when the use above the practice has a structural demand, such as permeable paving in a parking lane, DDOE references the manufacturer’s standards and the standards of the appropriate reviewing agency such as the District Department of Transportation (DDOT).

13. A Commenter requests including the following documentation:
   - Restore the appendix on the Stormwater Fee Discount Program.
   - Include specific guidance regarding approval of proprietary stormwater retention BMPs (Appendix T):
     - How does a vendor submit an application?
     - Which criteria will DDOE use to review an application and approve a given proposed practice?
     - Can DDOE estimate how long this review process will take?
     - Will approval of a proprietary practice apply only to a single regulated site, or will other regulated sites be able to utilize the same practice under the same approval?
     - Restore the proprietary practices application form.
DDOE Response:

- The Stormwater Fee Discount Program has its own guidance document and, therefore, it is not appropriate to include this information as an appendix in the SWMG.
- The existing Appendix T explains a vendor does not submit an application.
  - A vendor must notify DDOE that they have achieved the NJDEP Certification status for TSS, provide copies of the approval/certification letter and any attachments, and document how the practice’s design and sizing is affected by the District’s stormwater performance criteria. DDOE will confirm the approval and sizing information from the NJDEP website: http://www.njstormwater.org/treatment.html. The SWMG provides all relevant links for developers and consultants to review the available products and select the one most appropriate for their site.
  - The criterion is explicit, 80% removal of TSS as demonstrated through the NJDEP field or lab testing protocol.
  - DDOE cannot estimate the review time.
  - Once a product has been approved, it can be used on any sites as long as it is designed and sized for the site specific conditions in accordance with the allowed treatment flow rates specified in the NJDEP Certification.
  - In the absence of DDOE’s own proprietary practice approval program the proprietary practices application form is not relevant.

14. A commenter requests that DDOE revise Figure 3.16 and the accompanying text to clearly indicate the recommended width between vertical flow barriers. If no single fixed width is recommended, the commenter asks DDOE to indicate which factors should be considered in determining the proper width for a given facility. Additionally, the commenter requests that DDOE provide some indication of how an underdrain might be installed below the vertical flow barriers.

   DDOE Response: The arrows in Figure 3.16 were amended for clarity. The vertical flow barriers indicated in Figure 3.16 are intended to facilitate infiltration. The depth and spacing of the barriers is dependent upon the underlying slope and the infiltration rate, as any water retained by the flow barriers must infiltrate within 48 hours. This is explained in the existing text. If an underdrain will be used in conjunction with the flow barriers, it can be installed over the top of the barriers, or parallel to the barriers with an underdrain in each cell. These clarifying notes were added to the Pavement Bottom Slope passage within the section Permeable Pavement Design Criteria.

15. In Sections 3.5.6 and 3.8.6, a commenter asks DDOE to clarify whether the recommendation that "any area of the site intended ultimately to be an infiltration practice should generally not be used as the site of a temporary sediment basin” also applies to soil erosion control traps.

   DDOE Response: Yes, soil erosion control traps are often grouped under the sediment basin category. DDOE has added this term separately for clarity purposes.

16. In Appendix F, a commenter contends that the requirements for hydraulic grade lines flowing into the combined sewer system are not feasible and should be corrected. Specifically,
commenter contends that the requirement to plan for 100-year flows is highly infeasible, particularly considering that there is no reliable data available as to what a 100-year flow will actually be. Therefore, the commenter requests that DDOE remove this requirement, such that hydraulic grade lines will only be required to plan for 15-year flows.

DDOE Response: DDOE disagrees with the commenter and notes this is a requirement under the existing regulations that applicants currently comply with.

17. A commenter notes that Appendix F states that "where two or more pipes enter a structure, a minimum of two feet horizontal clearance must be maintained between pipes connected to the structure at the same elevation." The commenter asks for clarification on whether this horizontal clearance requirement applies to existing manholes because DC Water has approved of certain pre-cast manhole designs featuring just one foot of horizontal clearance. The commenter contends that reconfiguring existing manholes will be difficult and unnecessary and requests DDOE’s rationale for the two foot horizontal clearance requirement.

DDOE Response: DDOE consulted with DC Water and has clarified this note in Appendix F to be consistent with DC Water’s guidelines.

18. In Appendix F, a commenter contends that the 45-degree clearance requirement between storm drains and utility crossings may not be possible for existing utilities where utility crossings have already been laid, particularly in densely developed areas where existing utilities could effectively prevent installation of storm drains throughout large portions of the District. The commenter contends that this requirement is not necessary to protect utilities from nearby storm drains and requests that it be revised to better accommodate the installation of storm drains around exiting utilities.

DDOE Response: DDOE consulted with DC Water and found this precaution is consistent with DC Water’s Utility Protection Guidelines.

19. With regard to the protection of areas for future on-site BMP facilities, a commenter requests that DDOE remove the restriction in Sections 3.5.6, 3.6.6, and 3.8.6 that state "where [soil compaction] is infeasible, the impacted area cannot be excavated below 2 feet above the final design elevation of the bottom of the bioretention until further compaction by heavy equipment can be avoided." The commenter contends that this is an unnecessary burden that has no impact on environmental protection, given that the soil would be tilled prior to installation of the BMP facility anyway (once the area is excavated to grade).

DDOE Response: DDOE finds the directions for infiltration protection and options for infiltration restoration when areas are impacted by heavy equipment or sedimentation lack clarity. These sections have been reworded for clarity.

20. A commenter notes their support for the statement the Stormwater Equipment Manufacturers Association made previously during the informal comment period stating that water quality
treatment should be provided to the MEP for all sites; even if on-site retention and infiltration is not possible.

DDOE Response: DDOE believes the existing rules and guidance address this concern in large part. DDOE points the commenter to Chapter 2. Minimum Control Requirements that details an 80% TSS treatment requirement when minimum retention standards are not met for the areas of greatest pollutant load concern, areas in the MS4 and areas with vehicular access.

21. A commenter suggests that DDOE update Appendix E to allow the use of on-site water quality treatment BMPs to the MEP prior to granting a reduction from 80% to 50% TSS removal. The commenter contends that public domain and proprietary technologies are available that can accomplish 80% TSS removal in a small footprint, making it possible to achieve greater pollution reduction onsite prior to discharge. The commenter contends that Appendix E does not give credence to any recognized BMPs that would be allowable under Appendix T or other public domain BMPs that could also be used to meet the District’s Water Quality Treatment Volume exclusive of the SWRv.

DDOE Response: DDOE suggests the commenter misinterpreted the “relief” that is available to the applicant. Under some circumstances an applicant may be allowed to shift some of their minimum onsite retention obligation offsite. That is they may be allowed to retain onsite less than the required 50% SWRv. However, these sites must provide a minimum 80% TSS removal through an approved treatment practice.

22. A commenter recommends that DDOE utilize TARP for any verification of a field-monitoring study with water quality measurements. The commenter notes that the Maryland Department of the Environment uses TARP to evaluate and approve proprietary systems, and the Massachusetts Stormwater Technology Evaluation Project’s reviews of TARP studies are used by several jurisdictions as the basis of their BMP approval process (e.g., Pennsylvania Department of the Environment).

DDOE Response: DDOE thanks the commenter for their suggestion and will consider this as District explores this question further in the future. However, DDOE will continue to limit the District’s use of these protocols to the NJTARP for now.

23. In Appendix T (now Appendix S), a commenter contends that the text is inaccurate in stating the New Jersey Department of Environmental Protection and New Jersey Corporation for Advanced Technology represent the only state to have developed a formal evaluation and acceptance process for MTDs with the TARP protocol. The commenter notes that Maryland and Pennsylvania approve proprietary systems based on TARP studies. Therefore, the commenter recommends that DDOE correct this language in Appendix T (now Appendix S).

DDOE Response: DDOE does not find the distinction significant and has removed the term “only” from the SWGM.
24. A commenter recommends that DDOE consider using the State of Washington Department of Ecology’s Technology Assessment Protocol - Ecology protocol to approve new technologies for use in the District and contends that it is considered the industry’s most rigorous field testing protocol and that it is given reciprocity by several jurisdictions throughout the United States.

DDOE Response: DDOE thanks the commenter for their suggestion and will consider this as District explores this question further in the future. However, DDOE will continue to limit the District’s use of these protocols to the NJTARP for now.

25. A commenter asks if design deficiencies for on-site detention requirements can be compensated with payment of the in-lieu fee.

DDOE Response: The balance between flexibility for developers as well as environmental outcomes achieved by a combination of on-site and off-site retention provides a compelling argument for retention trading. DDOE does not have similar evidence to support that argument for detention.

26. A commenter contends that there is a disconnect between the definitions of public right-of-way contained in Section 599 of the Second Proposed Rule and Appendix B of the Second Proposed Stormwater Management Guidebook. The commenter suggests revising the two definitions to align with each other and unambiguously affirm that railway tracks owned and operated by the Government for the purpose of providing public transportation are to be considered public right-of-way for purposes of this regulation.

DDOE Response: DDOE agrees with the commenter has added the term railway to the definition of Appendix U.