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Rulemaking Hearing Rule(s) Filing Form

Rulemaking Hearing Rules are rules filed after and as a result of a rulemaking hearing (Tenn. Code Ann. § 4-5-205).

Pursuant to Tenn. Code Ann. § 4-5-229, any new fee or fee increase promulgated by state agency rule shall take effect on July 1, following the expiration of the ninety (90) day period as provided in § 4-5-207. This section shall not apply to rules that implement new fees or fee increases that are promulgated as emergency rules pursuant to § 4-5-208(a) and to subsequent rules that make permanent such emergency rules, as amended during the rulemaking process. In addition, this section shall not apply to state agencies that did not, during the preceding two (2) fiscal years, collect fees in an amount sufficient to pay the cost of operating the board, commission or entity in accordance with § 4-29-121(b).

Agency/Board/Commission:	Board of Water Quality, Oil and Gas
Division:	Water Resources
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Revision Type (check all that apply):

- Amendment
- New
- Repeal

Rule(s) (ALL chapters and rules contained in filing must be listed here. If needed, copy and paste additional tables to accommodate multiple chapters. Please make sure that **ALL** new rule and repealed rule numbers are listed in the chart below. Please enter only **ONE** Rule Number/Rule Title per row.)

Chapter Number	Chapter Title
0400-40-10	National Pollutant Discharge Elimination System General Permits
Rule Number	Rule Title
0400-40-10-.01	General
0400-40-10-.04	Municipal Separate Storm Sewer Systems

Place substance of rules and other info here. Please be sure to include a detailed explanation of the changes being made to the listed rule(s). Statutory authority must be given for each rule change. For information on formatting rules go to <https://sos.tn.gov/products/division-publications/rulemaking-guidelines>.

Chapter 0400-40-10
National Pollutant Discharge Elimination System General Permits

Amendments

The table of contents to Chapter 0400-40-10 National Pollutant Discharge Elimination System General Permits is amended by adding a new rule to read as follows:

0400-40-10-.04 Municipal Separate Storm Sewer Systems

Authority: T.C.A. §§ 69-3-101 et seq. and 4-5-201 et seq.

Rule 0400-40-10-.01 General is amended by deleting it in its entirety and substituting instead the following:

0400-40-10-.01 General.

- (1) This chapter states the manner in which the Department may issue general permits in accordance with § 402 of the Clean Water Act (33 U.S.C. § 1342) and T.C.A. § 69-3-108.
- (2) Electronic reporting. This chapter requires the submission of forms developed by the Commissioner in order for a person to comply with certain requirements, including, but not limited to, making reports, submitting monitoring results, and applying for permits. The Commissioner may make these forms available electronically and, if submitted electronically, then that electronic submission shall comply with the requirements of Chapter 0400-01-40.

Authority: T.C.A. §§ 69-3-101 et seq. and 4-5-201 et seq.

Chapter 0400-40-10
National Pollutant Discharge Elimination System General Permits

New Rule

Chapter 0400-40-10 National Pollutant Discharge Elimination System General Permits is amended by adding a new rule to read as follows:

0400-40-10-.04 Municipal Separate Storm Sewer Systems.

Permits issued to entities that operate a municipal separate storm sewer system (MS4) shall include the following effluent limitations to manage post-construction stormwater at all new development and redevelopment projects that disturb one or more acres of land, or less than one acre if part of a larger common plan of development, and discharge into the permittee's MS4:

- (1) Permanent Stormwater Management Program.
 - (a) The permittee shall develop and implement a permanent stormwater management program to reduce pollutants in stormwater discharges through management practices, control techniques, and systems, design, and engineering practices implemented to the maximum extent practicable (MEP), as set forth herein.
 - (b) The permanent stormwater management program shall include plans review, site inspections, and a means to ensure that permanent stormwater control measures (SCMs) are adequately operated and maintained.
 - (c) The permittee must develop and implement, and modify as necessary, an ordinance or other regulatory mechanism to address permanent stormwater management at new development and redevelopment projects.
 - (d) The permittee must submit an implementation plan for its permanent stormwater management program not later than 90 days after the effective date of the first new or revised permit issued after the effective date of these rules. The implementation plan shall include a brief description of the main components of the permittee's permanent stormwater management program, which should include: codes and ordinance development and implementation; procedures for plans review and criteria for approval; procedures for conducting and tracking site inspections; and SCM operation and maintenance policies. The implementation plan shall also include a timeline to develop and implement the program. If the permittee has implemented a permanent stormwater management program that complies with all requirements of the new or revised permit, the permittee may submit an implementation plan explaining how its program complies and identifying any new or modified elements of its program. The schedule must indicate

completion as soon as feasible but no later than 24 months from the effective date of the first permit issued after the effective date of these rules. Further, if implementation will take longer than 12 months, the plan must include interim milestones. Implementation plans must be submitted to the Division.

(2) Permanent Stormwater Standards.

- (a) The permanent stormwater management program must require new development and redevelopment projects to be designed to reduce pollutants to the MEP, as set forth herein. Compliance with permanent stormwater standards for new development and redevelopment projects is determined by designing and installing SCMs as established by this rule and complying with other requirements of this rule. For design purposes, total suspended solids (TSS) may be used as the indicator for the reduction of pollutants.
- (b) SCMs must be designed to provide full treatment capacity within 72 hours following the end of the preceding rain event for the life of the new development or redevelopment project. The permittee shall identify a suite of SCMs to be used in various situations. Information relevant to identified SCMs should be made readily available. Application of innovative SCMs is encouraged. If the permittee decides to significantly limit the number of SCM options, it must be documented in the stormwater management program how the performance standards of this rule can be met with the limited set of control measures that are allowed.
- (c) The water quality treatment design storm is a 1-year, 24-hour storm event as defined by Precipitation-Frequency Atlas of the United States. Atlas 14. Volume 2. Version 3.0. U.S. Department of Commerce. National Oceanic and Atmospheric Administration (NOAA), National Weather Service, Hydrometeorological Design Studies Center, Silver Springs, Maryland or its digital product equivalent. The water quality treatment volume (WQTV) is a portion of the runoff generated from impervious surfaces at a new development or redevelopment project by the design storm, as set forth below. Uncontaminated roof runoff may be excluded from the WQTV. SCMs must be designed, at a minimum, to achieve an overall treatment efficiency of 80% TSS removal from the WQTV. The quantity of the WQTV depends on the type of treatment provided, as established in the following table:

Water Quality Treatment Volume and the Corresponding SCM Treatment Type for the 1-year, 24-hour design storm		
SCM Treatment Type	WQTV	Notes
infiltration, evaporation, transpiration, and/or reuse	runoff generated from the first 1 inch of the design storm	Examples include, but are not limited to, bioretention, stormwater wetlands, and infiltration systems.
biologically active filtration, with an underdrain	runoff generated from the first 1.25 inches of the design storm	To achieve biologically active filtration, SCMs must provide minimum of 12 inches of internal water storage.
sand or gravel filtration, settling ponds, extended detention ponds, and wet ponds	runoff generated from the first 2.5 inches of the design storm or the first 75% of the design storm, whichever is less	Examples include, but are not limited to, sand filters, permeable pavers, and underground gravel detention systems. Ponds must provide forebays comprising a minimum of 10% of the total design volume. Existing regional detention ponds are not subject to the forebay requirement.
hydrodynamic separation, baffle box settling, other flow-through manufactured treatment devices (MTDs), and treatment trains using MTDs	maximum runoff generated from the entire design storm	Flow-through MTDs must provide an overall treatment efficiency of at least 80% TSS reduction. Refer to subparagraph (2)(d) of this rule.

(d) Treatment Train Calculations.

1. Treatment trains using MTDs.

Treatment trains using MTDs must provide an overall treatment efficiency of at least 80% TSS reduction utilizing the following formula:

The calculation:

$$R = A + B - (A \times B) / 100$$

Where:

R = total TSS percent removal from application of both SCMs,
A = the TSS percent removal rate applicable to the first SCM, and
B = the TSS percent removal rate applicable to the second SCM.

TSS removal rates for MTD must be evaluated using industry-wide standards.
TSS removal rates for other SCMs must be from published reference literature.

2. Treatment trains not using MTDs.

Treatment trains using infiltration, evaporation, transpiration, reuse, or biologically active filtration followed by sand or gravel filtration, settling ponds, extended detention ponds or wet ponds may subtract the treated WQTV of the upstream SCMs from the WQTV of the downstream SCMs.

(e) The permittee may also develop a mitigation program and/or system of payment into a public stormwater fund as described in paragraph (3) of this rule.

(f) The permanent stormwater management program may allow for a reduction of the WQTV for a new development or redevelopment project up to 20% for any one of the following conditions, and up to a total maximum of 50% for a combination of the following conditions:

1. Redevelopment projects (including, but not limited to, brownfield redevelopment);
2. Vertical density (floor to area ratio of at least 2, or at least 18 units per acre); and
3. Incentives as identified by the permittee, submitted to the Division and approved by the Division in writing, and documented as part of the stormwater management program.

(3) Stormwater Mitigation and Public Stormwater Fund.

(a) A permittee may choose to develop an offsite mitigation program or payment in lieu into a public stormwater fund, or both, to offset the portion of the WQTV that cannot be treated on site to the MEP. The program must ensure that off-site stormwater mitigation will be accomplished within the same USGS 12-digit hydrologic unit code watershed as the new development or redevelopment project, if practicable, and will treat a minimum of 1.5 times the portion of the WQTV not treated on site. The permittee may identify priority areas within the watershed in which stormwater mitigation projects are to be completed. The program must have a mitigation project approval procedure, and all projects must meet all requirements in this permit. Procedures and requirements in the offsite mitigation and payment in lieu programs should be documented as part of the stormwater management program and available for review.

(b) If the permittee allows payment into a public stormwater fund, the permittee assumes responsibility to provide the required mitigation projects. The public stormwater fund should be used to fund public mitigation projects. The payment amount into a public stormwater fund must be sufficient to design, install, and maintain the stormwater mitigation measures.

(4) Water Quality Riparian Buffers.

Permittees shall develop and implement a set of requirements to establish, protect, and maintain permanent water quality riparian buffers to provide additional water quality treatment in riparian areas of

new development and redevelopment projects that contain streams, including wetlands, ponds, and lakes. Riparian buffers must meet the following minimum standards:

- (a) Stormwater discharges should enter the water quality riparian buffer as sheet flow, not as concentrated flow, where site conditions allow.
- (b) Water quality riparian buffers must have the following minimum widths, unless site-specific conditions necessitate alternative widths, as described in subparagraph (d) of this paragraph:

	Average buffer width (feet)	Minimum buffer width (feet)	Notes
Waters with available parameters for siltation or habitat alteration or unassessed waters	30	15	The criteria for the width of the buffer zone can be established on an average width basis at a project, as long as the minimum width of the buffer zone is more than the required minimum width at any measured location. If the new development or redevelopment site encompasses both sides of a stream, buffer averaging can be applied to both sides, but must be applied independently.
Exceptional Tennessee Waters or waters with unavailable parameters for siltation or habitat alteration	60	30	

The predominant vegetation within the minimum buffer width area should be trees. The remaining riparian buffers may be composed of herbaceous cover or infiltration-based SCMs.

- (c) Permittees may establish permissible land uses or activities within the buffer, such as biking and walking trails, infiltration-based SCMs, selective landscaping, habitat improvement, road and utility crossings, or other limited uses as determined by the permittee. The permittee must have a process to review proposed activities within buffers to ensure the pollutant removal function of the buffer will be retained. Trails constructed within the buffer should prevent or minimize the generation of pollutants. If trails are constructed from impervious materials, runoff must either be directed to infiltration-based SCMs or the buffer width must be increased by the width of the trail.
 - (d) Permittees may authorize alternative buffer widths for new development and redevelopment projects where averaged water quality riparian buffers cannot be fully implemented on-site. In order to allow alternative widths, the permittee must develop and apply criteria for determining the circumstances under which required buffer widths cannot be achieved based on the type of project, existing land use, and physical conditions that restrict the use of water quality riparian buffers. Any such procedures and criteria for alternative buffer widths must ensure that implementing full buffer widths would be impracticable and that the maximum practicable buffer widths are required. Procedures and criteria for alternative buffer widths must be submitted to the Division, approved by the Division in writing, and documented as a part of the stormwater management program.
 - (e) Water quality riparian buffer widths are measured from the top of bank also referred to as the “ordinary high-water mark.”
 - (f) Ordinances and local requirements adopted prior to November 13, 2018, and that mandate minimum 30-foot water quality riparian buffers for drainage areas less than one square mile, and minimum 60-foot water quality riparian buffers for drainage areas of greater than one square mile (with provisions for buffer averaging down to a minimum 30-foot width), are deemed to satisfy the conditions of this paragraph.
- (5) Codes and Ordinances Review and Update.
- (a) Within one year of obtaining initial permit coverage, newly permitted programs shall review local codes and ordinances using the EPA Water Quality Scorecard. A completed copy of the Scorecard shall be submitted with the subsequent annual report. Permittees who have completed

and submitted the Scorecard in the past are not required to repeat this review.

- (b) Newly permitted programs shall update codes and ordinances or other legal instruments as necessary to comply with the permit within 24 months of coverage under this permit. Current permittees shall continue to implement the existing permanent stormwater management program and update legal instruments according to the compliance schedule in subparagraph (1)(d) of this rule.

(6) Development Project Plan Review, Approval, and Enforcement.

The permittee shall develop and implement project plan review, approval, and enforcement procedures applicable, at a minimum, to all new development and redevelopment projects, which shall include:

- (a) Procedures for review and approval of site plans, including inter-departmental consultations and a re-submittal process when modifications to the project require changes to an approved site design plan;
- (b) A plans review process that requires SCMs to be properly designed, installed, and maintained to meet the performance standards established in this rule. The process must also include incentives adopted by the permittee as authorized by paragraph (2) of this rule, if any, along with water quality buffers as required by paragraph (4) of this rule; and
- (c) A verification process to document that SCMs have been installed per design specifications within 90 days of installation. Verification shall include submission of as-built plans to the permittee, permittee inspection, or inspection by a qualified design professional. The verification process shall include enforcement procedures to bring noncompliant projects into compliance, which shall be detailed in the enforcement response plan.

(7) Maintenance of Permanent Stormwater Control Measure Assets.

- (a) Permanent SCMs, including SCMs used at mitigation projects, must be installed, implemented, and maintained to meet the performance standards of paragraph (2) of this rule, and provide full treatment capacity within 72 hours following the end of the preceding rain event.
- (b) The permittee must develop and implement a program to require implementation of appropriate SCM maintenance procedures to sustain pollutant reduction efficiency for the life of the new development or redevelopment project. All procedures, reports, and documentation must be maintained as part of the stormwater management program. The program must include at a minimum:
 - 1. The development and documentation of maintenance and inspection procedures and frequencies for approved SCMs, which shall require all SCMs to be inspected at least once every five years by the permittee, a licensed professional engineer, a licensed landscape architect, or other qualified professional familiar with applicable SCM design and maintenance requirements;
 - 2. The development and documentation of the procedure the permittee will use to verify that SCMs are being inspected and maintained including any written reports from the responsible party;
 - 3. A clear, documented, legally binding agreement assigning SCM maintenance responsibility to the owner/operator, a third party, or the permittee as appropriate. For SCMs designed to manage stormwater from multiple properties, appropriate deed restrictions shall be recorded; and
 - 4. An allowance or agreement for permittee personnel to access the SCMs for inspections and provide for enforcement action for failure to maintain SCMs according to agreement.

(8) Inventory and Tracking of Permanent Stormwater Control Measure Assets.

- (a) Existing permittees must continue to implement and maintain a system to inventory and track the

status of all public and private SCMs installed on new development and redevelopment projects. New permittees must implement the system within 24 months of coverage.

(b) The inventory and tracking system must be a searchable database, either paper or electronic, that retrieves SCM information by location or other similar identification. The system must be made available to the Division or to members of the public upon request. Other than the basic information of location and project identification, the system should include information and records the permittee will use to demonstrate that SCMs are properly maintained, including but not limited to:

1. A brief description of the type of SCM and basic design characteristics;
2. The responsible party contact information;
3. Inspection schedules (both permittee and responsible party);
4. A brief description of or reference to maintenance procedures and frequency;
5. Photographs of the installed SCMs; and
6. Maintenance and inspection records.

Authority: T.C.A. §§ 69-3-101 et seq. and 4-5-201 et seq.

* If a roll-call vote was necessary, the vote by the Agency on these rulemaking hearing rules was as follows:

Board Member	Aye	No	Abstain	Absent	Signature (if required)
Dr. Gary G. Bible (Oil and Gas Industry)	X				
Elaine Boyd (Commissioner's Designee, Department of Environment and Conservation)	X				
James W. Cameron III (Small Generator of Water Pollution representing Automotive Interests)	X				
Mayor Kevin C. Davis (Counties)	X				
Dodd Galbreath (Environmental Interests)	X				
Brent Galloway Oil or Gas Property Owner	X				
Charlie R. Johnson (Public-at-large)				X	
Judy Manners (Commissioner's Designee, Department of Health)	X				
Sam Marshall (Commissioner's Designee, Department of Agriculture)	X				
Frank McGinley (Agricultural Interests)	X				
Neal Whitten (Manufacturing Industry)	X				
Terry Wimberley (Municipalities)	X				

I certify that this is an accurate and complete copy of rulemaking hearing rules, lawfully promulgated and adopted by the Board of Water Quality, Oil and Gas on 04/20/2021, and is in compliance with the provisions of T.C.A. § 4-5-222.

I further certify the following:

Notice of Rulemaking Hearing filed with the Department of State on: 05/02/2019

Rulemaking Hearing(s) Conducted on: (add more dates). 07/15/2019

Date: April 20, 2021

Signature: *James W. Cameron III*

Name of Officer: James W. Cameron III

Title of Officer: Chairman

Agency/Board/Commission: Board of Water Quality, Oil and Gas

Rule Chapter Number(s): Chapter 0400-40-10

All rulemaking hearing rules provided for herein have been examined by the Attorney General and Reporter of the State of Tennessee and are approved as to legality pursuant to the provisions of the Administrative Procedures Act, Tennessee Code Annotated, Title 4, Chapter 5.

Herbert H. Slatery III

Herbert H. Slatery III
Attorney General and Reporter

2/16/2022

Date

Department of State Use Only

Filed with the Department of State on: 2/14/2022

Effective on: 5/15/2022

Tre Hargett

Tre Hargett
Secretary of State

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Division of Publications

Public Hearing Comments

One copy of a document that satisfies T.C.A. § 4-5-222 must accompany the filing.

Rule Chapter 0400-40-10 National Pollutant Discharge Elimination System General Permits

Concise Statement of the Principal Reasons for Rulemaking

In accordance with Tennessee Code Annotated section 4-5-205(b), and in response to requests from commenters, the Tennessee Board of Water Quality, Oil and Gas (Board) is providing this concise statement of the principal reasons for its amendments to Rule Chapter 0400-40-10.

This rule chapter adds a rule for submission of electronic forms. This is necessary to comply with updated EPA reporting requirements, and also will promote efficiency for the regulated community and TDEC.

This rulemaking adds Rule 0400-40-10-.04 to establish effluent limitations for permanent stormwater management for municipal separate storm sewer systems (MS4s). Adoption of this rule is necessary to comply with Tennessee Code Annotated section 69-3-108(s), which provides that “numeric or narrative effluent limitations to manage post-construction stormwater shall be adopted by the board as rules....” This rule adopts permanent stormwater requirements to comply with the minimum requirements of federal law, while allowing local governmental entities discretion in selecting measures to comply with these effluent limitations in accordance with Tennessee Code Annotated section 69-3-108(s) and (t).

This rule reflects the terms of a settlement of the appeal of the 2016 Phase II MS4 General Permit by the Homebuilders Association of Tennessee and several nongovernmental organizations. A number of improvements and clarifications to the proposed rule have been made in this final rule in response to comments from the broader public, including comments from MS4 communities and professional stormwater consultants. The settlement parties have agreed these changes are consistent with the terms of the settlement.

Response to Comments

The Board appreciates that numerous commenters expressed interest in this rulemaking and submitted detailed comments. Every comment letter has been closely reviewed and duly considered. The specific verbiage of every comment is not included in this document, and comments have been edited for brevity, clarity, and formatting consistency. Many comments present similar recommendations and/or observations. Comments addressing the same substantive issue have been rephrased and/or grouped together for the sake of brevity.

Rule 0400-40-10-.01

Comment 1: Rule 0400-40-10-.01(2) could be simplified by deleting 13-15 words, so that it would read: (2) Electronic reporting. This chapter requires the submission of forms including but not limited to making reports, submitting monitoring results, and applying for permits. The Commissioner may make these forms available electronically and, if submitted electronically, electronic submission shall comply with the requirements of Chapter 0400-01-40.

Response: The Board appreciates the comment, but has retained the provision per the Rulemaking Hearing Notice for clarity and completeness.

Rule 0400-40-10-.04 Municipal Separate Storm Sewer Systems General

Comment 2: The rule should not lump green space development (new development) and gray space development (redevelopment) into the single overarching term of “new development.” These two development types can be vastly different with redevelopment requiring a number of different decisions to address the issue of stormwater treatment.

Response: In accordance with EPA regulations, the permanent stormwater management program must require new development and redevelopment projects to be designed to reduce pollutants to the maximum extent practicable. The local MS4 stormwater programs have the flexibility to set requirements specific to their community within the bounds of this rule and to select any or all of the four equivalent alternatives. With

equivalent treatment options, designers will be able to select the optimum treatment for each site with respect to effectiveness, economics, and expediency.

Comment 3: The term “new development” is defined as “a new or redevelopment project that disturbs one or more acres of land, or less than one acre if part of a larger common plan of development, and discharges into a MS4.” Clarify if a “new development” project that does not discharge into MS4 infrastructure, but is located within the boundary of a MS4, is subject to the Permanent Stormwater Management section of the proposed new rule.

Response: The rule regulates discharges of pollutants from the MS4 to waters of the state. If a new development or redevelopment project runs off directly to waters rather than through the MS4 infrastructure, it is not subject to the NPDES permitting requirement. However, such a site remains subject to the prohibitions on activities that cause pollution contained in T.C.A. § 69-3-114. Also, local governments may choose to regulate such sites through their local legal authorities for stormwater management.

Comment 4: Several commenters complained that the draft rule reflected the terms of a settlement agreement with the Homebuilders Association of Tennessee and several non-governmental organizations to resolve the appeal of the 2016 Phase II Municipal Separate Storm Sewer Systems (MS4) general permit. The MS4 communities were not part of that negotiation. Although they now have the opportunity to comment on the draft rules, this participation opportunity is not meaningful. This is a due process violation.

Response: Pursuant to T.C.A. § 69-3-108(s), all effluent limitations for post-construction stormwater must be established by rule, not just the limitations in general permits. These post-construction stormwater standards represent reasonable and flexible requirements that are expected to protect our water resources in a cost-effective manner. Although these effluent limitations are designed to provide flexible options, individual permittees may choose to adopt more stringent requirements in accordance with the procedures of T.C.A. § 69-3-108(t).

As reflected in this final rulemaking, the Board is modifying the final effluent limitations based on comments received during the rulemaking process, including comments received from MS4 communities, design consultants, and others. These modifications improve the clarity of the rule, align the buffer requirements to those in the construction general permit, and provide additional compliance options for MS4 communities. Therefore, this rulemaking reflects the input of a wide range of people, organizations, and governmental bodies.

Comment 5: New Rule 0400-40-10-.04 is clearly written for application only to traditional Phase II MS4s (i.e. medium and small municipalities) under the Tennessee general MS4 permit and does not in all cases apply to non-traditional MS4s. The introductory paragraph to the New Rule should clearly state that this rule applies directly and immediately only to traditional municipal Phase II MS4s under the Tennessee general MS4 permit and specify that these requirements may be modified, or their application delayed, for a non-traditional MS4 and/or by an individual MS4 Permit. Furthermore, T.C.A. 69-3-108(s) and (t), which is apparently driving these rule changes, clearly states that it applies only to a “local government entity” (i.e., a traditional municipal MS4) and thus does not apply to a non-traditional MS4. The intent of the rule should be made clear in this section and throughout the New Rules.

Response: Although the settlement applies only to the Phase II general permit, T.C.A. § 69-3-108(s) and (t) apply to all local governments, both Phase I and Phase II. The commenter is correct that these statutory provisions do not apply to other types of MS4s that are not operated by local governments, such as universities, military facilities, and TDOT. However, the federal MEP requirement for post-construction stormwater does apply to these entities. In most cases, there is no reason that MEP for new development or redevelopment projects within these MS4s would be different from that for the communities in which they are located, although implementation procedures would necessarily differ.

Comment 6: Pursuant to TCA § 69-3-108(s), these rules should not be more stringent than federal requirements. There are no federal minimum requirements for post-construction. EPA has readily acknowledged that its regulations “do not include specific management practices or standards to be implemented.” 74 Fed. Reg. 68620 (Dec 28, 2009). Furthermore, EPA recognizes that “stormwater permits leave a great deal of discretion to the regulated community to set their own standards...” Id. Inasmuch as there are no minimum federal post-construction requirements, any requirement promulgated by the State would not be “necessary to comply with the minimum requirements of federal law.” Accordingly, the proposed stormwater rules should not be finalized. Without waiving the above argument, a determination of the minimum post-construction requirements of federal law must be based upon a review of EPA-issued and other State-issued MS4 permits. The minimum requirement can be ascertained by a review of those permits to determine the least stringent requirement. Inasmuch as TCA 69-3-108(s) envisions flexibility and that requirements be no more stringent than the federal minimum, the MS4 regulations, to the extent they are adopted, should provide the permittee the alternative of implementing any requirement set forth in an EPA or State-issued MS4 NPDES permit.

Response: The Board does not agree with the comment. Although EPA rules do not include specific standards for post-construction stormwater management, these rules mandate the NPDES permitting authority to establish clear, specific, and measurable requirements. In other words, EPA has left it to each NPDES permitting authority to determine what constitutes MEP within its own jurisdiction. EPA has developed a helpful compendium of post-construction stormwater standards from around the country, which demonstrates that states apply a range of approaches.¹

This rule must be finalized in order to comply with Tennessee Code Annotated section 69-3-108(s), which requires the Board to establish narrative and numeric effluent limitations for post-construction stormwater by rule.

The argument that the least stringent MS4 permit in the entire United States establishes MEP for post-construction stormwater in Tennessee is not tenable. MEP for post-construction stormwater in, for example, Arizona is not going to be the same as that for Tennessee. Rather, the appropriate analysis is to consider which post-construction stormwater measures are both practicable (i.e., capable of being put into practice) in Tennessee and maximize pollutant reduction: that is what federal law requires, and that is what TDEC has proposed and the Board has adopted through this rulemaking.

Moreover, the question of what constitutes MEP in a given state is technical and depends on locally based factors such as precipitation, land values, topography, etc. With respect to the infiltration measures established in this rule, it has been demonstrated that these are capable of implementation in Tennessee because a number of municipalities have adopted and successfully implemented this standard. The additional SCM types provide municipalities and developers substantial flexibility in determining the most appropriate measures for their specific situations. Accordingly, individual MS4 communities and developers may select from among these measures to determine what is practicable for their communities and development sites. With respect to water quality riparian buffers, these have been demonstrated to be practicable through their long-standing implementation in the construction stormwater general permit. Moreover, water quality riparian buffers maximize pollutant removal through contact of stormwater with vegetation, which both slows the discharge and removes pollutants. Vegetated buffers are particularly important for nutrient removal.

Comment 7: A number of commenters requested definitions of specific terms.

Response: The definitions section of this rule chapter was not opened during this rulemaking process, so it is not possible to add definitions at this time. However, Rule 0400-40-10-.02(7) provides, "Terminology not specifically defined herein shall be defined in accordance with the Tennessee Water Quality Control Act of 1977, T.C.A. § 69-3-101 et seq., and the rules adopted thereunder." Accordingly, definitions in the Act and in Rule Chapter 0400-40-05 apply to Rule Chapter 0400-40-10. Definitions related to MS4s are being added to Rule Chapter 0400-40-05 in a parallel rulemaking.

Comment 8: The language of this rule only mentions "new development." Is new development defined anywhere to include re-development? If not, it should be clarified what types of development are required to meet these performance standards.

Response: For the sake of clarity, the terminology has been changed to "new development or redevelopment project," and the text of the MS4 rule has been changed accordingly. The permanent stormwater standards apply to new development and redevelopment projects, which will be defined in Rule Chapter 0400-40-05. The permanent stormwater management program must require new development and redevelopment projects to be designed to reduce pollutants to the maximum extent practicable.

Comment 9: Please provide a definition for "disturb."

Response: "Disturbed area" for purposes of MS4 permitting is the same as that for construction stormwater permitting. The term is defined in the Tennessee Construction General Permit as "the total area presented as part of the development (and/or of a larger common plan of development) subject to being cleared, graded, or excavated during the life of the development. The area cannot be limited to only the portion of the total area that the site-wide owner/developer initially disturbs through the process of various land clearing activities or in the construction of roadways, sewers and water utilities, stormwater drainage structures, etc., to make the property marketable."

Comment 10: The regulations should separately define "new projects" and "redevelopment projects."

Response: Rule Chapter 0400-40-05 will include separate definitions of "new development projects" and "redevelopment." The permanent stormwater standards apply equally to both new development and redevelopment.

¹ https://www.epa.gov/sites/production/files/2016-08/documents/swstdsummary_7-13-16_508.pdf.

Comment 11: Define Redevelopment. Consider “Redevelopment means the alteration of developed land that disturbs one acre or more, or less than an acre if part of a larger common plan of development, and increases the site or building impervious footprint, or offers a new opportunity for stormwater controls. The term is not intended to include such activities as exterior remodeling, which would not be expected to cause adverse stormwater quality impacts.”

Response: The Board agrees with this comment, as the proposed language is identical to the definition of “redevelopment” in the 2016 Phase II MS4 permit. This definition will be added to the final version of Rule Chapter 0400-40-05, and will apply to this chapter as well.

Comment 12: Requiring the treatment of new impervious surfaces recognizes the differences in how stormwater quality requirements can be addressed on new developments versus redevelopments. This is in keeping with EPA’s guidance provided in their Model Ordinance for the Control of Post-Construction Stormwater Runoff.²

Response: The Board generally agrees, although some redevelopment projects without added impervious surface nonetheless have the opportunity to implement better stormwater controls. Please see Response to Comment 11.

Comment 13: Please define "preceding rain event." Is the intent preceding significant rain event, measurable rain event, etc.? And then, of course, those need to be defined as well.

Response: Rain event is defined as "rainfall event" in the revised Rule Chapter 0400-40-05.

Comment 14: Please define "full treatment capacity"

Response: Full treatment capacity within 72 hours following the end of the preceding rain event refers to the maximum drain time of the SCM.

Comment 15: Multiple sections of the rule make reference to the SWMP. Where has the acronym SWMP been introduced or defined in the rules?

Response: The following has been added to 0400-40-10-.04(2)(f)3. where the term is first used: “stormwater management program” and has been spelled out in other locations throughout the rule.

Comment 16: Please define TSS.

Response: Total Suspended Solids is listed in 40 C.F.R. Part 136-approved methods as “Residue—non-filterable (TSS), mg/L Gravimetric, 103-105°C post washing of residue with Standard method 2540 D-2011 ASTM D5907-13 USGS/AOAC/other I-3765-85.ASTM.”

Comment 17: Define Biologically Active Filtration.

Response: The North Carolina State University Cooperative Extension provides a helpful explanation of bioretention/biologically active filtration, which “combine[] natural and engineered systems to manage stormwater from developed areas.”³ This system must provide 12 inches of internal water storage.⁴

Comment 18: Define Common Plan of Development as it relates to “new development.” Consider “A common plan of development or sale means a contiguous area where multiple separate and distinct land disturbing activities may be taking place at different times, on different schedules, but under one proposed plan. “One plan” is broadly defined as any announcement or piece of documentation (including a sign, public notice or hearing, sales pitch, advertisement, drawing, permit application, zoning request, computer design, etc.) or physical demarcation (including boundary signs, lot stakes, surveyor markings, etc.) indicating construction activities may occur on a specific plot.”

Response: The term “Common plan of development or sale” in this rule chapter has the same meaning as in the Construction General Permit, which defines this term as “any announcement or documentation (including a sign, public notice or hearing, sales pitch, advertisement, drawing, permit application, zoning request, computer design) or physical demarcation (including boundary signs, lot stakes, surveyor markings) indicating construction activities may occur on a specific plot. A common plan of development or sale identifies a situation in which multiple areas of disturbance are occurring on contiguous areas. This applies because the activities may take place at different times, on different schedules, by different operators.”

Comment 19: A number of commenters requested a definition of Maximum Extent Practicable (MEP).

² (https://www.epa.gov/sites/production/files/2015-12/documents/modelillicit_0.pdf).

³<http://chesapeakestormwater.net/wp-content/uploads/downloads/2014/03/Internal-Water-Storage-for-Bioretenion-2009.pdf>.

⁴ *Id.*

Response: MEP is a term that refers to the entirety of narrative requirements in the MS4 permits. It is not amenable to definition. However, for post-construction stormwater, the rules provide specific information about what technologies, buffer requirements, and other practices would comply with the MEP requirement.

Comment 20: The changes to the rules result in an increase of amount of work and funds for the permittee in order to become compliant with the stormwater portion of the permit. A cost-benefit analysis is requested as justification for proposed changes.

Response: T.C.A. § 69-3-108(s) requires that effluent limitations to manage post-construction stormwater be adopted by rule. These rules are necessary because federal law requires all MS4s to implement a program to reduce pollutants in post-construction stormwater to the maximum extent practicable and to protect water quality. We are not aware of any more cost-effective methods to comply with the federal requirements.

Comment 21: Section 402(s) of the Clean Water Act ("CWA"), as recently enacted in the Water Infrastructure Improvement Act, provides for integrated planning to address CWA requirements. Under this federal provision, States are now required to inform municipalities of the opportunity to develop an integrated plan that may be incorporated into a permit. Section 402(s) specifically recognizes that integrated planning can be used to address MS4 permitting, as well as other provisions related to SSOs. Importantly, this section recognizes the importance of allowing municipalities to sequence and prioritize their most important projects.

Response: The Board acknowledges the reference to integrated planning in Section 402(s) of the Clean Water Act and its applicability to municipalities. The rule requires timely submission of an implementation plan that includes a timeline to develop and implement the program. The Department expects to review these plans in light of other Clean Water Act obligations of the municipality.

Rule 0400-40-10-.04(1) Permanent Stormwater Management Program

Comment 22: The prefatory paragraph to Proposed Rule 0400-40-10-.04(1) refers to "effluent limitations." it was suggested that the requirements be referenced as "performance standards."

Response: These are effluent limitations because they require a reduction in the amount of pollutants that will be discharged through the MS4 to waters. Effluent limitations are not limited to end-of-pipe permit limits, and can include both narrative and numeric requirements, including best management practices. The MS4 post-construction stormwater rule establishes effluent limitations as required by T.C.A. § 69-3-108(s). Accordingly, the term "effluent limitations" has been retained.

Comment 23: Multiple commenters requested that the word "remove" in Rule 0400-40-10-.04(1)(a) be changed to "treat for" or "reduce."

Response: This change is consistent with the federal rule and the settlement, and has been made throughout the rule.

Comment 24: Rule 0400-40-10-.04(1)(a) - Permanent Stormwater Management Program: There needs to be more emphasis placed on public education to achieve permanent water quality behavioral changes in neighborhoods instead of vigorous inspection and enforcement of devices from MS4 staff. Rather than requiring SCMs in all circumstances that are inadequately maintained by property owners or HOAs, cause homeowner confusion, and are difficult to inspect by smaller MS4s, an alternative solution may be to include an option for an MS4 that would allow them to decide if SCMs are practical for an individual neighborhood or if post-construction water quality can be achieved through alternative means like a targeted educational program.

Response: Public education is one of the six minimum control measures EPA requires in the MS4 program, but this rulemaking addresses only post-construction stormwater controls. While the Board agrees that public education is important, it does not agree that public education alone can substitute for implementation of SCMs and buffers. In particular, public education alone would not maximize practicable pollutant removal and therefore does not comply with the minimum requirements of federal law.

Comment 25: Multiple commenters referred to Rule 0400-40-10-.04(1)(b), and asked to replace "ensure" with "verify." The permittee cannot ensure that measures are adequately maintained. They can only develop programs to check and verify if it has been completed.

Response: The language in 1(b), 4(c), and 4(d) has not been changed. The Board acknowledges that the permittees often do not own or operate SCMs at new development and redevelopment sites, but they do have, and must exercise, oversight authority. The rule language has been changed in 6(b) and 7(b) from "ensure" to "require." The word "ensure" in 8(b) has been changed to "demonstrate."

Comment 26: Rule 0400-40-10-.04(1)(c) states: "The permittee must develop and implement, and modify as necessary, an ordinance or other regulatory mechanism..." However, non-traditional MS4s typically do not have

the legal capability to implement an ordinance or other regulatory mechanism on their own accord, and this could only be accomplished through actions of the Tennessee State legislature or the U.S. Congress.

Response: Nontraditional MS4s cannot adopt ordinances, but they can implement these requirements through other legally binding mechanisms such as contractual requirements that do not require legislation.

Comment 27. Regarding Rule 0400-40-10-.04(1)(d), the permittee has regulatory authority over municipal separate storm sewer system but does not have such authority over private stormwater control measures. Therefore, an implementation plan for a permanent stormwater management program can only be applicable to the municipal separate storm sewer system.

Response: The permittee has regulatory authority over new private SCMs that it permits and is required by these rules to adopt ordinances or other regulatory mechanisms to implement that authority.

Comment 28: Regarding the implementation plan in Rule 0400-40-10-.04(1)(d), it would be unreasonable for a local government to develop an entirely new program within 90 days. If the plan is expected to include detailed policies and procedures, then the timeframe should be extended to at least 12 months, subject to MS4's extensions on a case-by-case basis for good cause.

Response: The final rule has been changed to make it clear that permittees have up to 24 months to develop and implement the post-construction program. Only the implementation plan is required within 90 days. This implementation plan must identify what elements the post-construction program will include and a timeline for development and implementation of the actual program.

Comment 29: Rule 0400-40-10-.04(1)(d) states, "The permittee must submit an implementation plan for its permanent stormwater management program not later than 90 days after issuance of the effective date of a new or renewed permit." It is recommended that additional time be provided, 180 days minimum.

Response: The language in the rules dictates the language in the general permit and, as such, provides ample lead time for the permittees to structure their implementation plans with a degree of certainty before the general permit is issued.

Comment 30: We find it difficult to find a legitimate application to the permittee for a mandatory permit requirement for the submittal of an implementation plan. For permit compliance, it should be sufficient to require the permittee to have the program implemented within 24 months of permit coverage.

Response: The rule effectively builds in a compliance schedule during which to implement new effluent limitations for the first permit cycle. Under federal law, NPDES permit compliance schedules must ensure compliance as soon as feasible, and include interim milestones for schedules that exceed 12 months. The implementation plans developed in accordance with this rule are necessary to define the steps in the compliance schedule for each municipality.

Comment 31: We recommend Rule 0400-40-10-.04(1)(d) be changed to read: "The permittee shall develop an implementation plan for its permanent stormwater management program. The implementation plan should include a brief description of the main components of the permittee's permanent stormwater management program, which should include: codes and ordinance development and implementation; and procedures for the plans review. The implementation plan shall include a timeline to develop and implement the program that results in full implementation of the program not later than 24 months after the effective date of the Notice of Coverage issued for the new and renewed permit. If the permittee has implemented a permanent stormwater management program that complies with all requirements of the new or revised permit, an implementation plan is not required."

Response: The rule has been revised regarding implementation plans in Rule 0400-40-10-.04(1)(d), but implementation plans are required for only the first permit issued after the effective date of these rules. The plans are required to be submitted to TDEC to assure of the permittee's progress towards achieving permanent stormwater management program requirements and the compliance schedule. Permittees can begin planning for implementation while waiting for the rule to become effective.

Comment 32: Must the implementation plan be approved in writing by the Division? To whom is the plan submitted?

Response: Yes, the plan must be approved in writing by the Division. The reissued Phase II general permit will specify where to submit the plan.

Comment 33: As written, this paragraph seems to imply different times for updates between new and existing permittees. However, they both should have the same time.

Response: Implementation plans are due at the same time for new and existing permittees.

Rule 0400-40-10-.04(2) Permanent Stormwater Standards

Comment 34: Multiple commenters noted 0400-40-10-.04(2)(a)'s proposed requirement to "reduce pollutants to the maximum extent practicable" has no meaning as MEP is not defined anywhere.

Response: MEP is a term that refers to the entirety of narrative requirements in the MS4 permits. It is not amenable to definition. However, for post-construction stormwater, the rules provide specific information about what technologies, buffer requirements, and other practices would comply with the MEP requirement. The final rule has been modified to clarify that compliance with this rule constitutes MEP for post-construction stormwater.

Comment 35: In Rule 0400-40-10-.04(2)(a), please specify the types of pollutants required to be reduced. After "maximum extent practicable" add language specifying minimum 80% TSS removal.

Response: The rule reflects federal standards in which the types of pollutants are not limited. Therefore, all pollutants are to be reduced through implementation of these post-construction stormwater control measures. 80% TSS removal is not the standard; the standard is to implement the entirety of the narrative and numeric effluent limitations established in this rule.

Comment 36: The language under Permanent Performance Standards in Rule 0400-40-10-.04(2)(b) states that, "For design purposes, TSS may be used as the indicator of pollutants (such as sediment, nutrients, and pathogens)." The use of the term "may" is subjective and could lead to inconsistent implementation amongst the regulated MS4 communities. Furthermore, utilizing TSS as a surrogate for other pollutants, particularly nutrients, is potentially damaging to water quality. TDEC should set specific nutrient reduction performance targets utilizing the best available science and sound engineering principles if the Agency wants specific nutrient reductions achieved.

Response: TSS has been used as an indicator pollutant for stormwater control across the nation for many years. Many other pollutants attach to TSS, so reducing TSS also reduces other pollutants. The reference to nutrients and pathogens has been removed from the rule. In addition to the SCMs set out in this section, water quality riparian buffers are intended to further maximize pollutant reduction, including nutrients, in a practicable manner.

Comment 37: Permittees who have implemented permanent stormwater programs compliant with standards equal to or more stringent than those under proposed 0400-40-10-.04(2) under a currently or previously authorized and duly issued general permit by the State of Tennessee that require(d) establishment of a Permanent Stormwater Management Program should be deemed by the State as meeting the proposed 0400-40-10-.04(2), without requirement to amend their compliant program. Add subparagraph (f) under 0440-40-10-.04(2) to read: "Permittees who can demonstrate compliance with permanent stormwater management requirements established in the 2010 general NPDES small MS4 permit issued prior to adoption of these rules shall be deemed compliant with the standards in 0400-40-10-.04(2)(b) and (c) based on documentation of equal or more stringent program standards in effect at the time of adoption of this rule. Such local program standards shall have met all requirements of public notice, adoption, permit reporting, and review by the issuing agency of the State."

Response: The Board appreciates those MS4 communities that have developed and successfully implemented post-construction stormwater programs. However, it does not have the authority to supersede the provisions of Tennessee Code Annotated section 69-3-108(t), which establishes specific requirements for local governments who wish to adopt or apply more stringent standards. The Board also cannot issue a blanket determination that any entity has complied with that standard. Therefore, the suggested language has not been adopted in this final rule.

Please note that municipalities may select any of the SCM types established in this rule, as appropriate for their community. Local governments have discretion in selecting measures to comply with the effluent limitations established in this rule in accordance with T.C.A. § 69-3-108(s).

Comment 38: We request that the permit recognize the standards that have been implemented by MS4 programs and allow for the continued use by inserting the following language: "For MS4 programs that have developed standards other than TSS, that are in compliance with the previous permit requiring Runoff Reduction, then this shall be considered equivalent and in compliance."

Response: The permanent stormwater management program must require new development and redevelopment projects to be designed to reduce pollutants to the maximum extent practicable. For design purposes, total suspended solids may be used as the indicator for the removal of pollutants, but that is at the option of the permittee. To provide equivalency of various treatment processes, the Water Quality Treatment Volume is graduated. The stormwater programs have the flexibility to set requirements specific to their community within the bounds of this rule and select any or all of the four equivalent alternatives. As such, the tiered system of the 2010 permit where SCM not using infiltration, evapotranspiration, and reuse had to provide technical justification of site

limitations is no longer applicable. With equivalent treatment options, designers will be able to select the optimum treatment for each site with respect to effectiveness, economics, and expediency.

Comment 39: In Rule 0400-40-10-.04(2)(b), no mention is made of the basis of design storm selection. Many previous documents from EPA and others indicate that a 95th percentile event is appropriate for permanent stormwater designs, but this new Rule requires an event that for much of Tennessee will be around a 99th percentile event. For Knoxville, the former is about 1.45” and is larger than all events comprising well over 80% of the total annual rainfall, while the latter is about 2.90” and is larger than events comprising 98.1% of total annual rainfall, which seems excessive for a design whose failure would not cause significant risk to life or property. It is also not clear that utilizing a larger storm event benefits a TSS-removal water treatment design. In fact, designing for such a large and infrequent event could lead to poor performance for the many smaller events comprising most of the runoff and pollution.

Response: The design storm provides distribution of depth and intensity values as they vary across the state. The 1-year, 24-hour storm is the smallest design storm readily available in engineering reference literature in general and in the NOAA Atlas 14 in particular. However, only a portion of the design storm is used in the calculation of the WQTV. Hydrodynamic separators and other Manufactured Treatment Devices are designed for flowrate that is a function of rainfall intensity. The smallest design storm that NOAA Atlas 14 provides intensity values for is the 1-year, 24-hour storm.

Comment 40: Proposed Rule 0400-40-10-.04(2)(b) indicates that the design storm is a 1-year, 24-hour storm event. Unless the final rule references some standards, such as NOAA Atlas 14, it appears that the rule is providing the MS4 flexibility in making such determination.

Response: The rule specifies a 1-year, 24-hour water quality design storm. The authoritative reference for the design storm is NOAA Atlas 14, Volume 2, Version 3.0. U.S. Department of Commerce. National Oceanic and Atmospheric Administration (NOAA), National Weather Service, Hydrometeorological Design Studies Center, Silver Springs, Maryland or its digital product equivalent, providing rainfall depth and intensities.

NRCS is replacing the use of its legacy rainfall distributions (Type I, Type IA, Type II, and Type III) with rainfall distributions based on NOAA Atlas 14 precipitation-frequency data. NEH 630 Chapter 4 rev August 2019:

“Precipitation-frequency data and storm distribution are important components of the NRCS hydrologic modeling procedures. Different assumptions and procedures were used in preparation of precipitation frequency atlases TP-40 and NOAA Atlas 14 by the NWS and in preparation of storm distributions NRCS Type II and those based on NOAA Atlas 14 data. Understanding these differences will provide more background on why hydrologic results could be different when changing from TP-40 and the Type I, IA, II, or III storm distribution to NOAA Atlas 14 data and a locally derived storm distribution. With many more years of data, better quality control, and more short duration measurements, much more confidence can be placed in the NOAA Atlas 14 precipitation-frequency estimates and storm distributions based on the estimates.”⁵

Comment 41: The storm definition issues combine in complicated ways. For example, with the previously-used Knoxville 95th percentile event depth (1.45”) and an assumed Type II distribution, the 1st inch of rainfall occurred well past the very high-intensity Type II peak, which is where most runoff is generated. Moving to the 1-yr event (2.9”) means that the 1st inch occurs well before the Type II peak, so less runoff is actually generated by that 1st inch of rainfall. This is exacerbated by defining it as a 24-hr event, which stretches the intensity peak out even further from the previously-used 15 hours, further reducing the runoff volume from the first inch.

Response: NRCS is replacing the use of its legacy rainfall distributions (Type I, Type IA, Type II, and Type III) with rainfall distributions based on NOAA Atlas 14 precipitation-frequency data. See Chapter 4 of NRCS NEH August 2019 rev.⁶

Comment 42: The new rule should eliminate the use of, and references to, a design storm and hydrologic distribution of rainfall and require use of an instantaneous capture design as the minimum level standard. The draft rule specifies the design of SCMs for “the first X-inches” of the 1-year, 24-hour design storm (where X is variable depending on SCM treatment type). To accomplish this, a designer needs to use a rainfall distribution (e.g., Type II storm, NRCS distributions based on NOAA Atlas 14, etc.) though none is specified in the draft rule. However, this level of analysis is well-beyond the standard engineering practices for stormwater system design. Further, given the inaccuracies inherent in rainfall distributions and the variability of hydrologic parameters over

⁵ <https://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=43924.wba>

⁶ <https://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/water/manage/hydrology/?cid=STELPRDB1043063>

time and space, these models won't necessarily provide significant hydrologic accuracy or result in more effective pollutant removal over more traditional engineering design methods. Does TDEC really intend for designers to create a hydrologic model for every SCM design?

Response: Please see Response to Comment 40. In addition, the designer must use good engineering practices and standards of care for hydrologic calculations. Several customary methods are currently used in the engineering profession, so a method appropriate to the scope and size of the project can be selected. The Division does not expect the use of continuous simulation modeling on most sites.

Comment 43: Please clarify the distribution of the design storm (e.g., uniform distribution or Type II distribution).

Response: Please see Response to Comment 40.

Comment 44: Rule 0400-40-10-.04(2)(b) what reference should be used to define the 1-year, 24-hour storm at a given location? The rule should reference some standards, such as NOAA Atlas 14.

Response: The authoritative reference for the design storm is NOAA Atlas 14 providing rainfall depth and intensities.

Comment 45: In Rule 0400-40-10-.04(2)(b), why use the 1-year, 24-hour storm event? It seems that this event was chosen due to familiarity as opposed to effectiveness in TSS removal. A 1-year event is too large for effective TSS removal, especially for smaller, more frequent events. Please consider replacing this and requiring retention of the first 0.80-inch of runoff by either infiltration or capture and use. A calculation should be provided by the professional engineer to demonstrate these results.

Response: The design storm provides distribution of depth and intensity values as they vary across the state. The 1 -year, 24-hour storm is the smallest design storm readily available in engineering reference literature in general and in the NOAA Atlas 14 in particular. However, only a portion of the design storm is used in the calculation of the WQTV. The use of infiltration, evapotranspiration and capture/reuse SCMs is allowed and described in table 2(c), but is only one of the SCM types that may be used.

Comment 46: Rule 0400-40-10-.04(2)(b) – this section says SCMs should be designed to operate “for the life of the new development project.” No infrastructure, much less SCMs, are capable of operating in perpetuity. This requirement should be removed or clarified.

Response: Stormwater control measures are post-construction measures that provide long-term treatment for the life of the project. As set out in Rule 0400-40-10-.04(7), appropriate SCM maintenance procedures must be required.

Comment 47: In Rule 0400-40-10-.04(2)(b), it seems that in the next to last sentence, the word “new” could be deleted. So, “...72 hours following the end of the preceding rain event for the life of the development project.”

Response: The reference has been changed to “new development and redevelopment projects” to be consistent with federal law and the balance of this rule.

Comment 48: In the next to last sentence of Rule 0400-40-10-.04(2)(b), it would be better to leave out the word “new” and even the word project. The article the undoubtedly refers to a new development project, which is the context of the section, and so the new is superfluous. And the new also introduces a bit of a contradiction: the new project is not going to be new for the life of it. Nor is the new development project going to remain a development project for the life of it. The present sentence introduces tiny loopholes for one to argue “my development is no longer a new project; so my SCMs now aren't bound by this treatment standard, right?” I suggest dropping the new and the project...So, state simply “...72 hours following the end of the preceding rain event for the life of the development.”

Response: The Board acknowledges the complications that could arise from the term "new development." However, the terminology is consistent with federal rules. The intent is for SCMs to be maintained and provide treatment until the end of the project life.

Comment 49: Rule 0400-40-10-.04(2)(b) omits language from the settlement agreement concerning allowing a suite of SCM types.

Response: The commenter is correct, and the language has been added back. Permittees should provide a range of SCM options appropriate for their communities.

Comment 50: A number of commenters requested that the columns in the table for SCM Treatment Type and WQTV be switched.

Response: The Board agrees that it is clearer to list the SCM treatment type first, and then the WQTV, so this change has been made.

Comment 51: In the SCM Table in Rule 0400-40-10-.04(2)(c), please clarify the "inch(es) of the design storm." The table should be addressing runoff but, as worded, it could be assumed to mean precipitation.

Response: The wording has been changed to: "runoff generated from the first X inch(es) of the design storm."

Comment 52: The table in proposed Rule 0400-40-10-.04(2)(c) sets forth SCM treatment types. The signed settlement agreement included a comment that stated, "[t]he rationale will indicate that MS4s may offer these four options." Clarification should be provided indicating that MS4 permittees will be able to offer as many or as few of the 4 options listed in the table as it determines appropriate.

Response: To provide equivalency of various treatment processes, the WQTV is graduated. The stormwater programs have the flexibility to set requirements specific to their community within the bounds of this rule, so they can select options from this table. The table classifies all SCMs by the type of treatment process on which they rely, since the vast majority of SCMs can be classified in this way. Retention and storage SCMs rely on infiltration and/or evapotranspiration. Stormwater control measures that drain to an outlet provide filtration. Where internal water storage is provided, the filtration is enhanced biologically by nitrogen removal and additional settling. Other SCMs rely on particle settling, either in quiescent conditions, baffled flow-paths or hydrodynamic separators. The SCMs are therefore sufficiently classified by their predominant treatment process. Local stormwater programs can provide list of specific SCMs in each category. For Manufactured Treatment Devices, the WQTV is now specified as the maximum runoff generated from the entire design storm.

Comment 53: How are the design criteria for the non-infiltrative practices derived and what research was cited for determining these?

Response: The performance of various treatment types has been evaluated and published in scientific literature⁷ Stormwater manuals used in Tennessee present removal rates along with scientific literature references. For example, UT Permanent Stormwater Manual⁸ presents an excellent summary of literature findings of TSS removal efficiencies for various SCMs. Also please refer to the 2016 updated Summary of State Post-Construction Stormwater Standards issued by the EPA.⁹

Comment 54: The required treatment volumes indicated appears skewed in favor of "green infrastructure" and away from mechanical means. As an example, the requirement for manufactured treatment devices of the "maximum flow rate of the design storm" equates to 3.1 inches over a 24-hour period for Chattanooga, which is over three times that of infiltration, evaporation, transpiration, and/or reuse. Please provide data to support the equivalency of the varying WQTVs for corresponding SCM treatment types, and clarify how this corresponds to a quantifiable standard for pollutant reduction or provide a quantifiable definition for "maximum extent practicable."

Response: To provide equivalency of various treatment processes, Water Quality Treatment Volume is graduated and an overall treatment efficiency of 80% TSS removal from the WQTV is set as the minimum design. The stormwater programs have the flexibility to set requirements specific to their community within the bounds of this rule. Larger volumes correspond to less efficient treatment processes (e.g. infiltration vs. settling) but provide equivalent overall treatment efficiency. The table represents successively less efficient treatment methods, with increased volumes of runoff being treated to achieve roughly equivalent overall pollutant removal. Infiltration, evapotranspiration, transpiration, and/or reuse approach 100% pollutant removal efficiency because these methods effectively eliminate the discharge of pollutants from the runoff generated by the first inch of the design storm. The design standard of 80% TSS removal for the fourth category of SCMs is significantly less efficient at overall pollutant removal, so a significantly higher volume of water must be treated to achieve equivalency.

The principle of the first flush is incorporated in the WQTV being defined as the first portion of the design storm. A singular WQTV disregards the lower efficiencies of treatment processes such as settling, gravel filtration, or hydrodynamic separators and does not provide treatment equivalent to the infiltration and evapotranspiration process. With equivalent treatment options, designers will be able to select the optimum treatment for each site with respect to effectiveness, economics and expediency.

Please see Response to Comment 53 regarding supporting data.

Comment 55: Is there any scientific data to support that these SCM treatment types achieve an overall efficiency of at least 80% TSS removal from the WQTV? These are expensive treatment types to force upon the population without something more than "engineering judgment" from a select group of people.

Response: Please see Response to Comment 53.

⁷ Schueler, T.R., Controlling Urban Runoff: A Practical Manual for Planning and Designing Urban BMPs, Metropolitan Washington Council of Governments (MWCOC), Publication #87703, July 1987

⁸ <https://tnpermanentstormwater.org/manual.asp>

⁹ https://www.epa.gov/sites/production/files/2016-08/documents/swstdsummary_7-13-16_508.pdf.

Comment 56: Permittees must have the flexibility to establish equivalent or more stringent standards and use standard compliance and design methods. This flexibility is not established in the draft rule. In the public question session held on July 15, 2019, when asked to define the standard in the rule, TDEC staff stated they did not intend to be prescriptive regarding how the 80% TSS Removal standard is met. Later however, TDEC staff indicated the table in (2)(c) was also the standard. Site designers can use SCMs in sequence to achieve the standard without managing the volume and surface area increases that would occur when designing via the TDEC method. This design flexibility is critical to site designers, yet it still ensures they can meet an 80% TSS removal standard.

Response: The permanent stormwater management program must require new development and redevelopment projects to be designed to reduce pollutants to the maximum extent practicable and the minimum for achieving this standard is established in Rule 0400-40-10-.04. Each row of table (2)(c) represents a different level of treatment efficiency, with increasing WQTV to offset decreasing efficiency. The absolute minimum standard, as clarified in the revisions of the table, is 80% TSS removal for flow-through manufactured treatment devices for the maximum runoff generated from the entire design storm.

The local jurisdiction may decide to require standards more stringent than the minimum of this rule. An ordinance with provisions more stringent than this rule must comply with T.C.A. § 69-3-108(t).

Comment 57: Can TDEC clarify the difference, or give examples of the SCM Treatment Type practices listed? There is confusion of what category many SCM practices such as a bioretention, infiltration trench, water quality swale, etc., would fit into. For example, our interpretation would be that bioretention area would easily fit into both the first and second tier as it is both an "infiltration, evaporation, transpiration, and/or reuse" along with a "biologically active filtration, with an underdrain" practice. A list of generally accepted SCMs would greatly aid MS4's in understanding what practices are being proposed in each Tier.

Response: The vast majority of SCMs can be classified by the treatment process on which they rely. Retention and storage SCMs rely on infiltration and/or evapotranspiration. Stormwater control measures which drain to an outlet provide filtration. Where internal water storage is provided, the filtration is enhanced biologically by nitrogen removal and additional settling. Other SCMs rely on particle settling, either in quiescent conditions, baffled flow-paths or hydrodynamic separators. The SCMs are therefore sufficiently classified by their predominant treatment process. Local stormwater programs can provide list of specific SCMs in each category.

Comment 58: In Rule 0400-40-10-.04 (2)(c), it seems there needs to be more clarity on the types of SCMs allowed within each SCM treatment type category. For example, "biologically active filtration with an underdrain" appears to refer to a bioretention SCM with an underdrain, whereas a bioretention practice with no underdrain may fall under the first category of SCMs. Should this section refer to some guidance document for clarity on the approved SCMs, such as those listed in the Tennessee Permanent Stormwater and Design Guidance Manual or approved equal?

Response: Local stormwater programs can provide list of specific SCMs in each category. Please see Responses to Comments 17 and 57.

Comment 59: The 4th category of SCMs in the table does not use any defined treatment volume, but rather a flow rate. This practice should be removed from the table defining "water quality treatment volumes" and presented separately.

Response: The wording throughout the table has been changed to: "runoff generated from the first X inch(es) of the design storm." For the 4th category of SCMs, the WQTV is now specified as the "maximum runoff generated from the entire design storm."

Comment 60: In Rule 0400-40-10-.04(2)(c), table row 2 - There is no standard definition of "biologically active filtration" nor standard specifications for what counts as "internal water storage," and this new terminology is not consistent with existing state and local technical guidance. Also, none of this is even relevant for TSS removal. If the rule is expanded to include within the definition of MEP treatment of other contaminants (i.e., Nitrogen), these specifications would need to be greatly expanded to ensure adequate treatment, as per designs in North Carolina and Minnesota.

Response: The requirement of the rule is to remove all pollutants to the maximum extent practicable. TSS may be used as an indicator pollutant, but that is optional for the permittee. Biologically Active Filtration must provide 12 inches of internal water storage as referenced in the North Carolina State University design guidance.¹⁰

Comment 61: In table (2)(c), it is not clear how SCMs such as pervious/permeable pavements and pavers, engineered wetlands, and green roofs fit within the table

Response: Permeable pavement is a filtration- and/or infiltration-based SCM depending on the specific design and site conditions and as such is included in two of the four alternatives. While green roofs and open space preservation do not typically receive runoff from an impervious surface, their inclusion in site design reduces the overall impervious surface and therefore reduces the total WQTV required to be treated.

Comment 62: Regarding row 3 of table (2)(c), previously-approved permits allowed use of wet ponds and extended detention basins for 80% TSS removal based on a 1" WQTV. This proposed Rule suddenly jumps that up to a WQTV of 2.5." Does the State have evidence to justify such a substantial size increase for a previously approved practice?

Response: The referenced 2010 permit allowed 80% TSS removal based on a 1-inch WQTV for wet ponds and extended detention basins as a second-tier standard and as such this required a technical justification to demonstrate site-specific limitations. The stormwater programs have the flexibility to set requirements specific to their community within the bounds of this rule and select any or all of the four equivalent alternatives. As such, there is no need for the tiered system of the 2010 permit where SCMs not using infiltration, evapotranspiration, and reuse had to provide technical justification of site limitations. With equivalent treatment options, designers will be able to select the optimum treatment for each site with respect to effectiveness, economics, and expediency. The revised rule requires 2.5 inches or 75% of the design storm for the WQTV calculation, but this can be utilized in any situation regardless of site-specific limitations.

Comment 63: Are there data showing equal TSS concentrations generated from all impervious surfaces, so that roofs are truly like parking lots as suggested by "impervious surfaces"? If not, on what basis are all impervious surfaces lumped for a TSS-based rule? If a designer provides evidence that 95% of all TSS is generated from parking lots, based on this Rule it should be acceptable to remove 84% of the parking lot runoff TSS (thereby providing $0.95 * 0.84 = 0.80 = 80\%$ total TSS removal) without treating any roof runoff. In that case, it is not justified to define the WQTV based on all impervious surface equally.

Response: The final rule has been revised to allow permittees to exclude uncontaminated roof runoff from the WQTV calculation.

Comment 64: Not all impervious surfaces contribute pollution and not all contribute the same amount (e.g., a roof for a residential home contributes less than bus parking). Please consider weighting the impervious areas based on the potential pollutant contribution.

Response: The final rule has been revised to allow permittees to exclude uncontaminated roof runoff from the WQTV calculation.

Comment 65: Please remove the table it is confusing and should not take the place of engineering calculations (e.g., STAR model) for the specific design to achieve a specific TSS goal. If it is not removed, how do we know that the TSS goals are achieved? Why does the table not mention TSS? What is biologically active filtration and why 12 inches of internal weir storage? Why do the depths vary? Depending upon the situation or the site, we often use multiple SCMs. How would this be measured using the table? The varying depths would diminish the effectiveness of the desired removal rates for smaller storm events.

Response: The performance of various treatment types has been evaluated and published in scientific literature.¹¹ Stormwater manuals used in Tennessee present removal rates along with scientific literature references. For example, the Tennessee Permanent Stormwater Manual by UT¹² presents an excellent summary of literature findings of TSS removal efficiencies for various SCMs. The table classifies all SCMs by the type of treatment process on which they rely. Retention and storage SCMs rely on infiltration and/or evapotranspiration. Stormwater control measures that drain to an outlet provide filtration. Where internal water storage is provided, the filtration is enhanced biologically by nitrogen removal and additional settling. Other SCMs rely on particle settling, either in quiescent conditions, baffled flow-paths or hydrodynamic separators. To provide equivalency of various treatment processes, Water Quality Treatment Volume is graduated and an overall treatment efficiency of

¹⁰<http://chesapeakestormwater.net/wp-content/uploads/downloads/2014/03/Internal-Water-Storage-for-Bioretenion-2009.pdf>

¹¹ Schueler, T.R., Controlling Urban Runoff: A Practical Manual for Planning and Designing Urban BMPs, Metropolitan Washington Council of Governments (MWWOG), Publication #87703, July 1987

¹² <https://tnpermanentstormwater.org/manual.asp>

80% TSS removal from the WQTV is set as the minimum design. Larger volumes correspond to less efficient treatment processes (e.g. infiltration vs. settling) but provide equivalent overall treatment efficiency. Row 4 was modified where the rule requires the permittees to use an industry-wide standard for performance evaluation of Manufactured Treatment Devices. The current industry-wide standards include NJDEP certification and Washington DOE TAPE approval (GULD, basic). New industry-wide standards may be developed and accepted as well (e.g. ASTM). Manufactured treatment filter devices are typically a part of a treatment train. Treatment trains were added to the rule.

Comment 66: Per Chapter 0400-40-10.04(2)(c) and the table therein, where wet (retention) ponds are provided as a SCM treatment type, the mandatory forebay language is too restrictive in our professional opinion. Forebays have a practical use when dry detention ponds or extended dry detention ponds are provided, but where wet (retention) ponds are provided and water elevations often backs into the forebay, our experience would indicate these have little effect on pollutant removal. Therefore, we would request the language be amended to state the use of forebays be required for dry extended detention, but only as an option for wet retention ponds.

Response: The forebay requirement has been retained in the final rule. Please reference the Tennessee Permanent Stormwater Manual by UT¹³ or the summary in the Illinois Urban Manual Practice Standard Sediment Forebay (no.) Code 914¹⁴ on the use and sizing of forebays in all types of detention basins and constructed wetlands.

Comment 67: Terminology in the Rule 0400-40-10-.04(2)(c) table needs clarification. 1. Define "biologically active filtration" and provide examples of acceptable SCMs and clarify what is mean by "12 inches of internal water storage" (within gravel voids, free-standing water, etc.). Additional clarification is needed regarding "biologically active" as well. Biologically active implies flora and/or fauna are a part of the treatment mechanism. Is it one or both? 2. Define "sand or gravel filtration" and provide examples of acceptable SCMs.

Response: Please see Response to Comment 17 and the North Carolina State University design guidance.¹⁵ Sand or gravel filtration is a treatment system where sand or gravel is used as a media to filter stormwater runoff prior to discharge, usually through an underdrain, whereby pollutants including TSS, BOD, bacteria, hydrocarbons and metals, are removed through settling, filtering and adsorption processes. Example SCMs include sand filters and gravel filters. These filters can be located underground in areas with limited surface space.

Comment 68: The SCM Treatment Type table found in 2(c) states, "SCMs must (emphasis added) be designed, at a minimum, to achieve an overall treatment efficiency of 80% TSS removal from the WQTV." However, TDEC has publicly insisted MEP requires greater removal through use of the treatment table. We respectfully ask TDEC to clarify their position on whether 80% TSS removal meets MEP.

Response: No, 80% TSS removal by itself does not constitute MEP. Instead, the SCM treatment table governs MEP for SCMs. Please see Response to Comment 54.

Comment 69: We support the use of GI practices where possible. In instances when site conditions make GI implementation infeasible, other solutions, such as proprietary filters and biofilters, should be allowed for compliance purposes without being penalized by being sized larger than necessary to treat an equivalent level of runoff. The same treatment standards should apply to all SCMs.

Response: Please see Response to Comment 54.

Comment 70: Specific to bioretention practices, which remain the most commonly deployed and studied GI practice available, the International BMP Database shows that these systems commonly export nutrients, specifically phosphorus. Statistical analysis published in 2017 shows bioretention to be a net exporter of total phosphorus.

Response: Bioretention may be designed with or without underdrain and in some instances with a liner. The International BMP Database includes a variety of bioretention studies for various site settings, climate conditions and rain events. A variety of designs exist for bioretention. Some are designed to retain and infiltrate the treatment volume and bypass all flows that exceed it; some are designed to filter stormwater runoff through media, infiltrate a portion of the filtrate, and discharge the rest through an underdrain; and some are designed with a liner to filter and discharge the entire volume of the filtered runoff through the underdrain. With all these design options, the results of the bioretention studies will show a variety of outcomes as it relates to phosphorus. For bioretention that retains and infiltrates the entire treatment volume, the TP removal approaches 100%, however, any runoff bypassing the bioretention does not receive treatment. Bioretention with an underdrain provides

¹³ [Id.](#)

¹⁴ <http://www.aiswcd.org/wp-content/uploads/2013/04/SEDIMENT-FOREBAY-IUM-914.pdf>

¹⁵ <http://chesapeakestormwater.net/wp-content/uploads/downloads/2014/03/Internal-Water-Storage-for-Bioretention-2009.pdf>

filtration and the engineered media have different removal efficiencies depending on whether the media were amended to remove dissolved phosphorus. Media that have high organic matter content will not effectively retain phosphorus and can leach phosphorus to the filtrate. Media that have low organic matter content will attenuate phosphorus. The WQTV is graduated to increase for bioretention with and underdrain and requires 12 inches of internal water storage to better remove nitrogen and to further enhance particulate phosphorus removal through settling.

Comment 71: The list of SCM treatment types is not all inclusive and it is unclear how other existing or innovative SCMs would be incorporated over time. These include SCMs such as green roofs, permeable pavements, open space preservation, filter technologies, perforated detention systems, and underground plastic chamber systems.

Response: Emerging SCMs can be sufficiently classified by the predominant treatment process upon which they rely. For example, SCM technology in the form of a modular bioretention using retention and storage with or without an underdrain is similar to built-on-site bioretention. Another new SCM technology uses advanced media filtration. Manufactured treatment filter devices are typically a part of a treatment train, which has been added to the rule.

Comment 72: Specific to flow-through manufactured treatment devices referenced in the SCM Treatment Type table found in 2(c):

a. Critical sizing and implementation guidance is lacking and should be considered to ensure program and permit consistency.

b. TDEC makes reference to hydrodynamic separators (HDS) in the clarifications section of the table. TDEC should be aware that HDS devices are only one subset of MTDs. Filtration and Biofiltration MTDs are in use throughout Tennessee and should be included in the clarifications column within the table.

c. To ensure consistent evaluation and implementation of MTDs across the state, TDEC should specify a specific protocol, such as the New Jersey Department of Environmental Protection (NJDEP) Certification for laboratory testing or Washington State's Technology Assessment Protocol- Ecology (TAPE) for field testing, be followed as referencing these protocols will bring credibility to the program and provide performance certainty to the regulated communities. These prescriptive protocols are rigorous in nature and allow MTDs to be evaluated on a level playing field. NJDEP's laboratory certification is the regulatory standard in NJ. NJDEP only provides certification letters for verification reports that are in full compliance with the protocol and process, whereas NJCAT will issue verification reports for MTDs that have been tested against other standards that do not meet NJDEP's requirements. Any references to the New Jersey Corporation for Advanced Technologies (NJCAT) verification should be replaced in this rule with either NJDEP Certification or TAPE General Use Level Designation (GULD) for Basic (TSS) treatment.

Response: The final rule was changed to "maximum runoff generated from the entire design storm" and 1-year 24-hour water quality design storm. The authoritative reference for the design storm is NOAA Atlas 14 providing rainfall depth and intensities. The designer must use good engineering practices and standard of care for hydrologic calculation. Several customary methods are currently used in the engineering profession so a method appropriate to the scope and size of the project can be selected. The rule requires the permittees to use an industry-wide standard for performance evaluation of Manufactured Treatment Devices. The current industry-wide standards include NJDEP certification and Washington DOE TAPE approval (GULD, basic). New industry-wide standard may be developed and accepted as well (e.g. ASTM). Not all proprietary devices fall within the flow-through manufactured device category. Based on the type or treatment process, proprietary devices are modular or prefabricated SCMs. The vast majority of SCMs can be classified by the treatment process they rely on. Retention and storage SCMs rely on infiltration and/or evapotranspiration. SCMs that drain to an outlet provide filtration. Where internal water storage is provided, the filtration is enhanced biologically by nitrogen removal and additional settling. Other SCMs rely on particle settling, either in quiescent conditions, baffled flow-paths or hydrodynamic separators. The SCMs are therefore classified by the predominant treatment process they rely on.

Comment 73: (2)(c) - How will "maximum flowrate of the design storm" be calculated for manufactured treatment devices (MTDs)?

Response: Hydrodynamic separators and other Manufactured Treatment Devices are designed for flowrate that is a function of rainfall intensity. NOAA Atlas 14 provides intensity values for the 1-year, 24-hour storm.

Comment 74: How are MTDs to be sized? Typically, only one size of a particular model of MTD is tested by NJCAT, but several sizes are available.

Response: For Manufactured Treatment Devices, the WQTV is the maximum runoff generated by the design storm. The designer must use good engineering practices and standard of care to for hydrologic calculation. The rule requires the permittees to use an industry-wide standard for performance evaluation of Manufactured Treatment Devices. The current industry-wide standards include NJDEP certification and Washington DOE TAPE approval (GULD, basic). New industry-wide standards may be developed and accepted as well (e.g. ASTM).

Comment 75: The SCM Treatment Types in the table do not include other currently accepted practices like green roof, permeable pavement, open space preservation, and buffer enhancements, etc.

Response: Permeable pavement is a filtration- and/or infiltration-based SCM depending on the specific design and site conditions and as such is included in two of the four alternatives. While green roofs and open space preservation do not typically receive runoff from an impervious surface, their inclusion in site design reduces the overall impervious surface and as such reduces the total WQTV required to be treated.

Comment 76: The ability to incorporate emerging SCM technology is not incorporated in the table.

Response: The emerging SCM can be sufficiently classified by the predominant treatment process on which they rely. For example, SCM technology in the form of a modular bioretention using retention and storage with or without an underdrain is similar to a built-on-site bioretention. Another new SCM technology uses advanced media filtration. Manufactured treatment filter devices are typically a part of a treatment train. The table classifies all SCMs by the type of treatment process on which they rely since the vast majority of SCMs can be classified in this way. Retention and storage SCMs rely on infiltration and/or evapotranspiration. SCMs that drain to an outlet provide filtration. Where internal water storage is provided, the filtration is enhanced biologically by nitrogen removal and additional settling. Other SCMs rely on particle settling, either in quiescent conditions, baffled flow-paths, or hydrodynamic separators. The SCMs are therefore sufficiently classified by the predominant treatment process on which they rely. Local stormwater programs can provide lists of specific SCMs in each category. The WQTV is determined by the type of SCM treatment and the impervious area draining to the SCM where the depth from the Table and impervious area are multiplied to yield volume.

Comment 77: Consider allowing mitigation project elements in addition to the SCM Treatment Types in 0400-40-10-.04(2)(c) like stream or wetland restoration and enhancement, buffer enhancement, etc.

Response: The permittee has the option to develop a mitigation program and/or other incentives as set out in Rule 0400-40-10-.04(2)(e). TDEC will evaluate such proposals based on a reduction in pollutant loading.

Comment 78: USEPA (Region 3) lost a challenge to the regulation of surrogate parameters (VDOT vs. USEPA, 2013), so TSS should not be explicitly identified as a surrogate for other pollutants in a permanent stormwater management standard.

Response: This comment incorrectly seeks to extend a narrow holding in a case challenging a total maximum daily load document to the stormwater regulation context and misstates the holding. That case construed regulatory language specific to TMDLs, and there is no reason to believe the holding would be extended to the regulation of pollutants in post-construction stormwater. In addition, the court held that flow could not be used as a surrogate for sediment because the statutory language for TMDLs specifically requires limits on pollutant loading, noting that sediment is a pollutant. TSS is a recognized way of regulating sediment discharges so, if anything, the use of TSS as an indicator pollutant is supported by this case.

Comment 79: Instead of a generic standard, please consider basing the TSS reduction on the difference in pollutant impact between the redeveloped conditions as compared to the existing conditions.

Response: The final version of Rule Chapter 0400-40-05 will include a definition of redevelopment that will also apply to this chapter. In addition, the incentive section of the rule is substantively similar to the 2016 NPDES Permit. Overall, the regulated community has not expressed much confusion with this requirement. Furthermore, Rule 0400-40-10-.04(2)(f)3. allows municipalities to identify jurisdiction-specific incentives.

Comment 80: Why does the filter identified in row 2 of Table (2)(c) need to be “biologically active,” when TSS removal is the sole performance criteria? In addition, the 12” of internal water storage in these practices is meant for N rather than TSS removal, so is also irrelevant. If N removal is a requirement for this row of practices, how do we justify leaving that out of the other rows? If TSS removal is truly the sole performance criterion, then those two specifications for N removal found in this row should be deleted. This should solely require filter material providing 80% TSS removal from the influent.

Response: TSS removal is not the sole performance criterion. The federal requirement, as reflected in this rulemaking, is to maximize removal of all pollutants to the extent practicable. Larger volumes correspond to less efficient treatment processes (e.g. infiltration vs. settling) but provide equivalent overall treatment efficiency. To account for the more effective overall pollutant reduction, biologically active filtration is identified with a smaller WQTV than physical filtration using sand or gravel.

Comment 81: Vertical density by itself is not directly related to TSS removal; however, if rooftops are downgraded (as most should be) because of lower pollutant contributions, then a vertical credit would have already been achieved by both this reduction and the reduction in overall impervious area that is inherent with vertical construction as opposed to single story building of the same square footage.

Response: Again, TSS reduction is not the performance criterion for this rulemaking: maximizing pollutant reduction is. The incentive for vertical density is based on the water quality benefits of retaining greenspace, not TSS removal. In addition, a provision was included in the revised rule whereby permittees may allow uncontaminated roof runoff to be excluded from the WQTV calculation. The table provides the WQTV for engineering calculations to meet the standard of reducing pollutants to the MEP where TSS may be used as an indicator.

Comment 82: Proposed Rule 0400-40-10-.04(2)(b) provides that TSS "may be used as the indicator for the removal of pollutants." However, Rule 0400-40-10-.04(2)(c) then provides that SCMs "must be designed, at a minimum, to achieve an overall treatment efficiency of 80%." These provisions are inconsistent as to whether TSS is an optional indicator or mandatory. The "must be designed" language in subsection (c) raises additional concerns. The rule should be clarified that if the developer implements a SCM treatment type set forth in the table, that it is deemed to have met the performance standard. Furthermore, it should be clarified that the MS4 is not required to independently undertake monitoring to confirm an 80% treatment efficiency.

Response: The use of TSS as an indicator pollutant is optional. Compliance with this rule constitutes MEP, so if a developer chooses any one of the SCMs in table (2)(c), or a combination of these in a treatment train as set out in Rule 0400-40-10-.04(2)(d), that complies with the SCM requirements of this rule. However, MTDs do require design verification to ensure that these meet the minimum overall 80% TSS removal standard. Permittees are not separately required to monitor discharges to confirm TSS removal because compliance is based on design standards.

Comment 83: The specified design storm (1-year, 24-hour) for some locations in Tennessee is less than 2.5". In those locations, the WQTV requirement for the SCM treatment types which define the WQTV as the first 2.5 inches of the design storm will exceed the design storm.

Response: The commenter is correct. Accordingly, the final rule has been revised to require the lesser of 2.5 inches or the first 75% of the design storm for the WQTV calculation.

Comment 84: Can a developer apply different SCM Treatment types for different parts of project (and thus different WQTV)? The draft rule implies only one per site vs multiple SCMs on one site. Add new sentence as 2nd sentence in verbiage: "All new dev projects must install one or more SCM types to treat all runoff generated from impervious surfaces."

Response: Yes, a variety of SCMs can be used on one site. The final rule has been revised to include treatment trains to allow sequencing SCMs in series.

Comment 85: The use of a table with prescribed, increasing treatment volumes creates confusion when a designer is attempting to use the flexible advantages of green infrastructure in stormwater management. This is true in two ways:

1. By definition, the table in part (2)(c) (with the exception of row 4 for manufactured treatment devices) eliminates a large number of SCMs that, while not able to manage water quality from an entire project design alone, contribute significant ability to reduce pollutants when used in combination with other SCMs in a "treatment train" approach. There are significant advantages of a "treatment train" approach for capture and treatment of pollutants which incorporates very effective SCMs, just not those indicated in the table.

2. The table does not seem to support a combined SCM approach which includes green infrastructure. This is a backward step in natural green treatment of stormwater runoff.

Response: The Board agrees with the commenter that treatment trains, including those that include a combined SCM approach, are appropriate measures. Moreover, this allows for greater flexibility in the broad range of site development scenarios. It was not the intent of the draft rule to eliminate the use of treatment trains. Accordingly, treatment trains were added as Rule 0400-40-10-.04(2)(d). While green roofs and open space preservation do not typically receive runoff from an impervious surface, their inclusion in site design reduces the overall impervious surface and as such reduces the total WQTV required to be treated. Any green space receiving runoff intended for infiltration may be part of a treatment train for the part of the WQTV it infiltrates.

Comment 86: 3rd sentence. The word "capacity" is incorrectly used in the sentence. Replace with "the WQTV." Exchange "capacity" with "of the WQTV" as indicated in the suggested revision provided for comment 2 above.

Response: Full treatment capacity within 72 hours refers to the maximum drain time of the SCM.

Comment 87: The requirement for forebays to be 10% of the total design volume may increase forebay size in Knox County.

Response: The commenter may be correct. Please reference the UT Permanent Stormwater Manual and the excellent summary in the Illinois Urban Manual Practice Standard Sediment Forebay (no.) Code 914¹⁶ on the use and sizing of forebays in all types of detention basins and constructed wetlands.

Comment 88: Based on an infiltration modeling analysis of the table rows (using STAR, which is an improved version of the RRAT design tool previously approved by TDEC and external reviewers), designers should clearly use the 2nd row. Assuming a sand-compost mixture for the filter material, the sole limiting factor is how fast water can be shoved through the material before reaching the underdrain. Where under the previous Permit requiring some on-site retention the highest impervious-treatment ratio was around 16:1 (matching very well with published results), with filter practices adequately removing TSS but requiring no infiltration this can easily be pushed up to 50:1. If it is assumed that the rainfall is evenly distributed evenly over 24 hours, this can rise even higher. Such a filter (much less a hydrodynamic separator) is clearly not near as representative of the natural hydrologic state as achieving infiltration, but since the Rule includes no infiltration requirement that is irrelevant.

Response: Concurring with the commenter, infiltration is not specifically required by this rule: it is instead one option among several.

Comment 89: MS4s with existing validated and previously-approved methods for defining and determining adequate treatment should be allowed to continue with their current approaches, as those meet the 80% TSS removal criteria, often using a combination of infiltration and other treatment approaches. In other words, the “grandfather clause” present in the current 2016 Permit should be retained in this Rule in some way, as the science on which those previous methods were based went through a rigorous development and approval process. On what basis are those previously-approved methods now presumed to be inadequate? On what basis was that clause removed?

Response: Pursuant to T.C.A. § 69-3-108(s), all effluent limitations for post-construction stormwater must be established by rule, not just the limitations in general permits. The rulemaking notice proposed the same rules for individual MS4 permits and general MS4 permits to promote consistency throughout the state and because these requirements reflect the standard to reduce pollutants to the maximum extent practicable. For example, it would make little sense for a city to have post-construction stormwater requirements that substantially differ from those applicable to its surrounding Phase II communities.

These post-construction stormwater standards represent reasonable and flexible requirements that are expected to protect our water resources in a cost-effective manner. The combination of SCMs, buffers, and other measures are shown to be practicable through their implementation in various communities in Tennessee, and achieve significantly more than 80% TSS reduction. Although these effluent limitations are designed to provide flexible options, individual permittees may choose to adopt more stringent requirements in accordance with the procedures of T.C.A. § 69-3-108(t). However, as reflected in the final rulemaking, the Board is making changes to the effluent limitations for individual permittees based on comments received during the rulemaking process.

Comment 90: Previously-approved Permits allowed use of wet ponds and extended detention basins for 80% TSS removal based on a 1” WQTV. This proposed Rule suddenly jumps that up to a WQTV of 2.5”. Does the State have evidence to justify such a substantial size increase for a previously-approved practice?

Response: To provide equivalency of various treatment processes, the Water Quality Treatment Volume is graduated and an overall treatment efficiency of 80% TSS removal from the WQTV is set as the minimum design. The stormwater programs have the flexibility to set requirements specific to their community within the bounds of this rule and select any or all of the four equivalent alternatives. As such, there is no need for the tiered system of the 2010 permit where SCMs not using infiltration, evapotranspiration, and reuse had to provide technical justification of site limitations.

Comment 91: Add clarification of what storm for extended detention.

Response: The rule establishes a water quality design storm (1-year, 24-hour). Design storms for detention and water quantity, however, are given by local design standards.

Comment 92: In the last row of table (2)(c), please clarify what is meant by the maximum flow rate of design storm? Flow at point where put device or max flow rate of the device you picked?

Response: For Manufactured Treatment Devices, the WQTV is now specified as the maximum runoff generated by the design storm.

Comment 93: Modify language in table to "e.g. manufactured treatment devices with 3rd party testing and verification."

¹⁶ <http://www.aiswcd.org/wp-content/uploads/2013/04/SEDIMENT-FOREBAY-IUM-914.pdf>
SS-7039 (October 2021)

Response: The final rule adds Rule 0400-40-10-.04(2)(d), which requires the permittees to use an industry-wide standard for performance evaluation of Manufactured Treatment Devices. The current industry-wide standards include NJDEP certification and Washington DOE TAPE approval (GULD, basic). New industry-wide standards may be developed and accepted as well (e.g., ASTM).

Comment 94: Duplicate comment omitted.

Comment 95: Consider removing the table and modifying as follows: “The water quality treatment volume (WQTV) is a portion of the runoff generated from impervious surfaces at a new development project by, at a minimum, the first one-inch of the design storm. SCMs must be designed, at a minimum, to achieve an overall treatment efficiency of 80% TSS removal from the WQTV.”

Response: The proposed language would not comply with the minimum requirements of federal law because it does not ensure that pollutant removal is maximized to the extent practicable or protect water quality. Therefore, the requested change has not been made.

Comment 96: Modify row 4, clarifications to state “e.g. manufactured treatment devices with 3rd party field or lab testing certification,” or delete this column in its entirety. NJCAT verification is not the appropriate program. If a program must be suggested in this row, NJDEP certification, or equivalent certification program, is the appropriate reference.

Response: The reference was deleted in row 4. Rule 0400-40-10-.04(2)(d) was added to the final rule and requires the permittees to use an industry-wide standard for performance evaluation of Manufactured Treatment Devices. The current industry-wide standards include NJDEP certification and Washington DOE TAPE approval (GULD, basic). New industry-wide standards may be developed and accepted as well (e.g. ASTM).

Comment 97: Regarding the second item on SCM chart biologically active filtration could be designed without the internal water storage. The requirement for 12” of internal storage decreases the flexibility of designers.

Response: Where internal water storage is provided, the filtration is enhanced biologically by nitrogen removal and additional settling. Biologically Active Filtration must provide 12 inches of 48-hour internal water storage as referenced in the North Carolina State University design guidance.¹⁷ This is required to achieve equivalency with the other rows in the table.

Comment 98: In the last line of table (2)(c), you could also include the acceptable particle distribution (micron sizes).

Response: The rule requires the permittees to use an industry-wide standard for performance evaluation of Manufactured Treatment Devices. The current industry-wide standards include NJDEP certification and Washington DOE TAPE approval (GULD, basic). New industry-wide standards may be developed and accepted as well (e.g. ASTM).

Comment 99: How will WQTV be calculated?

Response: The WQTV is determined by the type of SCM treatment and the impervious area draining to the SCM where the depth from the table and impervious area are multiplied to yield volume.

Comment 100: For the WQTV column in table (2)(c), could the table clarify what is meant by “first 1 inch of the design storm?” Is it the first inch of precipitation that is to be captured? Or, is it the runoff volume generated from the first inch of the storm? Those are two different values.

Response: The wording in the final rule has been changed to: “runoff generated from the first X inch(es) of the design storm.”

Comment 101: Duplicate comment omitted.

Comment 102: The draft rule is clear that 80% TSS removal efficiency is the goal of design. However, within the table, volume is the goal apart from a pollutant. When questioned during the July 15, 2019 public comment/questioning session, replies from Department staff as to what, exactly, is the standard were inconsistent (i.e., the standard is MEP, the standard is 80% TSS removal, the standard is the WQTV). Is it 80% TSS? Is it volume removal? Is it an array of targeted pollutants state-wide? Is it site or watershed specific pollutants? There has always been some question in making the standard a treatment volume, as is done by the part (2)(c) table, without directly associating it with an actual pollutant. In most places, the treatment volumes (termed the WQTV in the draft rule language) specified are tied to a pollutant removal standard and the water volume is used to

¹⁷<http://chesapeakestormwater.net/wp-content/uploads/downloads/2014/03/Internal-Water-Storage-for-Bioretenion-2009.pdf>

measure the pollutant removed. This is a fine but important point. The table in part (2)(c) does not have a clear connection with pollution even though the 80% TSS requirement occurs above the table. It is recommended the table be changed or eliminated, and that the actual underlying science behind the table in the removal of an actual pollutant be referenced instead. Part (2) of the draft rule could be changed to state: "SCMs must be designed, at a minimum, to achieve an equivalent overall treatment efficiency of 80% TSS removal from the first 1.25 inches of the design storm," with reference to increasing WQTVs per the table. However, the gradual increasing of WQTV still incurs a larger issue, described in comment #3.

Response: As previously stated, 80% TSS removal is not the design standard and does not constitute MEP by itself. Rather, applying the SCM types in accordance with the table ensures compliance with the MEP standard. Moreover, the rule does not require flow reduction. The Board most certainly appreciates the complexities, history and science of post-construction stormwater management, treatment and design. With much consideration to the existing approach to stormwater treatment in Tennessee, the rules reflect an acceptable degree of complexity yet provide design specificity and management flexibility to achieve equitable implementation and protection of state's waters. While used in the past with many complications and without sufficient design standard specificity, a singular WQTV disregards the lower efficiencies of treatment processes such as settling, gravel filtration, or hydrodynamic separators and does not provide treatment equivalent to the infiltration and evapotranspiration process.

Comment 103: If the table in (2)(c) is eliminated, the rule should allow the use of design or pollutant standard incentives to promote the use of green infrastructure and LID practices. 2. If the table in (2)(c) is retained, the draft rule should explicitly recognize and allow non-structural green space SCMs, such as trees and green space, impervious area disconnection, reforestation, soil restoration, and buffer enhancements. These features, when properly situated, can infiltrate and evapotranspire stormwater from impervious areas and provide pollutant removal. Revise (2)(e) as follows. "The permanent stormwater management program may include incentives for the use of low impact planning techniques and/or SCMs that infiltrate, evapotranspire, or reuse stormwater." Then add green infrastructure SCMs (bioretention, infiltration trench, etc.) and LID approaches to the list of accepted conditions and offer acceptable incentive options such as a lower rainfall than the standard for the WQTV (e.g., 1-inch as opposed to 1.2 inches). Add the following sentence to (2)(c): "Permittee programs may recognize nonstructural vegetated SCMs and vegetated areas which receive stormwater discharges from impervious areas as infiltration and/or evapotranspiration SCMs when such SCMs and areas are designed or otherwise can be shown to sufficiently infiltration and/or evapotranspire the stormwater discharged to them."

Response: The rule allows permittees to develop custom incentives. While green roofs and open space preservation do not typically receive runoff from an impervious surface, their inclusion in site design reduces the overall impervious surface and as such reduces the total WQTV required to be treated. Any green space receiving runoff intended for infiltration may be part of a treatment train for part or WQTV it infiltrates.

Comment 104: Proposed Rule 0400-40-10-.04(2)(b) and (7)(b) impose stormwater control measures (SCMs) for the life of the project. It is not appropriate to impose a requirement in perpetuity. This concern is further exacerbated by the definition of "Stormwater control measure" proposed in Rule 0400-40-05-.02(85) which refers to "permanent practices and measures." The standard is impossible to meet. Instead, the regulation should provide for the imposition of SCMs in the five-year MS4 permit and reimposition of such requirement in a new permit, as deemed appropriate at such time. Inasmuch as this requirement is more stringent than federal regulations, the proposed rule conflicts with T.C.A. § 69-3-108(s), as discussed above. This provision should be modified to recognize that the appropriateness of continuing the requirement will be determined on a permit-by-permit basis.

Response: The term "permanent" refers to stormwater control measures that provide long-term treatment for the life of the project. As required by federal law, MS4 permits must impose conditions for maintenance of these measures. The use of the term "permanent" here does not mean that the effluent limitations established by rule will never change. However, per Tennessee Code Annotated section 69-3-108(s), effluent limitations must for post-construction stormwater must be established by rule, so these are unlikely to change with each five-year permit cycle.

Comment 105: Site limitations such as highwater table, karst topography, and other unique site restrictions should be taken into consideration when allowing a reduction in WQTV. This was allowable in the previously issued MS4 permit but not explicitly stated in this Rule. Clarify if the Rule allows for a permittee to develop a list of exemptions or site limitations in which a reduced WQTV may be allowable.

Response: The rule does not allow for exemptions or site limitations because it provides for alternatives to allow the designer to address site-specific conditions. As such, there is no need for the tiered system of the 2010 permit where SCM not using infiltration, evapotranspiration, and reuse had to provide technical justification of site limitations. With equivalent treatment options, designers will be able to select the optimum treatment for each site with respect to effectiveness, economics, and expediency.

Comment 106: The mitigation credit provided in Rule 0400-40-10-.04(2)(e) is ambiguous and generic. Why not use engineering calculations for the specific design to achieve a specific result?

Response: This provision is intended to provide flexibility to local MS4 communities to adopt mitigation credits to compensate for any post-construction stormwater that is not fully managed on-site. Such credits must ensure equivalent control measures to reduce the discharge of pollutants in stormwater.

Comment 107: The rule should allow incentives to be defined by the permittee outside of the WQTV reductions already identified in Rule 0400-40-10-.04(2)(f). Please modify this rule to read, "The permanent stormwater management program may provide incentives for new development and redevelopment projects which are designed and constructed using low impact development (LID) practices. The LID practices incentivized must be measurable (e.g., reduction in impervious surface areas over existing impervious areas (redevelopments only); surface area established vertically vs what could be established at ground level, etc.) and the incentives provided must correlate to the pollutant reduction being provided (e.g. reduction in impervious surface area correlates directly to reduced WQTV or improved pollutant discharges)."

Response: The rule allows permittees to develop custom incentives, subject to TDEC approval.

Comment 108: TDEC should clearly address the on-going acceptance of STAR-derived design as compliant with Permanent Stormwater Standards in the rule. TDEC should continue to support of development of the STAR tool, as it has demonstrated utility in meeting the needs of land development permit applicants, MS4s, and property owners who will be responsible for maintenance of SCMs.

Response: TDEC approved and used the previous version of the STAR tool. TDEC will continue to be involved with the revisions of the STAR tool and review its new capabilities.

Comment 109: Prior to the current draft, TDEC, in partnership with UTK, invested significant resources in developing a design tool to meet the core EPA permanent water quality standards which this permit is intended to address. In the period contemporary with the appeal process and subsequent to development of the subject Rule, subject experts at UT have successfully refined this tool (currently called STAR) to provide a clear path for site design that (1) effectively addresses pollutants of concern, (2) incentivizes resourcefulness in site design, (3) is demonstrably cost-effective, and (4) minimizes the complexity of SCM design and review.

Response: See Response to Comment 111.

Comment 110: The first row in the "Water Quality Treatment Volume" Table is for infiltration; therefore, a tool like the STAR would be useful. Some MS4s have already found the STAR tool to be an effective solution to infiltration design scenarios.

Response: See Response to Comment 111.

Comment 111: Per Rule 0400-40-10-.04(2)(f), programs have the ability to reduce WQTVs via credits for certain criteria as indicated. Please give consideration for sites with high water tables and/or impermeable soils - which present hardships for development/redevelopment. Additionally, a condition for high-density development be included consisting of a density of 8 units per acre.

Response: The rule describes incentives municipalities may provide to encourage development in areas of preference (e.g., brownfields). The rule also incentivizes reduction of impervious surface and the use of infiltration, evapotranspiration, and reuse of stormwater. Providing incentives for sites with impermeable soils and/or high water table in the form of a reduced WQTV would negate the intent of the rule, which is to reduce the discharge of pollutants to the maximum extent practicable. In addition, the Board does not agree that eight units per acre constitutes high density development that should be eligible for incentives. That provision is intended to promote truly high-density development, with offsetting water quality benefits from reduced sprawl.

Rule 0400-40-10-.04(3) Stormwater Mitigation and Public Stormwater Fund

Comment 112: Are there any existing permittees using stormwater mitigation and public stormwater funds? Is this an option or mandated for permittees? All permittees should not be required to accept Offsite Stormwater Mitigation or offer a Stormwater Fund.

Response: There are municipalities in Tennessee with a mitigation program, and there may be others interested in developing such programs. This rule allows for this additional flexibility to meet the post-construction standard. The rule has been revised to reflect that the development of a mitigation program or payment in lieu into a public stormwater fund are both at the discretion of the permittee. In the rule, the word "may" applies to both the mitigation program and the stormwater fund indicating both options are optional. The language of the rule has been revised to clarify this intent.

Comment 113: Mitigation should be required on site with a pollutant loading equal to or greater than the design site. Example: It wouldn't work for a trucking company that expands its parking lot (high amounts of hydrocarbons) to perform offsite mitigation at a public park. The water quality benefit is lessened even if the volume mitigated is 1.5x the unmet volume.

Response: It is not necessarily practicable for mitigation to be provided on-site. In fact, if it were practicable, then mitigation would not be necessary. The rule requires that mitigation be provided in the same watershed, which is sufficient.

Comment 114: Proposed Rule 0400-40-10-.04(3) addresses stormwater mitigation and public stormwater fund. a. Subsection (a) indicates that a "permittee may choose to develop an offsite mitigation program in lieu into a stormwater fund..." The rule should be clarified that the mitigation applies "in lieu of meeting the standard on-site." As written, it fails to identify what the words "in lieu" are referencing. B. Subsection (b) provides that if "the permittee allows payment into a public stormwater fund, the permittee assumes responsibility to provide the required mitigation projects." In no case should the developer's liability, associated with meeting its standards, be transferred to the MS4. Moreover, it is unclear what the term "public stormwater fund" means. The MS4 permittee should not be liable if it were to allow a developer to undertake off-site mitigation by one of these other entities.

Response: The commenter is correct that offsite mitigation would be provided in lieu of meeting standards on-site. If the MS4 community does allow payment into a fund, then it must provide the offsetting mitigation.

Comment 115: Regarding proposed Rule 0400-40-10-.04(3), we request that the MS4 be allowed to authorize off-site mitigation within the hydrologic unit code watershed regardless if the WQTV can be treated on-site.

Response: The Board declines to make this change. If it is practicable to treat the WQTV on-site, then it is required under the federal MEP standard. The rule allows for off-site mitigation where WQTV treatment is not practicable on site. The permittee has the option to develop a mitigation program or other incentives. TDEC will evaluate such proposals based on a reduction of pollutant loading. However, any offsite mitigation must be in the same 12-digit hydrologic unit code.

Comment 116: MS4s need more guidance regarding acceptable mitigation projects.

Response: The rule outlines the requirements of the mitigation program. It is recommended that the commenter reach out to other cities and organizations such as TNSA for guidance regarding mitigation projects.

Comment 117: We ask TDEC to provide additional guidance for valuation of mitigation projects. At a minimum, we ask these questions be addressed:

1. Are mitigation projects to be traditional projects such as streambank restoration or wetland creation?
2. Will site hydrology SCMs be considered acceptable means of mitigation?
3. Will TDEC support a standardization currency for water quality mitigation such that projects can efficiently be engaged across MS4 jurisdictional boundaries?
4. If a watershed management plan indicates a prioritization of particular potential mitigation areas within an MS4 for impact to water quality, should the 1.5 multiplier be required?

The mitigation approach is a smart watershed management tool from which all parties involved in the land development process will benefit.

Response: The permittee has the option to develop a mitigation program or other incentives. TDEC will evaluate such proposals based on a reduction of pollutant loading.

Comment 118: The mitigation approach is a smart watershed management tool which can effectively benefit all parties involved in the land development process. We recommend that TDEC endorse a replicable method of evaluating watershed condition such as the Urban Water Report Card. This will help create a standardized platform and working language from which permittees and policymakers can work together to determine the most effective placement of SCMs within a watershed.

Response: The Board encourages the collaborative approach of the development of the urban waters report card and is supportive of the voluntary use of the urban waters report card in the future.

Comment 119: "The payment amount into a public stormwater fund must be sufficient to design, install, and maintain the stormwater mitigation measures." We recommend that TDEC consider adding "monitor" after "maintain," if appropriate for the project type. Monitoring of mitigation measures is often overlooked in the funding.

Response: The Board understands that to properly maintain a SCM, municipalities may require monitoring. The monitoring requirement is inherent in the maintenance requirement, so the requested change has not been made.

Comment 120: It says that "public stormwater fund should be used to fund public mitigation projects." Can it be

assumed that grant funds or other types of local funding (utility revenue, bonding) can be added to this fund to pay for these projects? It would seem rare that such a fund would be capable of funding all the required needs.

Response: The rule does not limit the types of revenue sources that can be placed toward a public stormwater fund.

Comment 121: Duplicate comment omitted.

Comment 122: The rule should be clarified to specifically recognize that, when a public stormwater fund is used to fund public mitigation projects, grant funds or other types of local funding (utility revenue, bonding) can be added to this fund to pay for these projects. It would seem rare that such a fund limited to development off-site mitigation would be capable of funding all the required needs.

Response: The rule does not limit the types of revenue sources into a public stormwater fund.

Comment 123: Duplicate comment omitted.

Rule 0400-40-10-.04(4) Water Quality Riparian Buffers

Comment 124: In Rule 0400-40-10-.04(4), does the term "unassessed waters" refer to any water in the State that TDEC hasn't assessed? This should be further defined as it is not clear to the extent that this requirement covers ditches, swales, wet weather conveyances, etc.

Response: This term refers to streams that have not been assessed pursuant to Section 303(d) of the Clean Water Act. The introduction to the water quality riparian buffers rule applies this requirement only to streams, so buffers are not required for wet weather conveyances.

Comment 125: Multiple commenters requested a measurable term below the table in Rule 0400-40-10-.04(4)(b) be used to describe where vegetation in the area near the stream should be.

Response: The language has been changed to "within the minimum buffer width area," which is now defined in the table.

Comment 126: In Rule 0400-40-10-.04(4)(e), consider defining "top of bank" as "the ordinary high water level and break in slope of a water resource."

Response: The Division will consider defining the common term "top of bank" in the permit.

Comment 127: Duplicate comment omitted.

Comment 128: On the two sentences describing vegetation in the buffer. The second sentence begins, "the remaining riparian buffers maybe be composed..." The use of buffers, plural, is odd. Also, why not say something like: Areas of the buffer not in trees may be composed of herbaceous cover or infiltration-based SCMs.

Response: The term buffer(s) is plural because the term refers to buffers on both sides of the stream. While the rule does not prohibit infiltration-based SCMs in the buffer, the specifics of buffer use are at the discretion of the local jurisdiction that has site specific knowledge or community-wide experience, to decide if infiltration-based SCMs in their buffers areas should not be allowed or if the designer evaluates the applicability of infiltration-based SCMs to the buffer areas on a specific site.

Comment 129: We suggest adding to the sentence "The remaining riparian buffers may be composed of herbaceous cover or infiltration-based SCMs" the clause "...providing that the SCM does not introduce concentrated flow into the buffer."

Response: The rule already requires that stormwater discharges should enter the buffer as sheet flow, rather than concentrated flow. Moreover, the effectiveness of buffers to provide pollutant reduction is maximized where stormwater enters the buffer as dispersed sheet flow, thus allowing contact with plants to provide filtration. Where site conditions exist such that sheet flow is practicable, this condition represents pollutant reduction to the MEP from this element of permanent stormwater controls and has been retained. The specifics of buffer use are at the discretion of the local jurisdiction that has site specific knowledge or community-wide experience, to decide if infiltration based SCMs in their buffers areas should not be allowed or if the designer evaluates the applicability of infiltration-based SCMs to the buffer areas on a specific site.

Comment 130: MS4s need clarification as to what SCMs are acceptable and practical to be use in buffers and/or floodplains.

Response: While the rule does not prohibit infiltration-based SCMs in the buffer, the specifics of buffer use are at the discretion of the local jurisdiction that has site-specific knowledge or community-wide experience, to decide if

infiltration-based SCMs in their buffers areas should be allowed or if the designer evaluates the applicability of infiltration-based SCMs to the buffer areas on a specific site.

Comment 131: A number of commenters noted that infiltration-based SCMs in buffers may be problematic due to flooding, scouring, soil and vegetation loss, and the associated maintenance requirements.

Response: While the rule does not prohibit infiltration-based SCMs in the buffer, the specifics of buffer use are at the discretion of the local jurisdiction that has site specific knowledge or community-wide experience, to decide if infiltration-based SCMs in their buffers areas should be allowed or if the designer evaluates the applicability of infiltration-based SCMs to the buffer areas on a specific site.

Comment 132: It is unclear from the proposal whether any SCM will be allowed in the riparian buffers, i.e., pervious concrete, pavers, asphalt, underground detention, etc. As we interpret the proposed language a pervious pavement parking lot could be placed all the way up to top of bank. Would this interpretation be correct?

Response: The final rule clarifies a minimum and average buffer width that matches the construction stormwater general permit. Infiltration-based SCMs are allowed outside of the minimum buffer width, at the discretion of the permittee.

Comment 133: Non-infiltration SCMs should be allowed in the buffer provided they are fully vegetated and do not discharge concentrated water (e.g., engineered wetlands) or discharge directly to the stream. Modify the first sentence to, "Permittees may establish permissible land uses or activities within the buffer, such as biking and walking trails, infiltration-based SCM, other SCMs provided they are fully vegetated and do not discharge stormwater to the surface of the buffer in a shallow concentrated or channelized manner, selective landscaping, habitat improvement, road and utility crossings or other limited uses as determined by the permittee."

Response: The rules allow the permittees to establish permissible land uses or activities within the buffer as long as the uses and activities retain the pollutant removal function of the buffer. However, only infiltration-based SCMs are allowable in the buffer.

Comment 134: I wish the buffer width for unimpaired waters were more – maybe 45 feet. I understand of course that the 30 feet is a minimum and that a local government may adopt a larger width.

Response: The buffer requirements have been adjusted to conform to those in the construction general permit, which have proven to be practicable. Local governments may adapt larger buffer widths in accordance with the provisions of Tennessee Code Annotated section 69-3-108(t).

Comment 135: Section 4.b. Is the minimum width a total width or just for one side?

Response: The minimum buffer width is for each side of the waterbody. So, if a property includes both sides of a stream with available parameters, each side must have at least a 30-foot average buffer. The rule language has been changed in paragraph 4(b) to clarify that if the construction site encompasses both sides of a stream, buffer averaging can be applied to both sides, but must be applied independently.

Comment 136: Several commenters requested that the rule expressly allow for buffer averaging and change the buffer requirements so that permanent buffers are the same as those required during the construction phase.

Response: The final rule has been changed to reflect the language in the construction general permit, with an allowance for buffer averaging. The permanent buffer requirement is now the same as the buffer requirement during construction.

Comment 137: It is conflicting to say in Proposed Rule 0400-40-10-.04(2) that the permittee is providing treatment to the MEP, and then in this section say that buffers "provide additional water quality treatment." The rule should be crafted to account for the benefit of water quality buffers in addition to an SCM in series to meet the 80% TSS reduction goal. To the extent buffers would be authorized to be included in the Rule or voluntarily implemented by MS4's, buffers are SCMs.

Response: The final rule has been changed to clarify that compliance with the entire rule constitutes MEP. The standard is to reduce pollutants to the MEP. Compliance with permanent stormwater standards for new development and redevelopment projects is determined by designing and installing SCMs as established by this rule and complying with all other requirements of this rule. Buffers are other requirements of the rule and as such, are a component of MEP.

Comment 138: This paragraph allows the permittee to establish alternate buffer widths "based upon the type of project, existing land use, and physical conditions that restrict the use of water quality riparian buffers." We recommend the paragraph be changed to read: "Permittees may authorize alternate buffer widths for New Development Projects where water quality riparian buffers cannot be fully implemented on-site. In order to allow alternate widths, the permittee must determine the circumstances under which required buffer widths cannot be

achieved based upon the type of project, existing land use, and physical conditions that limit the use of water quality riparian buffers. Any such decision to use alternate buffer widths must ensure that implementing full buffer widths would be impracticable.”

Response: The final rule has been changed to reflect the construction general permit buffer requirements, which have proven to be practicable.

Comment 139: Riparian Buffers are more stringent than federal minimum: Proposed Rule 0400-40-10-.04(4) requires the use of riparian buffers. The federal regulations, however, do not contain a minimum requirement for riparian buffers. Federal regulations merely provide guidance; suggesting buffers, but not requiring buffers, for post-construction in new development and redevelopment. 40 C.F.R. § 122.34(b)(S)(ii). Furthermore, the guidance only suggests the use of riparian buffers for sensitive waters. Inasmuch as the riparian buffer requirement is more stringent than the federal minimum, such proposal is in contravention of TCA 69-3-108(s), as discussed above. Instead, the rule should recognize the discretion of the MS4 to impose riparian buffer requirements through its local program, as it deems appropriate.

Response: The Board does not agree that buffers are more stringent than federal minimum requirements. The final rule’s buffer requirements have been in place in the construction general permit for many years, and have proven to be practicable: construction across Tennessee has proceeded, notwithstanding these buffer requirements. Moreover, buffers are very effective at reducing pollutant in stormwater, and thus are a component of the MEP requirement.

Comment 140: What is the true minimum width of a buffer, how close to the stream can grading activity occur, and what grading/disturbance activities are allowed in order to construct allowable uses (i.e. trails and SCMs)?

Response: The proposed rule has been changed in paragraph 4(b) to include a minimum buffer width and that the criteria for the width of the buffer zone can be established on an average width basis at a project, as long as the minimum width of the buffer zone is more than the required minimum width at any measured location. If the construction site encompasses both sides of a stream, buffer averaging can be applied to both sides, but must be applied independently. This is consistent with the CGP requirement. Moreover, this rule does not govern activities during the construction phase. Any such activities must comply with the CGP and any applicable local stormwater requirements.

Comment 141: Regarding the circumstances for allowing alternative widths, it would be helpful to have explicit guidance on whether “physical conditions” includes property line shape/dimensions, versus other site conditions such as topography/soils/geology/etc.

Response: The rule allows local MS4 communities to establish criteria for alternative buffer widths, subject to approval by the Division. This approval process is intended to occur upon initial approval and when the permittee wishes to revise the procedure. The Board does not intend for every site with alternative buffers to go through the Division for approval.

Comment 142: Consider adding a timeframe under which the Division has to provide a response in writing to the permittee, such as "Procedures and criteria for alternative buffer widths must be submitted to the local EFO, approved by the Division in writing, and documented in the SWMP. The Division shall provide a written response within 30 calendar days. If a permittee has not received a response in writing within 30 calendar days, the procedures and criteria shall be considered approved."

Response: The Board anticipates that the Division will provide timely review of proposals for alternative buffer widths, but declines to establish a response deadline.

Comment 143: Proposed Rule 0400-40-10-.04(4)(a) provides that stormwater discharges should enter the water quality riparian buffer as sheet flow where site conditions exist. If the stormwater enters the riparian buffer as sheet flow it is not a "discharge from a point source" and is not subject to the NPDES program.

Response: The Board disagrees with this comment. Any stormwater that has entered the municipal storm sewer system and then reaches waters is subject to federal NPDES requirements.

Comment 144: Multiple commenters addressed stormwater discharges entering the water quality riparian buffer as sheet flow:

- Is it allowed for discharges to enter buffers as concentrated flow where site conditions do not allow entry as sheet flow? It is not clear whether local programs would be required to submit procedures and criteria used to determine site limitations to TDEC/local EFO in writing for approval prior to making any allowances for discharges to enter buffers as concentrated flow.
- As written, this statement is too vague to be enforceable. Sheet flow is needed to allow the sediment particles time to settle as the water spreads and flows across the land toward the stream. If diffuse flow is listed in the rule as a requirement, such as "Sheet flow is required on all buffered streams and must be

achieved before stormwater enters the riparian buffer from any new development," then options should be given for how to achieve diffuse flow such as a level spreader or a variance from this rule.

- This provision should not be mandated but, instead, should be most be encouraged and left to the discretion of the MS4.
- Anecdotally, ninety-five percent of the water leaving a developed site is concentrated. As written, this regulation applies to the five percent or least commonly occurring situation. Therefore, in order to achieve this criterion, for almost every situation, water will need to be converted from concentrated flow to sheet flow. Given this, it would be more useful to describe the acceptable criteria for achieving this (e.g., level spreaders).
- This is part of a list of standards that the riparian buffer must meet. However, it uses permissive language (should as opposed to shall). We recommend the paragraph be changed to read: "Stormwater discharges shall enter the water quality riparian buffer as sheet flow where site conditions allow."

Response: This condition is not mandated as the site conditions often dictate how runoff enters riparian buffer zones. Moreover, the effectiveness of buffers to provide pollutant reduction is maximized where stormwater enters the buffer as dispersed sheet flow, thus allowing contact with plants to provide filtration. Where site conditions exist such that sheet flow is practicable, this condition represents pollutant reduction to the MEP from this element of permanent stormwater controls and has been retained.

Comment 145: We suggest adding to the last clause ("where site conditions allow") something to the effect of "or, where site conditions prohibit this, dispersing concentrated flow as quickly as possible"

Response: The suggested language is not incorporated since the site conditions often dictate how runoff enters riparian buffer zones.

Comment 146: We appreciate the change in buffer width based on these parameters. We predict it will benefit developers with more developable land on streams that are relatively small.

Response: Noted.

Comment 147: Water quality riparian buffers are sometimes deeded to the permittee to ensure no future development in those areas. Can the new development still use this area for calculating treatment of WQTV?

Response: Yes, the rule allows this, but this would ultimately be at the discretion of the permittee.

Comment 148: The draft rule does not allow for development situations where water quality riparian buffers may not be possible. In northeast Tennessee, land developments tend to occur in the valleys between ridges and hills. However, even when in a valley, individual properties can have a significant slope and /or other topographic features which significantly limit development. While not a frequent occurrence, there are instances where the addition of a riparian buffer, even with a maximum practicable buffer width, is not possible. In such cases, engineering practices other than buffers can be used to treat runoff prior to discharge to a stream, provide some degree of shading, and prevent streambank erosion. Please add the following sentences to (4)(b) below the table. Buffer width averaging is allowed provided the minimum total buffer width (in the table above) is used as the minimum average total buffer width and the actual buffer width is not less than the minimum allowable width (as shown in the table above) at any location along the buffer. Then add a right column to the table with the heading "Minimum Allowable Width for Buffer Averaging) with the State's acceptable minimum widths in an averaging scenario. 2. Add the following paragraph to (d) or as new part (e). Permittees may allow waiver of riparian buffer requirements in limited circumstance where it can be proven that a buffer of any width will result in the complete loss of property usage. To obtain the waiver, the permittee must require the new development or redevelopment project to implement practices which prevent the discharge of untreated stormwater into the receiving stream in keeping with part (2) above, prevent erosion of the streambank in the unbuffered area, and provide shade along the stream in the unbuffered area to the maximum extent practicable.

Response: The rule was changed to clarify that buffer averaging is allowable.

Comment 149: Permittees are required to develop and implement a set of requirements to establish protect and maintain buffers. It is not clear what form that set of requirements should take or whether those requirements must be submitted in writing to TDEC/local EFO for review and approval prior to implementation.

Response: The specifics of buffer requirements are at the discretion of the local jurisdiction that has site specific knowledge or community-wide experience.

Comment 150: A number of commenters requested clarification about whether water quality riparian buffers are required on wetlands, springs, lakes, and reservoirs.

Response: Yes. The draft rule referred to "streams" which are broadly defined in the Tennessee Water Quality Control Act as surface waters that are not wet weather conveyances. However, to ensure clarity, the final rule specifies that streams include wetlands, ponds, and lakes.

Comment 151: To the table row that reads "Exceptional Tennessee Waters or waters with unavailable parameters for siltation or habitat alteration", consider also adding the unavailable parameter of nutrients, because riparian buffers are effective at reducing nutrient pollution.

Response: Post-construction buffer requirements were revised to match temporary construction buffer requirements where the temporary buffers apply only under Exceptional Tennessee Waters and waters with unavailable parameters for siltation and habitat alteration. The CGP does not provide for extended buffers for nutrients.

Comment 152: "The predominant vegetation in the area adjacent to the stream should be trees. The remaining riparian buffers may be composed of herbaceous cover or infiltration-based SCMs."

(1) These two sentences do not make sense when referring to a buffer with just one zone. They are too vague to be enforceable. Consider other wording such as, "The riparian buffer must remain undisturbed unless the use or activity is allowed in the local ordinance or code."

(2) We have concerns surrounding the practicalities of regulating vegetation in the buffer. Some questions are, can you approve the developer to plant saplings, and wait for the trees to grow? What vegetated practices are considered SCMs versus natural resource BMPs, and which requires an O&M plan? We also predict developers would balk at having to replant the whole buffer for a stream that was cleared when it was farmland.

Response: The final rule clarifies the minimum buffer width (where the predominant vegetation should be trees), and the average buffer width. The specifics of buffer vegetation are at the discretion of the local jurisdiction that has site specific knowledge or community-wide experience. Additionally, the definition for water quality riparian buffer has been revised in rule 0400-40-05 to state: A "Water quality riparian buffer" is a permanent strip of natural perennial vegetation adjacent to streams, rivers, wetlands, ponds, and lakes, that contains dense vegetation made up of grass, shrubs, and/or trees. The purpose of a water quality riparian buffer is to maintain existing water quality by minimizing the risk of any potential sediments, nutrients or other pollutants reaching adjacent surface waters and to further prevent negative water quality impacts by providing canopy over adjacent waters.

Comment 153: The stream buffer section allows only "infiltration SCMs" in the non-stream-adjacent buffer area, but does not address "evaporation, transpiration, or reuse" SCMs listed in the WQTV table. Were these other types implied to be included, or not? These are certainly achievable through "natural resource protection" BMPs, but are not easily quantified, and therefore not routinely used. Ultimately if infiltration is required for treatment to be allowed, that implies an emphasis on infiltration rates, and thus could incentivize removal of existing riparian vegetation to replace soil with more pervious media. If so, technical guidance for the regulator on how to approach this would be helpful. Frankly on any given clay soil site, we do not know whether a long-term net TSS benefit would be greater from disturbing existing buffer to amend soil, versus keeping it intact. However, we do know that disturbance in those scenarios aids the colonization of invasive species, which in turn may damage nutrient cycling.

Response: The rules allow permittees to establish permissible land uses or activities within the buffer as long as the uses and activities retain the pollutant removal function of the buffer.

Comment 154: Trails in Buffers. Currently, Knox County gives greenways a "free pass" in riparian buffers because they are considered allowable and beneficial uses. Additionally, there is no permanent runoff treatment required for them, because the pervious and vegetated surfaces on either side are considered to manage the limited runoff (from the 10' wide impervious path). Requiring complicated SCMs to manage this water would be not only economically infeasible but also practically more trouble than they are worth, especially considering that increased grading means increased disturbance of intact buffer. Alternatively, requiring the developer to cede an additional 10' would de-incentivize inclusion of greenways in key sites important to connectivity. Thus, we recommend that greenways be allowed to be managed by so-called natural resource protection BMPs, which can effectively manage the small amount of runoff while still minimizing disturbance to an intact buffer and maintaining the developer's incentive to allow trail access through the property.

Response: The rules allow permittees to establish permissible land uses or activities within the buffer as long as the uses and activities retain the pollutant removal function of the buffer. Paved trails, while they may be beneficial to recreation, do not achieve the stormwater objectives of buffers. The rule specifies that impervious trails are only allowed within the buffer if the width is increased, or the runoff is treated. Rule 0400-40-10-.04(4)(d) allows permittees to propose alternative buffer widths where water quality riparian buffers cannot be fully implemented on site.

Comment 155: We have concerns regarding potential conflict/confusion between CGP and Permanent WQ Buffer requirements.

(1) Considering that SCMs are allowed uses within the buffer, that SCMs require grading for construction, and that there is only one single buffer zone, does this mean that in order to construct an SCM, a contractor could legally grade to the bank-full mark, assuming he filled back in around the stream edge with trees?

(2) Or, does the CGP overrule and exclude grading within the inner zone (15/30 ft)? In other words, what is the true and practical minimum width?

(3) Alternatively, within the buffer zone, are there (or perhaps should there be) limitations as to the type/layout/details of the grading activities allowed?

Response: The proposed rule has been changed to include a minimum buffer width and to specify that criteria for the width of the buffer zone can be established on an average width basis at a project, as long as the minimum width of the buffer zone is more than the required minimum width at any measured location. If the construction site encompasses both sides of a stream, buffer averaging can be applied to both sides, but must be applied independently. This is consistent with the CGP requirement. The specifics of buffer use are at the discretion of the local jurisdiction that has site specific knowledge or community-wide experience, to decide if infiltration-based SCMs in their buffer areas should not be allowed or if the designer evaluates the applicability of infiltration-based SCMs to the buffer areas on a specific site.

Comment 156: Waters that meet standards are not addressed in the table. Should the permittee assume that any waters within the jurisdiction that have been assessed and meet current standards do not require a buffer?

Response: The 30-foot buffer applies to waters with available parameters or unassessed waters as described in the table.

Rule 0400-40-10-.04(5) Codes and Ordinances Review and Update

Comment 157: Multiple commenters asked about the reference to "sub-section 4.1.1" in paragraph 5(b).

Response: This reference has been corrected to "subparagraph 1(d) of this rule."

Comment 158: Rule 0400-40-10-.03(5)(b) mentions a compliance timeline for permittees. Can you clarify that this paragraph means that once a permittee is issued a new permit following the approval of this rule, that the permittee has 24 months to implement the permanent stormwater management requirements? The timeline is unclear as it relates to passage of the rule and/or issuance of the permit.

Response: The sentence regarding 24 months applies to codes and ordinances or other legal instruments for newly permitted programs. Existing programs should implement any necessary revisions in accordance with the implementation plan submitted in accordance with Rule 0400-40-10-.04(1)(d).

Rule 0400-40-10-.04(6) Development Project Plan Review, Approval, and Enforcement.

Comment 159: Rule 0400-40-10-.04(6)(b) states, "The process must also include incentives as authorized by paragraph (3) of this rule, along with water quality buffers as required by paragraph (5) of this rule." Paragraph (3) discusses stormwater mitigation or payment in lieu stormwater fund which municipalities may or may not choose to establish. If paragraph references are not corrected, the casual reader may think they "must" (not "may") establish mitigation/fund.

Response: The rule has been revised to reflect that the development of a mitigation program or payment in lieu into a public stormwater fund are both at the discretion of the permittee. In the rule, the word "may" applies to both the mitigation program and the stormwater fund indicating both are optional. The language of the rule has been revised to clarify this intent.

Comment 160: Rule 0400-40-10-.04(6)(b) 2nd sentence. As written, the sentence requires incentives be included in the process, but incentives are not necessarily required of the permittee in part (3) of the rule. It would be better to allow, but not require, incentives. Modify the 2nd sentence in (6)(b) to say, "The process must also include incentives as authorized by paragraph (3) of this rule if implemented by the permittee, along with water quality buffers as required by paragraph (5) of this rule."

Response: The incentives are optional. The language of the Rule has been changed to reflect this comment. The language has been changed to "The process must also include incentives adopted by the permittee as authorized by paragraph (2) of this rule, if any, along with water quality buffers as required by paragraph (4) of this rule; and..."

Comment 161: Multiple comments were received related to Rule 0400-40-10-.04(6)(b) - The language references "incentives as authorized by paragraph (3) of this rule"; this reference is likely to Rule 0400-40-10-.04(2)(e).

Response: The commenter is correct, the reference is to Rule 0400-40-10-.04(2)(e), and the rule has been changed accordingly.

Comment 162: The permittee has no authority over private permanent stormwater control measures that are not installed in the municipal system. As such, enforcement action is limited to illicit discharges to the MS4 as identified in the permittee's ordinance or other regulatory device. We recommend paragraph Rule 0400-40-10-.04(6)(c) be changed to read: "PA process for the project engineer to certify that SCMs have been installed per design specifications. This process should include submission of as-built plans to the permittee."

Response: The Board does not agree with the premise of the comment. Local governments have the authority to regulate new permanent stormwater controls and the obligation to adopt ordinances or other regulatory measures to require that these controls are properly operated and maintained. This maintenance is critical to the success of post-construction stormwater measures and has been retained in the final rule. The rule provides the option of the submission of as-built plans to the permittee.

Comment 163: Rule 0400-40-10-.04(6)(c) would require an enforcement response plan. An ERP should not be required. Federal regulations only require an ERP for a pretreatment program, not for an MS4 program. Compare, e.g., 40 CFR 403.8(f)(4) with 40 CFR 122.26 and 122.32-37. As such, when EPA was permitting the DC WASA MS4 facility, EPA deleted the proposed ERP requirement and replaced it with enforcement procedures for illicit dischargers. This is more stringent than the federal regulations and should be deleted.

Response: Federal law requires an enforcement mechanism as part of MEP for post-construction stormwater management, and this provision has been retained in the final rule. The enforcement response plan required by this rule is not the same as that required for pretreatment. This rule applies to post-construction stormwater, not illicit discharges.

Comment 164: Rule 0400-40-10-.04(6)(c) requires "Verification that SCMs have been installed per design specifications within 90 days of installation." Certain SCMs may be installed during construction of project and activated once the site is completely stable. In these instances, a 90-day verification from installation requirement is overly restrictive. TDEC should consider allowing the permittee flexibility to establish local processes and policies that consider construction sequencing and as-built and inspection scheduling.

Response: The 90-day period starts at the completion of the installation of the post-construction SCMs. This is independent of building completion. The permittee has the option for verification, which includes submittal of as-built plans, permittee inspection, or inspection by a qualified design professional. The rules do not prohibit the permittee from establishing a process or policy that more clearly defines when a post-construction SCM has completed installation.

Comment 165: We do not think 90 days to receive as-builts is realistic, and ask why this timeframe was chosen. Some detention ponds and other SCMs are used as sediment basins during construction, and we often do not receive as-builts until far later than 90 days, especially on subdivisions.

Response: The 90-day period starts at the completion of the installation of the post-construction SCMs. See Response to Comment 167.

Comment 166: Rule 0400-40-10-.04(6) would require the permittee to have a project plan and review process that ensures SCMs are properly designed, installed, and maintained to meet performance standards. The burden should be on the developer, not on the MS4, to make sure that the developer's plans are properly designed. The City should not be responsible for approving a plan - especially if it turns out the plan does not appropriately work. In such case, the City would have compromised its ability to require changes in the plan that it approved. While the City can oversee what is being done, it should not be required to approve the plan.

Response: The permittee is required to conduct appropriate oversight via the project plan and review process. The developer is still responsible for submitting a plan that meets the performance standards.

Comment 167: The first sentence of Rule 0400-40-10-.04(6)(b), as written, implies that the permittee has the responsibility to ensure SCMs are designed to meet performance standards. This is the responsibility of the design engineer. The permittee may review the plans of SCMs and, based upon the data provided by the project engineer, make a determination that the SCMs appear to meet the performance standards, but the permittee cannot be expected to ensure the design meets the performance standard. This would be a function of reviewing the as-built data provided by the design engineer following construction.

Response: The Board recognizes the different roles of the permittee (municipality) and the design engineer. The language of the Rule has been changed to reflect this comment. This first sentence in Rule 0400-40-10-.04(6)(b) has been changed to "[a] plans review process that requires SCMs to be properly designed...."

Comment 168: The requirements of Rule 0400-40-10-.04(6)(c) appear to make the permittee responsible for verifying that SCMs were installed to design specifications. Although the permittee has regulatory authority in regard to the MS4, the permittee has no authority over private permanent stormwater control measures that are not installed in the municipal system. As such, requiring the permittee to verify SCMs are installed per design specifications and enforcement action for non-compliance exceeds the regulatory authority of the permittee. This is a certification by the designer.

Response: The Board does not agree with the premise of the comment. Local governments have the authority to regulate permanent stormwater controls and the obligation to adopt ordinances or other regulatory measures to ensure that these controls are properly installed.

Comment 169: The design engineer is responsible for the verification of SCM installation. The permittee may review the as-built data and, based upon the data provided by the project engineer, make a determination that the SCMs appear to have been installed to meet the design specifications.

Response: The Division clarified the language related to the verification process to reflect the different roles of the permittee (municipality) and the design engineer. Rule 0400-40-10-.04(6)(c) has been clarified as follows: "Verification process to document that SCMs have been installed per design specifications within 90 days of installation."

Comment 170: The "within 90 days of installation" requirement appears to be rather arbitrary. Especially since the verification can be based upon as-built data. As-built data usually isn't provided until after construction projects are complete. Additionally, SCMs installed and verified early in the construction process could easily be damaged during construction occurring after SCM has been constructed and verified. When does the 90 days start? When the owner does install or when the building is complete? These are two different time frames.

Response: The 90-day period starts at the completion of the installation of the post-construction SCMs. This is independent of building completion. The permittee has options for verification, which include as-built plans to the permittee, permittee inspection, or inspection by a qualified design professional.

Comment 171: The requirement for verification of SCM construction as designed is concerning. It could impact the ability of permittees to keep the site owner/operator liable for SCM construction through the end of construction and afterward (during post-construction vegetation or construction warranty periods). Typically, final verification of SCM construction occurs at the end of construction, when all construction activities have ceased and SCM integrity and cleanliness (removal of sediment, debris, EPSC measures, etc.) can also be assessed. The 90-day verification inspection required by the rule is premature as construction activities may still be on-going and could damage or otherwise impact SCM construction and/or function. Modify the 1st sentence in (6)(c) to "Verification that SCMs have been installed per design specifications within 30 days after termination of land disturbance activities."

Response: The 90-day period starts at the completion of the installation of the post-construction SCMs. This is independent of building completion. The permittee has options for verification, which include as-built plans to the permittee, permittee inspection, or inspection by a qualified design professional.

Rule 0400-40-10-.04(7) Maintenance of Permanent Stormwater Control Measure Assets

Comment 172: Rule 0400-40-10-.04(7)(a) says to "provide full treatment capacity within 72 hours following the end of the preceding rain event." Just refer to the presumptive standard and allow permittees to determine the most appropriate methods for inspection to ascertain SCM compliance at the post-construction stage. Delete the text after the comma ("~~and provide full treatment capacity within 72 hours following the end of the preceding rain event~~").

Response: Full treatment capacity within 72 hours, following the end of the preceding rain event, refers to the maximum drain time of the SCM. The rule does not specify inspection methods. The referenced language has been retained in the final rule.

Comment 173: In Rule 0400-40-10-.04(7)(b), the first sentence is an unattainable standard for even the most well-funded and mature stormwater management program ("ensure implementation...of maintenance procedures to sustain pollutant removal efficiency for the life of the project"). This sentence should be re-written to say, "The permittee must develop and implement a program to require on-going maintenance of SCMs consistent with industry standard practice, such as those maintenance practices described in the TN Permanent Stormwater and Design Guidance Manual or approved equivalent."

Response: Proposed Rule 0400-40-10-.04(7)(b) has been revised to change the term "ensure" to "require" to make it clear that the MS4 community sits in a regulatory role with respect to post-construction stormwater management.

Comment 174: In the first sentence of Rule 0400-40-10-.04(7)(b)(3), please eliminate the requirement for a legally-binding maintenance agreement. There is significant variability among Tennessee permittees regarding whether and how legally binding maintenance agreements are used. Much of this variability is the result of how permittee legal staff interpret state law regarding property rights and municipal authorities and processes. Modify the first sentence of Rule 0400-40-10-.04(7)(b)(3) to state, “An ordinance or regulatory mechanism, deed restriction, legally binding agreement or other legal instrument allowing permittee personnel to lawfully access the SCMs for inspections and provide for enforcement action for failure to maintain SCMs.”

Response: The rule has been modified to refer to a “legally binding document” to allow for a full range of legal instruments to be used.

Comment 175: New and redevelopment projects also apply to land disturbances of less than one acre. These are typically home builder lots. How does TDEC envision these rules to apply to those land disturbance activities? Is TDEC envisioning that Rule 0400-40-10-.04(7)(b)(3) of this rule results in an exemption for home builders, placing the responsibility upon the developer? If so, we question that logic. Since the SCMs are designed for runoff from impervious surfaces, the developer of a housing subdivision would only have impervious streets to design to whereas the builders will have impervious surfaces created by the footprint of the house, driveway, sidewalks and any other structures.

Response: Because the rules apply to common plans of development, the responsibility of the developer and the home builder should be determined by the permittee (municipality) in the approval process of the development. Home builders are not exempted by this rule.

Comment 176: Regarding Rule 0400-40-10-.04(7)(b), although the permittee has regulatory authority in regard to the municipal separate storm sewer system (MS4), the permittee has no authority over private permanent stormwater control measures that are not installed in the municipal system. Based upon this comment, we recommend the paragraph be changed to read: “The permanent stormwater management program shall include plans review, prior to the start of construction to ensure that permanent stormwater control measures are to be installed.”

Response: The Board does not agree with the premise of the comment. Local governments have the authority to regulate permanent stormwater controls and the obligation to adopt ordinances or other regulatory measures to ensure that these controls are properly maintained. The rule has been changed to substitute the word “require” for the word “ensure” to reflect the fact that the permittee sits in a regulatory oversight role.

Comment 177: Clarification is needed regarding the language of SCM inspection requirements in Rule 0400-40-10-.04(7)(b)(1). Can the permittee accept five-year inspection reports from the SCM owner (or a P.E./L.A./qualified professional hired by the owner), or is the permittee (or a P.E./L.A./qualified professional hired by the permittee) required to perform inspections every five years?

Response: The rule states that the SCMs should be inspected by the permittee, a licensed professional engineer, a licensed landscape architect, or other qualified professional familiar with applicable SCM design and maintenance requirements. If the SCM owner meets one of those qualifications, the permittee can accept inspections from the SCM owner.

Comment 178: Please clarify who is responsible for inspection and maintenance of SCMs. Can the permittee accept inspections from the SCM owner?

Response: The rule states that the SCMs should be inspected by the permittee, a licensed professional engineer, a licensed landscape architect, or other qualified professional familiar with applicable SCM design and maintenance requirements. If the SCM owner meets one of those qualifications, the permittee can accept inspections from the SCM owner.

Comment 179: Maintaining full functionality of SCMs is required in Rule 0400-40-10-.04(7)(a). With the emphasis placed on GI practices known to have more frequent inspection and maintenance intervals than other practices, has TDEC considered the additional burden this may put on private property owners and the MS4 community? More frequent inspection and maintenance requirements will lead to increased costs.

Response: The minimum inspection frequency of once every five years is practicable, and therefore part of the MEP requirement.

Comment 180: A majority of SCMs must be inspected and maintained quarterly and some more often to ensure they are functioning as designed and protecting water quality. This will save money to the owner because if you wait too long to do general regular maintenance, remedial maintenance could be more expensive and result in having to redo, replace, or redesign the system along with notice of violation from the MS4 and monetary penalty and/or court visit or cost. It is good to have the requirement to also have ‘engineers and LAs’ inspect every 5 years to ensure that the devices still function per designed; it is NOT good to allow the ‘permittee’ to do the 5-year

inspections unless they are an engineer or a LAs and familiar with design and maintenance requirements and have the credentials to 'certify' that the practices still accomplish the intended pollutant removal for the site design. Maybe the sentence could be rewritten: "The development and documentation of maintenance and inspection procedures and frequencies for approved SCMs which shall require all SCMs to be inspected at least once every five years by a qualified professional familiar with applicable SCM design and maintenance requirements which could be the permittee, a licensed professional engineer or a licensed landscape architect and certify that the SCMs still function as designed." Also, the permittee must develop a Certification process for all third-party inspectors and qualified professionals.

Response: The permittee in this instance refers to the MS4. The Division recognizes the different roles of the permittee (municipality) and the design engineer.

Comment 181: Does Rule 0400-40-10-.04(7)(b)(1) mean that permittees must require the owner/operator to conduct inspections, or is it up to the MS4 to decide who inspects? We recommend more clarification here.

Response: The rule states that the SCMs should be inspected by the permittee, a licensed professional engineer, a licensed landscape architect, or other qualified professional familiar with applicable SCM design and maintenance requirements. If the SCM owner meets one of those qualifications, the permittee can accept inspections from the SCM owner.

Rule 0400-40-10-.04(8) Inventory and Tracking of Permanent Stormwater Control Measure Assets

Comment 182: SCM location should be added to the list of require tracking elements in Rule 0400-40-10-.04(8)(b).

Response: The rule does require SCM location: "The inventory and tracking system must be a searchable database, either paper or electronic, that retrieves SCM information **by location or other similar identification**. The system must be made available to the Division or to members of the public upon request. Other than the basic information of location and project identification..."

Regulatory Flexibility Addendum

Pursuant to T.C.A. §§ 4-5-401 through 4-5-404, prior to initiating the rule making process, all agencies shall conduct a review of whether a proposed rule or rule affects small business.

- (1) The type or types of small business and an identification and estimate of the number of small businesses subject to the proposed rule that would bear the cost of, or directly benefit from the proposed rule.

This rule does not have a direct effect on small businesses. The rule directly affects and provides flexibility to local governments that operate a municipal separate storm sewer system (MS4), who bear the burden for compliance. One secondary effect of the rule may be on the development community, which will be required to comply with the MS4 program implementation decisions by municipalities and will benefit from reduced permitting risk (improved regulatory certainty) created by the rule. However, it is not possible to estimate the number of such members of the development community who may benefit from the rule, or if they are small businesses, since that number is dependent on implementation decisions by municipalities.

- (2) The projected reporting, recordkeeping, and other administrative costs required for compliance with the proposed rule, including the type of professional skills necessary for preparation of the report or record.

No new requirements are introduced that would result in additional costs associated with report or record preparation. Governments operating small MS4s have been subject to permitting for post-construction storm water runoff since before 2003. These programs are already developed, but the rule provides more regulatory certainty.

- (3) A statement of the probable effect on impacted small businesses and consumers.

The rule is expected to have a neutral to positive effect on small businesses and consumers. The rule provides regulatory certainty, and ensures that post-construction stormwater requirements will not change from one 5-year permit cycle to the next. Critically, this rule substantially increases the range of options developers, including homebuilders, may select for post-construction stormwater control measures. In addition, this rule aligns permanent buffer requirements with the temporary buffer requirements imposed by the construction stormwater general permit. The Homebuilders Association of Tennessee settled its appeal of the 2016 Phase II MS4 permit based on the language adopted in this rule.

- (4) A description of any less burdensome, less intrusive or less costly alternative methods of achieving the purpose and objectives of the proposed rule that may exist, and to what extent the alternative means might be less burdensome to small business.

This rule provides the least burdensome, least costly, least intrusive, and most flexible, way to comply with federal post-construction requirements in Tennessee. The rule is for municipalities and provides flexibility for each municipality to determine whether/how to implement certain elements. The rule includes complementary elements that align with local requirements so that stormwater management and water quality requirements can be met simultaneously (e.g., regional ponds and regional detention).

- (5) A comparison of the proposed rule with any federal or state counterparts.

This rule complies with the minimum requirements of federal law. EPA's rule, 40 C.F.R. § 122.34(b), provides "For any permit issued to a regulated small MS4, the NPDES permitting authority must include permit terms and conditions to reduce the discharge of pollutants from the MS4 to the maximum extent practicable (MEP), to protect water quality, and to satisfy the appropriate water quality requirements of the Clean Water Act. Terms and conditions that satisfy the requirements of this section must be expressed in clear, specific, and measurable terms. Such terms and conditions may include narrative, numeric, or other types of requirements." The EPA rule requires implementation of six minimum control measures, one of which is post-construction stormwater management for new development and redevelopment sites that disturb one or more acres or are part of a larger common plan of development. This rule mandates that NPDES permits require structural and/or nonstructural best management practices appropriate for the community, require an ordinance or other regulatory mechanism, ensure adequate long-term operation and maintenance of best management practices, and ensure that controls are in place that would prevent or minimize water quality impacts. 40 C.F.R. § 122.34(b)(5).

- (6) Analysis of the effect of the possible exemption of small businesses from all or any part of the requirements contained in the proposed rule.

Federal law defines which MS4 communities are subject to regulation. This rule does not directly regulate small business. However, homebuilders and other developers must comply with local stormwater ordinances adopted in accordance with this rule. This is mandated by federal law and no exemption would be legal.

Impact on Local Governments

Pursuant to T.C.A. §§ 4-5-220 and 4-5-228, “On any rule and regulation proposed to be promulgated, the proposing agency shall state in a simple declarative sentence, without additional comments on the merits for the policy of the rule or regulation, whether the rule or regulation may have a projected financial impact on local governments.” The statement shall describe the financial impact in terms of increase in expenditures or decrease in revenues.

The Board anticipates that these amended rules will result in an increase in expenditures for local governments.

Additional Information Required by Joint Government Operations Committee

All agencies, upon filing a rule, must also submit the following pursuant to T.C.A. § 4-5-226(i)(1).

- (A)** A brief summary of the rule and a description of all relevant changes in previous regulations effectuated by such rule;

This is a new rule that establishes narrative and/or numeric effluent limitations for the management of post-construction stormwater to comply with, but not exceed, the minimum requirements of federal law. It provides a suite of compliance options that local government MS4s may select to comply with these effluent limitations.

- (B)** A citation to and brief description of any federal law or regulation or any state law or regulation mandating promulgation of such rule or establishing guidelines relevant thereto;

This rule was adopted to comply with Tennessee Code Annotated section 69-3-108(s), which requires any numeric or narrative effluent limitations for post-construction stormwater management by a local government MS4 to be adopted by rule. Such limitations may not be more stringent than the minimum requirements of federal law. Tenn. Code Ann. § 69-3-108(s) and (t).

TDEC is required to operate an MS4 permitting program by the EPA as part of its delegation of National Pollutant Discharge Elimination System (NPDES) authority. Section 402(p)(3)(B)(iii) of the Clean Water Act requires that MS4 permits “shall 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 determine appropriate for the control of such pollutants.” EPA regulations require MS4 permits to include provisions to manage post-construction stormwater at new development and redevelopment sites. 40 C.F.R. § 122.34(b).

- (C)** Identification of persons, organizations, corporations or governmental entities most directly affected by this rule, and whether those persons, organizations, corporations or governmental entities urge adoption or rejection of this rule;

Governmental entities that operate MS4s are most directly affected by this rule. These entities generally accept this rule, and appreciate the increased regulatory certainty the rule will achieve.

Because these governments will establish local stormwater ordinances and requirements in compliance with this rule, developers are indirectly affected. The Homebuilders Association of Tennessee settled its appeal of the 2016 Phase II MS4 permit based on the provisions of this rule.

Finally, the people of Tennessee who use and enjoy our waters are also affected by this rule. The MS4 rule ensures the maximum practicable reduction of pollutants discharged to our waters. A number of nongovernmental organizations that had appealed the 2016 Phase II MS4 permit, including the Tennessee Environmental Council, the Sierra Club, and the Obed Watershed Community Association, settled their appeal based on the provisions of this rule.

- (D)** Identification of any opinions of the attorney general and reporter or any judicial ruling that directly relates to the rule or the necessity to promulgate the rule;

No attorney general and reporter opinions or judicial rulings directly relate to the rule or the necessity to promulgate the rule.

- (E)** An estimate of the probable increase or decrease in state and local government revenues and expenditures, if any, resulting from the promulgation of this rule, and assumptions and reasoning upon which the estimate is based. An agency shall not state that the fiscal impact is minimal if the fiscal impact is more than two percent (2%) of the agency's annual budget or five hundred thousand dollars (\$500,000), whichever is less;

No change in state revenues and expenditures is anticipated. Local governments may have an increase in expenditures from upfront labor costs that may be associated with aligning municipal programs to meet this rule, such as changes to stormwater ordinances, training staff, and providing guidance materials. This cost, if necessary, is anticipated to be minimal for any affected municipality and municipalities have the option to assess stormwater utility fees to offset such labor costs. The expenditure is not expected to be more than \$500,000 or more than 2% of a municipality's budget.

- (F) Identification of the appropriate agency representative or representatives, possessing substantial knowledge and understanding of the rule;

Karina Bynum, P.E., Stephanie Durman, Esq.

- (G) Identification of the appropriate agency representative or representatives who will explain the rule at a scheduled meeting of the committees;

Horace Tipton
Legislative Liaison
Office of General Counsel

- (H) Office address, telephone number, and email address of the agency representative or representatives who will explain the rule at a scheduled meeting of the committees; and

Office of General Counsel
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William R. Snodgrass Tennessee Tower
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- (I) Any additional information relevant to the rule proposed for continuation that the committee requests.

- (1) A description of the action proposed, the purpose of the action, the legal authority for the action and the plan for implementing the action.

This rulemaking adopts effluent limitations for post-construction stormwater in small MS4 communities across Tennessee. The purpose of this action is to comply with recent legislation and federal law.

This rulemaking is authorized and required by Tennessee Code Annotated section 69-3-108(s). TDEC's regulation of post-construction stormwater in MS4 communities is required by section 402(p)(3)(B)(iii) of the Clean Water Act and 40 C.F.R. § 122.34(b). The limitations in this rule meet, but do not exceed, the minimum requirements of federal law as required by Tennessee Code Annotated section 69-3-108(s) and (t).

During the time period between when the rule is adopted and when it becomes effective, TDEC will continue to work with MS4 communities to ensure they understand the rule and to help them evaluate any impact on their existing programs. TDEC will publish a draft renewal of the Phase II general permit based on this rule, which will be finalized after the rule becomes effective. As set out in 0400-40-10-.04(1)(d), small MS4 communities will have 90 days from the effective date of the permit to submit an implementation plan and up to 24 months to fully implement the rule.

- (2) A determination that the action is the least-cost method for achieving the stated purpose.

This rule represents the least-cost method to comply with applicable statutes and regulations. Compared to the post-construction stormwater conditions of the current Phase II MS4 permit, it allows greater flexibility to comply with the federal requirement to reduce pollutants to the maximum extent practicable. This will allow builders to determine, on a site-by-site basis, what is the most cost-effective way to comply.

- (3) A comparison of the cost-benefit relation of the action to nonaction.

Action is required by the Tennessee Water Quality Control Act, Tenn. Code Ann. § 69-3-108(s), which requires effluent limitations for post-construction stormwater management to be adopted by rule. These effluent limitations are required by federal law, and by TDEC's memorandum of understanding with EPA for delegation of NPDES permitting authority in Tennessee. Therefore, nonaction is not an available option.

However, compared to the post-construction stormwater measures in the current Phase II general permit, those in this rule provide more flexibility, allowing developers to choose lower cost options from a broader range of choices.

- (4) A determination that the action represents the most efficient allocation of public and private resources.

This rule represents the most efficient allocation of public and private resources because it provides both regulatory certainty and flexibility, while ensuring compliance with mandatory federal stormwater requirements.

- (5) A determination of the effect of the action on competition.

This rule is not anticipated to have a direct impact on competition. This rule provides regulatory certainty, which establishes a starting point for Tennessee municipalities to implement their permanent stormwater management programs. Any other effects on the development community are at the municipal level.

- (6) A determination of the effect of the action on the cost of living in the geographical area in which the action would occur.

While no effects are anticipated on the cost of living, the rule applies across the state and are equitable for all regulated municipalities.

- (7) A determination of the effect of the action on employment in the geographical area in which the action would occur.

This rule is not anticipated to have an impact on employment.

- (8) The source of revenue to be used for the action.

This rule, and any required implementation by TDEC, will be funded through existing revenues. No additional revenue is required for this action.

- (9) A conclusion as to the economic impact upon all persons substantially affected by the action, including an analysis containing a description as to which persons will bear the costs of the action and which persons will benefit directly and indirectly from the action.

This rule is not anticipated to have a substantial economic impact on any person. The development community and small MS4 communities have been affected by federal requirements since 2003. Both communities will benefit from the additional regulatory certainty provided by this rule. No new costs are anticipated beyond those labor costs necessary to align existing municipal stormwater programs with these requirements (changes to stormwater ordinances, training staff, providing guidance materials, etc.).

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Rule ID(s): _____
File Date: _____
Effective Date: _____

Rulemaking Hearing Rule(s) Filing Form

Rulemaking Hearing Rules are rules filed after and as a result of a rulemaking hearing (Tenn. Code Ann. § 4-5-205).

Pursuant to Tenn. Code Ann. § 4-5-229, any new fee or fee increase promulgated by state agency rule shall take effect on July 1, following the expiration of the ninety (90) day period as provided in § 4-5-207. This section shall not apply to rules that implement new fees or fee increases that are promulgated as emergency rules pursuant to § 4-5-208(a) and to subsequent rules that make permanent such emergency rules, as amended during the rulemaking process. In addition, this section shall not apply to state agencies that did not, during the preceding two (2) fiscal years, collect fees in an amount sufficient to pay the cost of operating the board, commission or entity in accordance with § 4-29-121(b).

Agency/Board/Commission:	Board of Water Quality, Oil and Gas
Division:	Water Resources
Contact Person:	Vojin Janjić
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Email:	Vojin.Janji@tn.gov

Revision Type (check all that apply):

- Amendment
 New
 Repeal

Rule(s) (ALL chapters and rules contained in filing must be listed here. If needed, copy and paste additional tables to accommodate multiple chapters. Please make sure that **ALL** new rule and repealed rule numbers are listed in the chart below. Please enter only **ONE** Rule Number/Rule Title per row.)

Chapter Number	Chapter Title
0400-40-10	National Pollutant Discharge Elimination System General Permits
Rule Number	Rule Title
0400-40-10-.01	General
0400-40-10-.04	Municipal Separate Storm Sewer Systems

Place substance of rules and other info here. Please be sure to include a detailed explanation of the changes being made to the listed rule(s). Statutory authority must be given for each rule change. For information on formatting rules go to <https://sos.tn.gov/products/division-publications/rulemaking-guidelines>.

Chapter 0400-40-10
National Pollutant Discharge Elimination System General Permits

Amendments

The table of contents to Chapter 0400-40-10 National Pollutant Discharge Elimination System General Permits is amended by adding a new rule to read as follows:

0400-40-10-.04 Municipal Separate Storm Sewer Systems

Authority: T.C.A. §§ 69-3-101 et seq. and 4-5-201 et seq.

Rule 0400-40-10-.01 General is amended by deleting it in its entirety and substituting instead the following:

0400-40-10-.01 General.

(1) This chapter states the manner in which the Department may issue general permits in accordance with § 402 of the Clean Water Act (33 U.S.C. § 1342) and T.C.A. § 69-3-108.

(2) Electronic reporting. This chapter requires the submission of forms developed by the Commissioner in order for a person to comply with certain requirements, including, but not limited to, making reports, submitting monitoring results, and applying for permits. The Commissioner may make these forms available electronically and, if submitted electronically, then that electronic submission shall comply with the requirements of Chapter 0400-01-40.

Authority: T.C.A. §§ 69-3-101 et seq. and 4-5-201 et seq.

Chapter 0400-40-10
National Pollutant Discharge Elimination System General Permits

New Rule

Chapter 0400-40-10 National Pollutant Discharge Elimination System General Permits is amended by adding a new rule to read as follows:

0400-40-10-.04 Municipal Separate Storm Sewer Systems.

Permits issued to entities that operate a municipal separate storm sewer system (MS4) shall include the following effluent limitations to manage post-construction stormwater at all new development and redevelopment projects that disturb one or more acres of land, or less than one acre if part of a larger common plan of development, and discharge into the permittee's MS4:

- (1) Permanent Stormwater Management Program.
 - (a) The permittee shall develop and implement a permanent stormwater management program to reduce pollutants in stormwater discharges through management practices, control techniques, and systems, design, and engineering practices implemented to the maximum extent practicable (MEP), as set forth herein.
 - (b) The permanent stormwater management program shall include plans review, site inspections, and a means to ensure that permanent stormwater control measures (SCMs) are adequately operated and maintained.
 - (c) The permittee must develop and implement, and modify as necessary, an ordinance or other regulatory mechanism to address permanent stormwater management at new development and redevelopment projects.
 - (d) The permittee must submit an implementation plan for its permanent stormwater management program not later than 90 days after the effective date of the first new or revised permit issued after the effective date of these rules. The implementation plan shall include a brief description of the main components of the permittee's permanent stormwater management program, which should include: codes and ordinance development and implementation; procedures for plans review and criteria for approval; procedures for conducting and tracking site inspections; and SCM operation and maintenance policies. The implementation plan shall also include a timeline to develop and implement the program. If the permittee has implemented a permanent stormwater management program that complies with all requirements of the new or revised permit, the permittee may submit an implementation plan explaining how its program complies and identifying any new or modified elements of its program. The schedule must indicate

completion as soon as feasible but no later than 24 months from the effective date of the first permit issued after the effective date of these rules. Further, if implementation will take longer than 12 months, the plan must include interim milestones. Implementation plans must be submitted to the Division.

(2) Permanent Stormwater Standards.

- (a) The permanent stormwater management program must require new development and redevelopment projects to be designed to reduce pollutants to the MEP, as set forth herein. Compliance with permanent stormwater standards for new development and redevelopment projects is determined by designing and installing SCMs as established by this rule and complying with other requirements of this rule. For design purposes, total suspended solids (TSS) may be used as the indicator for the reduction of pollutants.
- (b) SCMs must be designed to provide full treatment capacity within 72 hours following the end of the preceding rain event for the life of the new development or redevelopment project. The permittee shall identify a suite of SCMs to be used in various situations. Information relevant to identified SCMs should be made readily available. Application of innovative SCMs is encouraged. If the permittee decides to significantly limit the number of SCM options, it must be documented in the stormwater management program how the performance standards of this rule can be met with the limited set of control measures that are allowed.
- (c) The water quality treatment design storm is a 1-year, 24-hour storm event as defined by Precipitation-Frequency Atlas of the United States. Atlas 14. Volume 2. Version 3.0. U.S. Department of Commerce. National Oceanic and Atmospheric Administration (NOAA), National Weather Service, Hydrometeorological Design Studies Center, Silver Springs, Maryland or its digital product equivalent. The water quality treatment volume (WQTV) is a portion of the runoff generated from impervious surfaces at a new development or redevelopment project by the design storm, as set forth below. Uncontaminated roof runoff may be excluded from the WQTV. SCMs must be designed, at a minimum, to achieve an overall treatment efficiency of 80% TSS removal from the WQTV. The quantity of the WQTV depends on the type of treatment provided, as established in the following table:

Water Quality Treatment Volume and the Corresponding SCM Treatment Type for the 1-year, 24-hour design storm		
SCM Treatment Type	WQTV	Notes
infiltration, evaporation, transpiration, and/or reuse	runoff generated from the first 1 inch of the design storm	Examples include, but are not limited to, bioretention, stormwater wetlands, and infiltration systems.
biologically active filtration, with an underdrain	runoff generated from the first 1.25 inches of the design storm	To achieve biologically active filtration, SCMs must provide minimum of 12 inches of internal water storage.
sand or gravel filtration, settling ponds, extended detention ponds, and wet ponds	runoff generated from the first 2.5 inches of the design storm or the first 75% of the design storm, whichever is less	Examples include, but are not limited to, sand filters, permeable pavers, and underground gravel detention systems. Ponds must provide forebays comprising a minimum of 10% of the total design volume. Existing regional detention ponds are not subject to the forebay requirement.
hydrodynamic separation, baffle box settling, other flow-through manufactured treatment devices (MTDs), and treatment trains using MTDs	maximum runoff generated from the entire design storm	Flow-through MTDs must provide an overall treatment efficiency of at least 80% TSS reduction. Refer to subparagraph (2)(d) of this rule.

(d) Treatment Train Calculations.

1. Treatment trains using MTDs.

Treatment trains using MTDs must provide an overall treatment efficiency of at least 80% TSS reduction utilizing the following formula:

The calculation:

$$R = A + B - (A \times B) / 100$$

Where:

R = total TSS percent removal from application of both SCMs,
A = the TSS percent removal rate applicable to the first SCM, and
B = the TSS percent removal rate applicable to the second SCM.

TSS removal rates for MTD must be evaluated using industry-wide standards.
TSS removal rates for other SCMs must be from published reference literature.

2. Treatment trains not using MTDs.

Treatment trains using infiltration, evaporation, transpiration, reuse, or biologically active filtration followed by sand or gravel filtration, settling ponds, extended detention ponds or wet ponds may subtract the treated WQTV of the upstream SCMs from the WQTV of the downstream SCMs.

(e) The permittee may also develop a mitigation program and/or system of payment into a public stormwater fund as described in paragraph (3) of this rule.

(f) The permanent stormwater management program may allow for a reduction of the WQTV for a new development or redevelopment project up to 20% for any one of the following conditions, and up to a total maximum of 50% for a combination of the following conditions:

1. Redevelopment projects (including, but not limited to, brownfield redevelopment);
2. Vertical density (floor to area ratio of at least 2, or at least 18 units per acre); and
3. Incentives as identified by the permittee, submitted to the Division and approved by the Division in writing, and documented as part of the stormwater management program.

(3) Stormwater Mitigation and Public Stormwater Fund.

(a) A permittee may choose to develop an offsite mitigation program or payment in lieu into a public stormwater fund, or both, to offset the portion of the WQTV that cannot be treated on site to the MEP. The program must ensure that off-site stormwater mitigation will be accomplished within the same USGS 12-digit hydrologic unit code watershed as the new development or redevelopment project, if practicable, and will treat a minimum of 1.5 times the portion of the WQTV not treated on site. The permittee may identify priority areas within the watershed in which stormwater mitigation projects are to be completed. The program must have a mitigation project approval procedure, and all projects must meet all requirements in this permit. Procedures and requirements in the offsite mitigation and payment in lieu programs should be documented as part of the stormwater management program and available for review.

(b) If the permittee allows payment into a public stormwater fund, the permittee assumes responsibility to provide the required mitigation projects. The public stormwater fund should be used to fund public mitigation projects. The payment amount into a public stormwater fund must be sufficient to design, install, and maintain the stormwater mitigation measures.

(4) Water Quality Riparian Buffers.

Permittees shall develop and implement a set of requirements to establish, protect, and maintain permanent water quality riparian buffers to provide additional water quality treatment in riparian areas of

new development and redevelopment projects that contain streams, including wetlands, ponds, and lakes. Riparian buffers must meet the following minimum standards:

- (a) Stormwater discharges should enter the water quality riparian buffer as sheet flow, not as concentrated flow, where site conditions allow.
- (b) Water quality riparian buffers must have the following minimum widths, unless site-specific conditions necessitate alternative widths, as described in subparagraph (d) of this paragraph:

	Average buffer width (feet)	Minimum buffer width (feet)	Notes
Waters with available parameters for siltation or habitat alteration or unassessed waters	30	15	The criteria for the width of the buffer zone can be established on an average width basis at a project, as long as the minimum width of the buffer zone is more than the required minimum width at any measured location. If the new development or redevelopment site encompasses both sides of a stream, buffer averaging can be applied to both sides, but must be applied independently.
Exceptional Tennessee Waters or waters with unavailable parameters for siltation or habitat alteration	60	30	

The predominant vegetation within the minimum buffer width area should be trees. The remaining riparian buffers may be composed of herbaceous cover or infiltration-based SCMs.

- (c) Permittees may establish permissible land uses or activities within the buffer, such as biking and walking trails, infiltration-based SCMs, selective landscaping, habitat improvement, road and utility crossings, or other limited uses as determined by the permittee. The permittee must have a process to review proposed activities within buffers to ensure the pollutant removal function of the buffer will be retained. Trails constructed within the buffer should prevent or minimize the generation of pollutants. If trails are constructed from impervious materials, runoff must either be directed to infiltration-based SCMs or the buffer width must be increased by the width of the trail.
 - (d) Permittees may authorize alternative buffer widths for new development and redevelopment projects where averaged water quality riparian buffers cannot be fully implemented on-site. In order to allow alternative widths, the permittee must develop and apply criteria for determining the circumstances under which required buffer widths cannot be achieved based on the type of project, existing land use, and physical conditions that restrict the use of water quality riparian buffers. Any such procedures and criteria for alternative buffer widths must ensure that implementing full buffer widths would be impracticable and that the maximum practicable buffer widths are required. Procedures and criteria for alternative buffer widths must be submitted to the Division, approved by the Division in writing, and documented as a part of the stormwater management program.
 - (e) Water quality riparian buffer widths are measured from the top of bank also referred to as the “ordinary high-water mark.”
 - (f) Ordinances and local requirements adopted prior to November 13, 2018, and that mandate minimum 30-foot water quality riparian buffers for drainage areas less than one square mile, and minimum 60-foot water quality riparian buffers for drainage areas of greater than one square mile (with provisions for buffer averaging down to a minimum 30-foot width), are deemed to satisfy the conditions of this paragraph.
- (5) Codes and Ordinances Review and Update.
- (a) Within one year of obtaining initial permit coverage, newly permitted programs shall review local codes and ordinances using the EPA Water Quality Scorecard. A completed copy of the Scorecard shall be submitted with the subsequent annual report. Permittees who have completed

and submitted the Scorecard in the past are not required to repeat this review.

- (b) Newly permitted programs shall update codes and ordinances or other legal instruments as necessary to comply with the permit within 24 months of coverage under this permit. Current permittees shall continue to implement the existing permanent stormwater management program and update legal instruments according to the compliance schedule in subparagraph (1)(d) of this rule.

(6) Development Project Plan Review, Approval, and Enforcement.

The permittee shall develop and implement project plan review, approval, and enforcement procedures applicable, at a minimum, to all new development and redevelopment projects, which shall include:

- (a) Procedures for review and approval of site plans, including inter-departmental consultations and a re-submittal process when modifications to the project require changes to an approved site design plan;
- (b) A plans review process that requires SCMs to be properly designed, installed, and maintained to meet the performance standards established in this rule. The process must also include incentives adopted by the permittee as authorized by paragraph (2) of this rule, if any, along with water quality buffers as required by paragraph (4) of this rule; and
- (c) A verification process to document that SCMs have been installed per design specifications within 90 days of installation. Verification shall include submission of as-built plans to the permittee, permittee inspection, or inspection by a qualified design professional. The verification process shall include enforcement procedures to bring noncompliant projects into compliance, which shall be detailed in the enforcement response plan.

(7) Maintenance of Permanent Stormwater Control Measure Assets.

- (a) Permanent SCMs, including SCMs used at mitigation projects, must be installed, implemented, and maintained to meet the performance standards of paragraph (2) of this rule, and provide full treatment capacity within 72 hours following the end of the preceding rain event.
- (b) The permittee must develop and implement a program to require implementation of appropriate SCM maintenance procedures to sustain pollutant reduction efficiency for the life of the new development or redevelopment project. All procedures, reports, and documentation must be maintained as part of the stormwater management program. The program must include at a minimum:
 1. The development and documentation of maintenance and inspection procedures and frequencies for approved SCMs, which shall require all SCMs to be inspected at least once every five years by the permittee, a licensed professional engineer, a licensed landscape architect, or other qualified professional familiar with applicable SCM design and maintenance requirements;
 2. The development and documentation of the procedure the permittee will use to verify that SCMs are being inspected and maintained including any written reports from the responsible party;
 3. A clear, documented, legally binding agreement assigning SCM maintenance responsibility to the owner/operator, a third party, or the permittee as appropriate. For SCMs designed to manage stormwater from multiple properties, appropriate deed restrictions shall be recorded; and
 4. An allowance or agreement for permittee personnel to access the SCMs for inspections and provide for enforcement action for failure to maintain SCMs according to agreement.

(8) Inventory and Tracking of Permanent Stormwater Control Measure Assets.

- (a) Existing permittees must continue to implement and maintain a system to inventory and track the

status of all public and private SCMs installed on new development and redevelopment projects. New permittees must implement the system within 24 months of coverage.

(b) The inventory and tracking system must be a searchable database, either paper or electronic, that retrieves SCM information by location or other similar identification. The system must be made available to the Division or to members of the public upon request. Other than the basic information of location and project identification, the system should include information and records the permittee will use to demonstrate that SCMs are properly maintained, including but not limited to:

1. A brief description of the type of SCM and basic design characteristics;
2. The responsible party contact information;
3. Inspection schedules (both permittee and responsible party);
4. A brief description of or reference to maintenance procedures and frequency;
5. Photographs of the installed SCMs; and
6. Maintenance and inspection records.

Authority: T.C.A. §§ 69-3-101 et seq. and 4-5-201 et seq.

* If a roll-call vote was necessary, the vote by the Agency on these rulemaking hearing rules was as follows:

Board Member	Aye	No	Abstain	Absent	Signature (if required)
Dr. Gary G. Bible (Oil and Gas Industry)	X				
Elaine Boyd (Commissioner's Designee, Department of Environment and Conservation)	X				
James W. Cameron III (Small Generator of Water Pollution representing Automotive Interests)	X				
Mayor Kevin C. Davis (Counties)	X				
Dodd Galbreath (Environmental Interests)	X				
Brent Galloway Oil or Gas Property Owner	X				
Charlie R. Johnson (Public-at-large)				X	
Judy Manners (Commissioner's Designee, Department of Health)	X				
Sam Marshall (Commissioner's Designee, Department of Agriculture)	X				
Frank McGinley (Agricultural Interests)	X				
Neal Whitten (Manufacturing Industry)	X				
Terry Wimberley (Municipalities)	X				

I certify that this is an accurate and complete copy of rulemaking hearing rules, lawfully promulgated and adopted by the Board of Water Quality, Oil and Gas on 04/20/2021, and is in compliance with the provisions of T.C.A. § 4-5-222.

I further certify the following:

Notice of Rulemaking Hearing filed with the Department of State on: 05/02/2019

Rulemaking Hearing(s) Conducted on: (add more dates). 07/15/2019

Date: April 20, 2021

Signature: _____

Name of Officer: James W. Cameron III

Title of Officer: Chairman

Agency/Board/Commission: Board of Water Quality, Oil and Gas

Rule Chapter Number(s): Chapter 0400-40-10

All rulemaking hearing rules provided for herein have been examined by the Attorney General and Reporter of the State of Tennessee and are approved as to legality pursuant to the provisions of the Administrative Procedures Act, Tennessee Code Annotated, Title 4, Chapter 5.

Herbert H. Slatery III
Attorney General and Reporter

Date

Department of State Use Only

Filed with the Department of State on: _____

Effective on: _____

Tre Hargett
Secretary of State

Public Hearing Comments

One copy of a document that satisfies T.C.A. § 4-5-222 must accompany the filing.

Rule Chapter 0400-40-10 National Pollutant Discharge Elimination System General Permits

Concise Statement of the Principal Reasons for Rulemaking

In accordance with Tennessee Code Annotated section 4-5-205(b), and in response to requests from commenters, the Tennessee Board of Water Quality, Oil and Gas (Board) is providing this concise statement of the principal reasons for its amendments to Rule Chapter 0400-40-10.

This rule chapter adds a rule for submission of electronic forms. This is necessary to comply with updated EPA reporting requirements, and also will promote efficiency for the regulated community and TDEC.

This rulemaking adds Rule 0400-40-10-.04 to establish effluent limitations for permanent stormwater management for municipal separate storm sewer systems (MS4s). Adoption of this rule is necessary to comply with Tennessee Code Annotated section 69-3-108(s), which provides that “numeric or narrative effluent limitations to manage post-construction stormwater shall be adopted by the board as rules....” This rule adopts permanent stormwater requirements to comply with the minimum requirements of federal law, while allowing local governmental entities discretion in selecting measures to comply with these effluent limitations in accordance with Tennessee Code Annotated section 69-3-108(s) and (t).

This rule reflects the terms of a settlement of the appeal of the 2016 Phase II MS4 General Permit by the Homebuilders Association of Tennessee and several nongovernmental organizations. A number of improvements and clarifications to the proposed rule have been made in this final rule in response to comments from the broader public, including comments from MS4 communities and professional stormwater consultants. The settlement parties have agreed these changes are consistent with the terms of the settlement.

Response to Comments

The Board appreciates that numerous commenters expressed interest in this rulemaking and submitted detailed comments. Every comment letter has been closely reviewed and duly considered. The specific verbiage of every comment is not included in this document, and comments have been edited for brevity, clarity, and formatting consistency. Many comments present similar recommendations and/or observations. Comments addressing the same substantive issue have been rephrased and/or grouped together for the sake of brevity.

Rule 0400-40-10-.01

Comment 1: Rule 0400-40-10-.01(2) could be simplified by deleting 13-15 words, so that it would read: (2) Electronic reporting. This chapter requires the submission of forms including but not limited to making reports, submitting monitoring results, and applying for permits. The Commissioner may make these forms available electronically and, if submitted electronically, electronic submission shall comply with the requirements of Chapter 0400-01-40.

Response: The Board appreciates the comment, but has retained the provision per the Rulemaking Hearing Notice for clarity and completeness.

Rule 0400-40-10-.04 Municipal Separate Storm Sewer Systems General

Comment 2: The rule should not lump green space development (new development) and gray space development (redevelopment) into the single overarching term of “new development.” These two development types can be vastly different with redevelopment requiring a number of different decisions to address the issue of stormwater treatment.

Response: In accordance with EPA regulations, the permanent stormwater management program must require new development and redevelopment projects to be designed to reduce pollutants to the maximum extent practicable. The local MS4 stormwater programs have the flexibility to set requirements specific to their community within the bounds of this rule and to select any or all of the four equivalent alternatives. With

equivalent treatment options, designers will be able to select the optimum treatment for each site with respect to effectiveness, economics, and expediency.

Comment 3: The term “new development” is defined as “a new or redevelopment project that disturbs one or more acres of land, or less than one acre if part of a larger common plan of development, and discharges into a MS4.” Clarify if a “new development” project that does not discharge into MS4 infrastructure, but is located within the boundary of a MS4, is subject to the Permanent Stormwater Management section of the proposed new rule.

Response: The rule regulates discharges of pollutants from the MS4 to waters of the state. If a new development or redevelopment project runs off directly to waters rather than through the MS4 infrastructure, it is not subject to the NPDES permitting requirement. However, such a site remains subject to the prohibitions on activities that cause pollution contained in T.C.A. § 69-3-114. Also, local governments may choose to regulate such sites through their local legal authorities for stormwater management.

Comment 4: Several commenters complained that the draft rule reflected the terms of a settlement agreement with the Homebuilders Association of Tennessee and several non-governmental organizations to resolve the appeal of the 2016 Phase II Municipal Separate Storm Sewer Systems (MS4) general permit. The MS4 communities were not part of that negotiation. Although they now have the opportunity to comment on the draft rules, this participation opportunity is not meaningful. This is a due process violation.

Response: Pursuant to T.C.A. § 69-3-108(s), all effluent limitations for post-construction stormwater must be established by rule, not just the limitations in general permits. These post-construction stormwater standards represent reasonable and flexible requirements that are expected to protect our water resources in a cost-effective manner. Although these effluent limitations are designed to provide flexible options, individual permittees may choose to adopt more stringent requirements in accordance with the procedures of T.C.A. § 69-3-108(t).

As reflected in this final rulemaking, the Board is modifying the final effluent limitations based on comments received during the rulemaking process, including comments received from MS4 communities, design consultants, and others. These modifications improve the clarity of the rule, align the buffer requirements to those in the construction general permit, and provide additional compliance options for MS4 communities. Therefore, this rulemaking reflects the input of a wide range of people, organizations, and governmental bodies.

Comment 5: New Rule 0400-40-10-.04 is clearly written for application only to traditional Phase II MS4s (i.e. medium and small municipalities) under the Tennessee general MS4 permit and does not in all cases apply to non-traditional MS4s. The introductory paragraph to the New Rule should clearly state that this rule applies directly and immediately only to traditional municipal Phase II MS4s under the Tennessee general MS4 permit and specify that these requirements may be modified, or their application delayed, for a non-traditional MS4 and/or by an individual MS4 Permit. Furthermore, T.C.A. 69-3-108(s) and (t), which is apparently driving these rule changes, clearly states that it applies only to a “local government entity” (i.e., a traditional municipal MS4) and thus does not apply to a non-traditional MS4. The intent of the rule should be made clear in this section and throughout the New Rules.

Response: Although the settlement applies only to the Phase II general permit, T.C.A. § 69-3-108(s) and (t) apply to all local governments, both Phase I and Phase II. The commenter is correct that these statutory provisions do not apply to other types of MS4s that are not operated by local governments, such as universities, military facilities, and TDOT. However, the federal MEP requirement for post-construction stormwater does apply to these entities. In most cases, there is no reason that MEP for new development or redevelopment projects within these MS4s would be different from that for the communities in which they are located, although implementation procedures would necessarily differ.

Comment 6: Pursuant to TCA § 69-3-108(s), these rules should not be more stringent than federal requirements. There are no federal minimum requirements for post-construction. EPA has readily acknowledged that its regulations “do not include specific management practices or standards to be implemented.” 74 Fed. Reg. 68620 (Dec 28, 2009). Furthermore, EPA recognizes that “stormwater permits leave a great deal of discretion to the regulated community to set their own standards...” Id. Inasmuch as there are no minimum federal post-construction requirements, any requirement promulgated by the State would not be “necessary to comply with the minimum requirements of federal law.” Accordingly, the proposed stormwater rules should not be finalized. Without waiving the above argument, a determination of the minimum post-construction requirements of federal law must be based upon a review of EPA-issued and other State-issued MS4 permits. The minimum requirement can be ascertained by a review of those permits to determine the least stringent requirement. Inasmuch as TCA 69-3-108(s) envisions flexibility and that requirements be no more stringent than the federal minimum, the MS4 regulations, to the extent they are adopted, should provide the permittee the alternative of implementing any requirement set forth in an EPA or State-issued MS4 NPDES permit.

Response: The Board does not agree with the comment. Although EPA rules do not include specific standards for post-construction stormwater management, these rules mandate the NPDES permitting authority to establish clear, specific, and measurable requirements. In other words, EPA has left it to each NPDES permitting authority to determine what constitutes MEP within its own jurisdiction. EPA has developed a helpful compendium of post-construction stormwater standards from around the country, which demonstrates that states apply a range of approaches.¹

This rule must be finalized in order to comply with Tennessee Code Annotated section 69-3-108(s), which requires the Board to establish narrative and numeric effluent limitations for post-construction stormwater by rule.

The argument that the least stringent MS4 permit in the entire United States establishes MEP for post-construction stormwater in Tennessee is not tenable. MEP for post-construction stormwater in, for example, Arizona is not going to be the same as that for Tennessee. Rather, the appropriate analysis is to consider which post-construction stormwater measures are both practicable (i.e., capable of being put into practice) in Tennessee and maximize pollutant reduction: that is what federal law requires, and that is what TDEC has proposed and the Board has adopted through this rulemaking.

Moreover, the question of what constitutes MEP in a given state is technical and depends on locally based factors such as precipitation, land values, topography, etc. With respect to the infiltration measures established in this rule, it has been demonstrated that these are capable of implementation in Tennessee because a number of municipalities have adopted and successfully implemented this standard. The additional SCM types provide municipalities and developers substantial flexibility in determining the most appropriate measures for their specific situations. Accordingly, individual MS4 communities and developers may select from among these measures to determine what is practicable for their communities and development sites. With respect to water quality riparian buffers, these have been demonstrated to be practicable through their long-standing implementation in the construction stormwater general permit. Moreover, water quality riparian buffers maximize pollutant removal through contact of stormwater with vegetation, which both slows the discharge and removes pollutants. Vegetated buffers are particularly important for nutrient removal.

Comment 7: A number of commenters requested definitions of specific terms.

Response: The definitions section of this rule chapter was not opened during this rulemaking process, so it is not possible to add definitions at this time. However, Rule 0400-40-10-.02(7) provides, "Terminology not specifically defined herein shall be defined in accordance with the Tennessee Water Quality Control Act of 1977, T.C.A. § 69-3-101 et seq., and the rules adopted thereunder." Accordingly, definitions in the Act and in Rule Chapter 0400-40-05 apply to Rule Chapter 0400-40-10. Definitions related to MS4s are being added to Rule Chapter 0400-40-05 in a parallel rulemaking.

Comment 8: The language of this rule only mentions "new development." Is new development defined anywhere to include re-development? If not, it should be clarified what types of development are required to meet these performance standards.

Response: For the sake of clarity, the terminology has been changed to "new development or redevelopment project," and the text of the MS4 rule has been changed accordingly. The permanent stormwater standards apply to new development and redevelopment projects, which will be defined in Rule Chapter 0400-40-05. The permanent stormwater management program must require new development and redevelopment projects to be designed to reduce pollutants to the maximum extent practicable.

Comment 9: Please provide a definition for "disturb."

Response: "Disturbed area" for purposes of MS4 permitting is the same as that for construction stormwater permitting. The term is defined in the Tennessee Construction General Permit as "the total area presented as part of the development (and/or of a larger common plan of development) subject to being cleared, graded, or excavated during the life of the development. The area cannot be limited to only the portion of the total area that the site-wide owner/developer initially disturbs through the process of various land clearing activities or in the construction of roadways, sewers and water utilities, stormwater drainage structures, etc., to make the property marketable."

Comment 10: The regulations should separately define "new projects" and "redevelopment projects."

Response: Rule Chapter 0400-40-05 will include separate definitions of "new development projects" and "redevelopment." The permanent stormwater standards apply equally to both new development and redevelopment.

¹ https://www.epa.gov/sites/production/files/2016-08/documents/swstdsummary_7-13-16_508.pdf.

Comment 11: Define Redevelopment. Consider “Redevelopment means the alteration of developed land that disturbs one acre or more, or less than an acre if part of a larger common plan of development, and increases the site or building impervious footprint, or offers a new opportunity for stormwater controls. The term is not intended to include such activities as exterior remodeling, which would not be expected to cause adverse stormwater quality impacts.”

Response: The Board agrees with this comment, as the proposed language is identical to the definition of “redevelopment” in the 2016 Phase II MS4 permit. This definition will be added to the final version of Rule Chapter 0400-40-05, and will apply to this chapter as well.

Comment 12: Requiring the treatment of new impervious surfaces recognizes the differences in how stormwater quality requirements can be addressed on new developments versus redevelopments. This is in keeping with EPA’s guidance provided in their Model Ordinance for the Control of Post-Construction Stormwater Runoff.²

Response: The Board generally agrees, although some redevelopment projects without added impervious surface nonetheless have the opportunity to implement better stormwater controls. Please see Response to Comment 11.

Comment 13: Please define "preceding rain event." Is the intent preceding significant rain event, measurable rain event, etc.? And then, of course, those need to be defined as well.

Response: Rain event is defined as "rainfall event" in the revised Rule Chapter 0400-40-05.

Comment 14: Please define "full treatment capacity"

Response: Full treatment capacity within 72 hours following the end of the preceding rain event refers to the maximum drain time of the SCM.

Comment 15: Multiple sections of the rule make reference to the SWMP. Where has the acronym SWMP been introduced or defined in the rules?

Response: The following has been added to 0400-40-10-.04(2)(f)3. where the term is first used: “stormwater management program” and has been spelled out in other locations throughout the rule.

Comment 16: Please define TSS.

Response: Total Suspended Solids is listed in 40 C.F.R. Part 136-approved methods as “Residue—non-filterable (TSS), mg/L Gravimetric, 103-105°C post washing of residue with Standard method 2540 D-2011 ASTM D5907-13 USGS/AOAC/other I-3765-85.ASTM.”

Comment 17: Define Biologically Active Filtration.

Response: The North Carolina State University Cooperative Extension provides a helpful explanation of bioretention/biologically active filtration, which “combine[] natural and engineered systems to manage stormwater from developed areas.”³ This system must provide 12 inches of internal water storage.⁴

Comment 18: Define Common Plan of Development as it relates to “new development.” Consider “A common plan of development or sale means a contiguous area where multiple separate and distinct land disturbing activities may be taking place at different times, on different schedules, but under one proposed plan. “One plan” is broadly defined as any announcement or piece of documentation (including a sign, public notice or hearing, sales pitch, advertisement, drawing, permit application, zoning request, computer design, etc.) or physical demarcation (including boundary signs, lot stakes, surveyor markings, etc.) indicating construction activities may occur on a specific plot.”

Response: The term “Common plan of development or sale” in this rule chapter has the same meaning as in the Construction General Permit, which defines this term as “any announcement or documentation (including a sign, public notice or hearing, sales pitch, advertisement, drawing, permit application, zoning request, computer design) or physical demarcation (including boundary signs, lot stakes, surveyor markings) indicating construction activities may occur on a specific plot. A common plan of development or sale identifies a situation in which multiple areas of disturbance are occurring on contiguous areas. This applies because the activities may take place at different times, on different schedules, by different operators.”

Comment 19: A number of commenters requested a definition of Maximum Extent Practicable (MEP).

² (https://www.epa.gov/sites/production/files/2015-12/documents/modelillicit_0.pdf).

³<http://chesapeakestormwater.net/wp-content/uploads/downloads/2014/03/Internal-Water-Storage-for-Bioretenion-2009.pdf>.

⁴ *Id.*

Response: MEP is a term that refers to the entirety of narrative requirements in the MS4 permits. It is not amenable to definition. However, for post-construction stormwater, the rules provide specific information about what technologies, buffer requirements, and other practices would comply with the MEP requirement.

Comment 20: The changes to the rules result in an increase of amount of work and funds for the permittee in order to become compliant with the stormwater portion of the permit. A cost-benefit analysis is requested as justification for proposed changes.

Response: T.C.A. § 69-3-108(s) requires that effluent limitations to manage post-construction stormwater be adopted by rule. These rules are necessary because federal law requires all MS4s to implement a program to reduce pollutants in post-construction stormwater to the maximum extent practicable and to protect water quality. We are not aware of any more cost-effective methods to comply with the federal requirements.

Comment 21: Section 402(s) of the Clean Water Act ("CWA"), as recently enacted in the Water Infrastructure Improvement Act, provides for integrated planning to address CWA requirements. Under this federal provision, States are now required to inform municipalities of the opportunity to develop an integrated plan that may be incorporated into a permit. Section 402(s) specifically recognizes that integrated planning can be used to address MS4 permitting, as well as other provisions related to SSOs. Importantly, this section recognizes the importance of allowing municipalities to sequence and prioritize their most important projects.

Response: The Board acknowledges the reference to integrated planning in Section 402(s) of the Clean Water Act and its applicability to municipalities. The rule requires timely submission of an implementation plan that includes a timeline to develop and implement the program. The Department expects to review these plans in light of other Clean Water Act obligations of the municipality.

Rule 0400-40-10-.04(1) Permanent Stormwater Management Program

Comment 22: The prefatory paragraph to Proposed Rule 0400-40-10-.04(1) refers to "effluent limitations." it was suggested that the requirements be referenced as "performance standards."

Response: These are effluent limitations because they require a reduction in the amount of pollutants that will be discharged through the MS4 to waters. Effluent limitations are not limited to end-of-pipe permit limits, and can include both narrative and numeric requirements, including best management practices. The MS4 post-construction stormwater rule establishes effluent limitations as required by T.C.A. § 69-3-108(s). Accordingly, the term "effluent limitations" has been retained.

Comment 23: Multiple commenters requested that the word "remove" in Rule 0400-40-10-.04(1)(a) be changed to "treat for" or "reduce."

Response: This change is consistent with the federal rule and the settlement, and has been made throughout the rule.

Comment 24: Rule 0400-40-10-.04(1)(a) - Permanent Stormwater Management Program: There needs to be more emphasis placed on public education to achieve permanent water quality behavioral changes in neighborhoods instead of vigorous inspection and enforcement of devices from MS4 staff. Rather than requiring SCMs in all circumstances that are inadequately maintained by property owners or HOAs, cause homeowner confusion, and are difficult to inspect by smaller MS4s, an alternative solution may be to include an option for an MS4 that would allow them to decide if SCMs are practical for an individual neighborhood or if post-construction water quality can be achieved through alternative means like a targeted educational program.

Response: Public education is one of the six minimum control measures EPA requires in the MS4 program, but this rulemaking addresses only post-construction stormwater controls. While the Board agrees that public education is important, it does not agree that public education alone can substitute for implementation of SCMs and buffers. In particular, public education alone would not maximize practicable pollutant removal and therefore does not comply with the minimum requirements of federal law.

Comment 25: Multiple commenters referred to Rule 0400-40-10-.04(1)(b), and asked to replace "ensure" with "verify." The permittee cannot ensure that measures are adequately maintained. They can only develop programs to check and verify if it has been completed.

Response: The language in 1(b), 4(c), and 4(d) has not been changed. The Board acknowledges that the permittees often do not own or operate SCMs at new development and redevelopment sites, but they do have, and must exercise, oversight authority. The rule language has been changed in 6(b) and 7(b) from "ensure" to "require." The word "ensure" in 8(b) has been changed to "demonstrate."

Comment 26: Rule 0400-40-10-.04(1)(c) states: "The permittee must develop and implement, and modify as necessary, an ordinance or other regulatory mechanism..." However, non-traditional MS4s typically do not have

the legal capability to implement an ordinance or other regulatory mechanism on their own accord, and this could only be accomplished through actions of the Tennessee State legislature or the U.S. Congress.

Response: Nontraditional MS4s cannot adopt ordinances, but they can implement these requirements through other legally binding mechanisms such as contractual requirements that do not require legislation.

Comment 27. Regarding Rule 0400-40-10-.04(1)(d), the permittee has regulatory authority over municipal separate storm sewer system but does not have such authority over private stormwater control measures. Therefore, an implementation plan for a permanent stormwater management program can only be applicable to the municipal separate storm sewer system.

Response: The permittee has regulatory authority over new private SCMs that it permits and is required by these rules to adopt ordinances or other regulatory mechanisms to implement that authority.

Comment 28: Regarding the implementation plan in Rule 0400-40-10-.04(1)(d), it would be unreasonable for a local government to develop an entirely new program within 90 days. If the plan is expected to include detailed policies and procedures, then the timeframe should be extended to at least 12 months, subject to MS4's extensions on a case-by-case basis for good cause.

Response: The final rule has been changed to make it clear that permittees have up to 24 months to develop and implement the post-construction program. Only the implementation plan is required within 90 days. This implementation plan must identify what elements the post-construction program will include and a timeline for development and implementation of the actual program.

Comment 29: Rule 0400-40-10-.04(1)(d) states, "The permittee must submit an implementation plan for its permanent stormwater management program not later than 90 days after issuance of the effective date of a new or renewed permit." It is recommended that additional time be provided, 180 days minimum.

Response: The language in the rules dictates the language in the general permit and, as such, provides ample lead time for the permittees to structure their implementation plans with a degree of certainty before the general permit is issued.

Comment 30: We find it difficult to find a legitimate application to the permittee for a mandatory permit requirement for the submittal of an implementation plan. For permit compliance, it should be sufficient to require the permittee to have the program implemented within 24 months of permit coverage.

Response: The rule effectively builds in a compliance schedule during which to implement new effluent limitations for the first permit cycle. Under federal law, NPDES permit compliance schedules must ensure compliance as soon as feasible, and include interim milestones for schedules that exceed 12 months. The implementation plans developed in accordance with this rule are necessary to define the steps in the compliance schedule for each municipality.

Comment 31: We recommend Rule 0400-40-10-.04(1)(d) be changed to read: "The permittee shall develop an implementation plan for its permanent stormwater management program. The implementation plan should include a brief description of the main components of the permittee's permanent stormwater management program, which should include: codes and ordinance development and implementation; and procedures for the plans review. The implementation plan shall include a timeline to develop and implement the program that results in full implementation of the program not later than 24 months after the effective date of the Notice of Coverage issued for the new and renewed permit. If the permittee has implemented a permanent stormwater management program that complies with all requirements of the new or revised permit, an implementation plan is not required."

Response: The rule has been revised regarding implementation plans in Rule 0400-40-10-.04(1)(d), but implementation plans are required for only the first permit issued after the effective date of these rules. The plans are required to be submitted to TDEC to assure of the permittee's progress towards achieving permanent stormwater management program requirements and the compliance schedule. Permittees can begin planning for implementation while waiting for the rule to become effective.

Comment 32: Must the implementation plan be approved in writing by the Division? To whom is the plan submitted?

Response: Yes, the plan must be approved in writing by the Division. The reissued Phase II general permit will specify where to submit the plan.

Comment 33: As written, this paragraph seems to imply different times for updates between new and existing permittees. However, they both should have the same time.

Response: Implementation plans are due at the same time for new and existing permittees.

Rule 0400-40-10-.04(2) Permanent Stormwater Standards

Comment 34: Multiple commenters noted 0400-40-10-.04(2)(a)'s proposed requirement to "reduce pollutants to the maximum extent practicable" has no meaning as MEP is not defined anywhere.

Response: MEP is a term that refers to the entirety of narrative requirements in the MS4 permits. It is not amenable to definition. However, for post-construction stormwater, the rules provide specific information about what technologies, buffer requirements, and other practices would comply with the MEP requirement. The final rule has been modified to clarify that compliance with this rule constitutes MEP for post-construction stormwater.

Comment 35: In Rule 0400-40-10-.04(2)(a), please specify the types of pollutants required to be reduced. After "maximum extent practicable" add language specifying minimum 80% TSS removal.

Response: The rule reflects federal standards in which the types of pollutants are not limited. Therefore, all pollutants are to be reduced through implementation of these post-construction stormwater control measures. 80% TSS removal is not the standard; the standard is to implement the entirety of the narrative and numeric effluent limitations established in this rule.

Comment 36: The language under Permanent Performance Standards in Rule 0400-40-10-.04(2)(b) states that, "For design purposes, TSS may be used as the indicator of pollutants (such as sediment, nutrients, and pathogens)." The use of the term "may" is subjective and could lead to inconsistent implementation amongst the regulated MS4 communities. Furthermore, utilizing TSS as a surrogate for other pollutants, particularly nutrients, is potentially damaging to water quality. TDEC should set specific nutrient reduction performance targets utilizing the best available science and sound engineering principles if the Agency wants specific nutrient reductions achieved.

Response: TSS has been used as an indicator pollutant for stormwater control across the nation for many years. Many other pollutants attach to TSS, so reducing TSS also reduces other pollutants. The reference to nutrients and pathogens has been removed from the rule. In addition to the SCMs set out in this section, water quality riparian buffers are intended to further maximize pollutant reduction, including nutrients, in a practicable manner.

Comment 37: Permittees who have implemented permanent stormwater programs compliant with standards equal to or more stringent than those under proposed 0400-40-10-.04(2) under a currently or previously authorized and duly issued general permit by the State of Tennessee that require(d) establishment of a Permanent Stormwater Management Program should be deemed by the State as meeting the proposed 0400-40-10-.04(2), without requirement to amend their compliant program. Add subparagraph (f) under 0440-40-10-.04(2) to read: "Permittees who can demonstrate compliance with permanent stormwater management requirements established in the 2010 general NPDES small MS4 permit issued prior to adoption of these rules shall be deemed compliant with the standards in 0400-40-10-.04(2)(b) and (c) based on documentation of equal or more stringent program standards in effect at the time of adoption of this rule. Such local program standards shall have met all requirements of public notice, adoption, permit reporting, and review by the issuing agency of the State."

Response: The Board appreciates those MS4 communities that have developed and successfully implemented post-construction stormwater programs. However, it does not have the authority to supersede the provisions of Tennessee Code Annotated section 69-3-108(t), which establishes specific requirements for local governments who wish to adopt or apply more stringent standards. The Board also cannot issue a blanket determination that any entity has complied with that standard. Therefore, the suggested language has not been adopted in this final rule.

Please note that municipalities may select any of the SCM types established in this rule, as appropriate for their community. Local governments have discretion in selecting measures to comply with the effluent limitations established in this rule in accordance with T.C.A. § 69-3-108(s).

Comment 38: We request that the permit recognize the standards that have been implemented by MS4 programs and allow for the continued use by inserting the following language: "For MS4 programs that have developed standards other than TSS, that are in compliance with the previous permit requiring Runoff Reduction, then this shall be considered equivalent and in compliance."

Response: The permanent stormwater management program must require new development and redevelopment projects to be designed to reduce pollutants to the maximum extent practicable. For design purposes, total suspended solids may be used as the indicator for the removal of pollutants, but that is at the option of the permittee. To provide equivalency of various treatment processes, the Water Quality Treatment Volume is graduated. The stormwater programs have the flexibility to set requirements specific to their community within the bounds of this rule and select any or all of the four equivalent alternatives. As such, the tiered system of the 2010 permit where SCM not using infiltration, evapotranspiration, and reuse had to provide technical justification of site

limitations is no longer applicable. With equivalent treatment options, designers will be able to select the optimum treatment for each site with respect to effectiveness, economics, and expediency.

Comment 39: In Rule 0400-40-10-.04(2)(b), no mention is made of the basis of design storm selection. Many previous documents from EPA and others indicate that a 95th percentile event is appropriate for permanent stormwater designs, but this new Rule requires an event that for much of Tennessee will be around a 99th percentile event. For Knoxville, the former is about 1.45” and is larger than all events comprising well over 80% of the total annual rainfall, while the latter is about 2.90” and is larger than events comprising 98.1% of total annual rainfall, which seems excessive for a design whose failure would not cause significant risk to life or property. It is also not clear that utilizing a larger storm event benefits a TSS-removal water treatment design. In fact, designing for such a large and infrequent event could lead to poor performance for the many smaller events comprising most of the runoff and pollution.

Response: The design storm provides distribution of depth and intensity values as they vary across the state. The 1-year, 24-hour storm is the smallest design storm readily available in engineering reference literature in general and in the NOAA Atlas 14 in particular. However, only a portion of the design storm is used in the calculation of the WQTV. Hydrodynamic separators and other Manufactured Treatment Devices are designed for flowrate that is a function of rainfall intensity. The smallest design storm that NOAA Atlas 14 provides intensity values for is the 1-year, 24-hour storm.

Comment 40: Proposed Rule 0400-40-10-.04(2)(b) indicates that the design storm is a 1-year, 24-hour storm event. Unless the final rule references some standards, such as NOAA Atlas 14, it appears that the rule is providing the MS4 flexibility in making such determination.

Response: The rule specifies a 1-year, 24-hour water quality design storm. The authoritative reference for the design storm is NOAA Atlas 14, Volume 2, Version 3.0. U.S. Department of Commerce. National Oceanic and Atmospheric Administration (NOAA), National Weather Service, Hydrometeorological Design Studies Center, Silver Springs, Maryland or its digital product equivalent, providing rainfall depth and intensities.

NRCS is replacing the use of its legacy rainfall distributions (Type I, Type IA, Type II, and Type III) with rainfall distributions based on NOAA Atlas 14 precipitation-frequency data. NEH 630 Chapter 4 rev August 2019:

“Precipitation-frequency data and storm distribution are important components of the NRCS hydrologic modeling procedures. Different assumptions and procedures were used in preparation of precipitation frequency atlases TP-40 and NOAA Atlas 14 by the NWS and in preparation of storm distributions NRCS Type II and those based on NOAA Atlas 14 data. Understanding these differences will provide more background on why hydrologic results could be different when changing from TP-40 and the Type I, IA, II, or III storm distribution to NOAA Atlas 14 data and a locally derived storm distribution. With many more years of data, better quality control, and more short duration measurements, much more confidence can be placed in the NOAA Atlas 14 precipitation-frequency estimates and storm distributions based on the estimates.”⁵

Comment 41: The storm definition issues combine in complicated ways. For example, with the previously-used Knoxville 95th percentile event depth (1.45”) and an assumed Type II distribution, the 1st inch of rainfall occurred well past the very high-intensity Type II peak, which is where most runoff is generated. Moving to the 1-yr event (2.9”) means that the 1st inch occurs well before the Type II peak, so less runoff is actually generated by that 1st inch of rainfall. This is exacerbated by defining it as a 24-hr event, which stretches the intensity peak out even further from the previously-used 15 hours, further reducing the runoff volume from the first inch.

Response: NRCS is replacing the use of its legacy rainfall distributions (Type I, Type IA, Type II, and Type III) with rainfall distributions based on NOAA Atlas 14 precipitation-frequency data. See Chapter 4 of NRCS NEH August 2019 rev.⁶

Comment 42: The new rule should eliminate the use of, and references to, a design storm and hydrologic distribution of rainfall and require use of an instantaneous capture design as the minimum level standard. The draft rule specifies the design of SCMs for “the first X-inches” of the 1-year, 24-hour design storm (where X is variable depending on SCM treatment type). To accomplish this, a designer needs to use a rainfall distribution (e.g., Type II storm, NRCS distributions based on NOAA Atlas 14, etc.) though none is specified in the draft rule. However, this level of analysis is well-beyond the standard engineering practices for stormwater system design. Further, given the inaccuracies inherent in rainfall distributions and the variability of hydrologic parameters over

⁵ <https://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=43924.wba>

⁶ <https://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/water/manage/hydrology/?cid=STELPRDB1043063>

time and space, these models won't necessarily provide significant hydrologic accuracy or result in more effective pollutant removal over more traditional engineering design methods. Does TDEC really intend for designers to create a hydrologic model for every SCM design?

Response: Please see Response to Comment 40. In addition, the designer must use good engineering practices and standards of care for hydrologic calculations. Several customary methods are currently used in the engineering profession, so a method appropriate to the scope and size of the project can be selected. The Division does not expect the use of continuous simulation modeling on most sites.

Comment 43: Please clarify the distribution of the design storm (e.g., uniform distribution or Type II distribution).

Response: Please see Response to Comment 40.

Comment 44: Rule 0400-40-10-.04(2)(b) what reference should be used to define the 1-year, 24-hour storm at a given location? The rule should reference some standards, such as NOAA Atlas 14.

Response: The authoritative reference for the design storm is NOAA Atlas 14 providing rainfall depth and intensities.

Comment 45: In Rule 0400-40-10-.04(2)(b), why use the 1-year, 24-hour storm event? It seems that this event was chosen due to familiarity as opposed to effectiveness in TSS removal. A 1-year event is too large for effective TSS removal, especially for smaller, more frequent events. Please consider replacing this and requiring retention of the first 0.80-inch of runoff by either infiltration or capture and use. A calculation should be provided by the professional engineer to demonstrate these results.

Response: The design storm provides distribution of depth and intensity values as they vary across the state. The 1 -year, 24-hour storm is the smallest design storm readily available in engineering reference literature in general and in the NOAA Atlas 14 in particular. However, only a portion of the design storm is used in the calculation of the WQTV. The use of infiltration, evapotranspiration and capture/reuse SCMs is allowed and described in table 2(c), but is only one of the SCM types that may be used.

Comment 46: Rule 0400-40-10-.04(2)(b) – this section says SCMs should be designed to operate “for the life of the new development project.” No infrastructure, much less SCMs, are capable of operating in perpetuity. This requirement should be removed or clarified.

Response: Stormwater control measures are post-construction measures that provide long-term treatment for the life of the project. As set out in Rule 0400-40-10-.04(7), appropriate SCM maintenance procedures must be required.

Comment 47: In Rule 0400-40-10-.04(2)(b), it seems that in the next to last sentence, the word “new” could be deleted. So, “...72 hours following the end of the preceding rain event for the life of the development project.”

Response: The reference has been changed to “new development and redevelopment projects” to be consistent with federal law and the balance of this rule.

Comment 48: In the next to last sentence of Rule 0400-40-10-.04(2)(b), it would be better to leave out the word “new” and even the word project. The article the undoubtedly refers to a new development project, which is the context of the section, and so the new is superfluous. And the new also introduces a bit of a contradiction: the new project is not going to be new for the life of it. Nor is the new development project going to remain a development project for the life of it. The present sentence introduces tiny loopholes for one to argue “my development is no longer a new project; so my SCMs now aren't bound by this treatment standard, right?” I suggest dropping the new and the project...So, state simply “...72 hours following the end of the preceding rain event for the life of the development.”

Response: The Board acknowledges the complications that could arise from the term "new development." However, the terminology is consistent with federal rules. The intent is for SCMs to be maintained and provide treatment until the end of the project life.

Comment 49: Rule 0400-40-10-.04(2)(b) omits language from the settlement agreement concerning allowing a suite of SCM types.

Response: The commenter is correct, and the language has been added back. Permittees should provide a range of SCM options appropriate for their communities.

Comment 50: A number of commenters requested that the columns in the table for SCM Treatment Type and WQTV be switched.

Response: The Board agrees that it is clearer to list the SCM treatment type first, and then the WQTV, so this change has been made.

Comment 51: In the SCM Table in Rule 0400-40-10-.04(2)(c), please clarify the "inch(es) of the design storm." The table should be addressing runoff but, as worded, it could be assumed to mean precipitation.

Response: The wording has been changed to: "runoff generated from the first X inch(es) of the design storm."

Comment 52: The table in proposed Rule 0400-40-10-.04(2)(c) sets forth SCM treatment types. The signed settlement agreement included a comment that stated, "[t]he rationale will indicate that MS4s may offer these four options." Clarification should be provided indicating that MS4 permittees will be able to offer as many or as few of the 4 options listed in the table as it determines appropriate.

Response: To provide equivalency of various treatment processes, the WQTV is graduated. The stormwater programs have the flexibility to set requirements specific to their community within the bounds of this rule, so they can select options from this table. The table classifies all SCMs by the type of treatment process on which they rely, since the vast majority of SCMs can be classified in this way. Retention and storage SCMs rely on infiltration and/or evapotranspiration. Stormwater control measures that drain to an outlet provide filtration. Where internal water storage is provided, the filtration is enhanced biologically by nitrogen removal and additional settling. Other SCMs rely on particle settling, either in quiescent conditions, baffled flow-paths or hydrodynamic separators. The SCMs are therefore sufficiently classified by their predominant treatment process. Local stormwater programs can provide list of specific SCMs in each category. For Manufactured Treatment Devices, the WQTV is now specified as the maximum runoff generated from the entire design storm.

Comment 53: How are the design criteria for the non-infiltrative practices derived and what research was cited for determining these?

Response: The performance of various treatment types has been evaluated and published in scientific literature⁷ Stormwater manuals used in Tennessee present removal rates along with scientific literature references. For example, UT Permanent Stormwater Manual⁸ presents an excellent summary of literature findings of TSS removal efficiencies for various SCMs. Also please refer to the 2016 updated Summary of State Post-Construction Stormwater Standards issued by the EPA.⁹

Comment 54: The required treatment volumes indicated appears skewed in favor of "green infrastructure" and away from mechanical means. As an example, the requirement for manufactured treatment devices of the "maximum flow rate of the design storm" equates to 3.1 inches over a 24-hour period for Chattanooga, which is over three times that of infiltration, evaporation, transpiration, and/or reuse. Please provide data to support the equivalency of the varying WQTVs for corresponding SCM treatment types, and clarify how this corresponds to a quantifiable standard for pollutant reduction or provide a quantifiable definition for "maximum extent practicable."

Response: To provide equivalency of various treatment processes, Water Quality Treatment Volume is graduated and an overall treatment efficiency of 80% TSS removal from the WQTV is set as the minimum design. The stormwater programs have the flexibility to set requirements specific to their community within the bounds of this rule. Larger volumes correspond to less efficient treatment processes (e.g. infiltration vs. settling) but provide equivalent overall treatment efficiency. The table represents successively less efficient treatment methods, with increased volumes of runoff being treated to achieve roughly equivalent overall pollutant removal. Infiltration, evapotranspiration, transpiration, and/or reuse approach 100% pollutant removal efficiency because these methods effectively eliminate the discharge of pollutants from the runoff generated by the first inch of the design storm. The design standard of 80% TSS removal for the fourth category of SCMs is significantly less efficient at overall pollutant removal, so a significantly higher volume of water must be treated to achieve equivalency.

The principle of the first flush is incorporated in the WQTV being defined as the first portion of the design storm. A singular WQTV disregards the lower efficiencies of treatment processes such as settling, gravel filtration, or hydrodynamic separators and does not provide treatment equivalent to the infiltration and evapotranspiration process. With equivalent treatment options, designers will be able to select the optimum treatment for each site with respect to effectiveness, economics and expediency.

Please see Response to Comment 53 regarding supporting data.

Comment 55: Is there any scientific data to support that these SCM treatment types achieve an overall efficiency of at least 80% TSS removal from the WQTV? These are expensive treatment types to force upon the population without something more than "engineering judgment" from a select group of people.

Response: Please see Response to Comment 53.

⁷ Schueler, T.R., Controlling Urban Runoff: A Practical Manual for Planning and Designing Urban BMPs, Metropolitan Washington Council of Governments (MWWCOG), Publication #87703, July 1987

⁸ <https://tnpermanentstormwater.org/manual.asp>

⁹ https://www.epa.gov/sites/production/files/2016-08/documents/swstdsummary_7-13-16_508.pdf.

Comment 56: Permittees must have the flexibility to establish equivalent or more stringent standards and use standard compliance and design methods. This flexibility is not established in the draft rule. In the public question session held on July 15, 2019, when asked to define the standard in the rule, TDEC staff stated they did not intend to be prescriptive regarding how the 80% TSS Removal standard is met. Later however, TDEC staff indicated the table in (2)(c) was also the standard. Site designers can use SCMs in sequence to achieve the standard without managing the volume and surface area increases that would occur when designing via the TDEC method. This design flexibility is critical to site designers, yet it still ensures they can meet an 80% TSS removal standard.

Response: The permanent stormwater management program must require new development and redevelopment projects to be designed to reduce pollutants to the maximum extent practicable and the minimum for achieving this standard is established in Rule 0400-40-10-.04. Each row of table (2)(c) represents a different level of treatment efficiency, with increasing WQTV to offset decreasing efficiency. The absolute minimum standard, as clarified in the revisions of the table, is 80% TSS removal for flow-through manufactured treatment devices for the maximum runoff generated from the entire design storm.

The local jurisdiction may decide to require standards more stringent than the minimum of this rule. An ordinance with provisions more stringent than this rule must comply with T.C.A. § 69-3-108(t).

Comment 57: Can TDEC clarify the difference, or give examples of the SCM Treatment Type practices listed? There is confusion of what category many SCM practices such as a bioretention, infiltration trench, water quality swale, etc., would fit into. For example, our interpretation would be that bioretention area would easily fit into both the first and second tier as it is both an "infiltration, evaporation, transpiration, and/or reuse" along with a "biologically active filtration, with an underdrain" practice. A list of generally accepted SCMs would greatly aid MS4's in understanding what practices are being proposed in each Tier.

Response: The vast majority of SCMs can be classified by the treatment process on which they rely. Retention and storage SCMs rely on infiltration and/or evapotranspiration. Stormwater control measures which drain to an outlet provide filtration. Where internal water storage is provided, the filtration is enhanced biologically by nitrogen removal and additional settling. Other SCMs rely on particle settling, either in quiescent conditions, baffled flow-paths or hydrodynamic separators. The SCMs are therefore sufficiently classified by their predominant treatment process. Local stormwater programs can provide list of specific SCMs in each category.

Comment 58: In Rule 0400-40-10-.04 (2)(c), it seems there needs to be more clarity on the types of SCMs allowed within each SCM treatment type category. For example, "biologically active filtration with an underdrain" appears to refer to a bioretention SCM with an underdrain, whereas a bioretention practice with no underdrain may fall under the first category of SCMs. Should this section refer to some guidance document for clarity on the approved SCMs, such as those listed in the Tennessee Permanent Stormwater and Design Guidance Manual or approved equal?

Response: Local stormwater programs can provide list of specific SCMs in each category. Please see Responses to Comments 17 and 57.

Comment 59: The 4th category of SCMs in the table does not use any defined treatment volume, but rather a flow rate. This practice should be removed from the table defining "water quality treatment volumes" and presented separately.

Response: The wording throughout the table has been changed to: "runoff generated from the first X inch(es) of the design storm." For the 4th category of SCMs, the WQTV is now specified as the "maximum runoff generated from the entire design storm."

Comment 60: In Rule 0400-40-10-.04(2)(c), table row 2 - There is no standard definition of "biologically active filtration" nor standard specifications for what counts as "internal water storage," and this new terminology is not consistent with existing state and local technical guidance. Also, none of this is even relevant for TSS removal. If the rule is expanded to include within the definition of MEP treatment of other contaminants (i.e., Nitrogen), these specifications would need to be greatly expanded to ensure adequate treatment, as per designs in North Carolina and Minnesota.

Response: The requirement of the rule is to remove all pollutants to the maximum extent practicable. TSS may be used as an indicator pollutant, but that is optional for the permittee. Biologically Active Filtration must provide 12 inches of internal water storage as referenced in the North Carolina State University design guidance.¹⁰

Comment 61: In table (2)(c), it is not clear how SCMs such as pervious/permeable pavements and pavers, engineered wetlands, and green roofs fit within the table

Response: Permeable pavement is a filtration- and/or infiltration-based SCM depending on the specific design and site conditions and as such is included in two of the four alternatives. While green roofs and open space preservation do not typically receive runoff from an impervious surface, their inclusion in site design reduces the overall impervious surface and therefore reduces the total WQTV required to be treated.

Comment 62: Regarding row 3 of table (2)(c), previously-approved permits allowed use of wet ponds and extended detention basins for 80% TSS removal based on a 1" WQTV. This proposed Rule suddenly jumps that up to a WQTV of 2.5." Does the State have evidence to justify such a substantial size increase for a previously approved practice?

Response: The referenced 2010 permit allowed 80% TSS removal based on a 1-inch WQTV for wet ponds and extended detention basins as a second-tier standard and as such this required a technical justification to demonstrate site-specific limitations. The stormwater programs have the flexibility to set requirements specific to their community within the bounds of this rule and select any or all of the four equivalent alternatives. As such, there is no need for the tiered system of the 2010 permit where SCMs not using infiltration, evapotranspiration, and reuse had to provide technical justification of site limitations. With equivalent treatment options, designers will be able to select the optimum treatment for each site with respect to effectiveness, economics, and expediency. The revised rule requires 2.5 inches or 75% of the design storm for the WQTV calculation, but this can be utilized in any situation regardless of site-specific limitations.

Comment 63: Are there data showing equal TSS concentrations generated from all impervious surfaces, so that roofs are truly like parking lots as suggested by "impervious surfaces"? If not, on what basis are all impervious surfaces lumped for a TSS-based rule? If a designer provides evidence that 95% of all TSS is generated from parking lots, based on this Rule it should be acceptable to remove 84% of the parking lot runoff TSS (thereby providing $0.95 * 0.84 = 0.80 = 80\%$ total TSS removal) without treating any roof runoff. In that case, it is not justified to define the WQTV based on all impervious surface equally.

Response: The final rule has been revised to allow permittees to exclude uncontaminated roof runoff from the WQTV calculation.

Comment 64: Not all impervious surfaces contribute pollution and not all contribute the same amount (e.g., a roof for a residential home contributes less than bus parking). Please consider weighting the impervious areas based on the potential pollutant contribution.

Response: The final rule has been revised to allow permittees to exclude uncontaminated roof runoff from the WQTV calculation.

Comment 65: Please remove the table it is confusing and should not take the place of engineering calculations (e.g., STAR model) for the specific design to achieve a specific TSS goal. If it is not removed, how do we know that the TSS goals are achieved? Why does the table not mention TSS? What is biologically active filtration and why 12 inches of internal weir storage? Why do the depths vary? Depending upon the situation or the site, we often use multiple SCMs. How would this be measured using the table? The varying depths would diminish the effectiveness of the desired removal rates for smaller storm events.

Response: The performance of various treatment types has been evaluated and published in scientific literature.¹¹ Stormwater manuals used in Tennessee present removal rates along with scientific literature references. For example, the Tennessee Permanent Stormwater Manual by UT¹² presents an excellent summary of literature findings of TSS removal efficiencies for various SCMs. The table classifies all SCMs by the type of treatment process on which they rely. Retention and storage SCMs rely on infiltration and/or evapotranspiration. Stormwater control measures that drain to an outlet provide filtration. Where internal water storage is provided, the filtration is enhanced biologically by nitrogen removal and additional settling. Other SCMs rely on particle settling, either in quiescent conditions, baffled flow-paths or hydrodynamic separators. To provide equivalency of various treatment processes, Water Quality Treatment Volume is graduated and an overall treatment efficiency of

¹⁰<http://chesapeakestormwater.net/wp-content/uploads/downloads/2014/03/Internal-Water-Storage-for-Bioretenion-2009.pdf>

¹¹ Schueler, T.R., Controlling Urban Runoff: A Practical Manual for Planning and Designing Urban BMPs, Metropolitan Washington Council of Governments (MWWOG), Publication #87703, July 1987

¹² <https://tnpermanentstormwater.org/manual.asp>

80% TSS removal from the WQTV is set as the minimum design. Larger volumes correspond to less efficient treatment processes (e.g. infiltration vs. settling) but provide equivalent overall treatment efficiency. Row 4 was modified where the rule requires the permittees to use an industry-wide standard for performance evaluation of Manufactured Treatment Devices. The current industry-wide standards include NJDEP certification and Washington DOE TAPE approval (GULD, basic). New industry-wide standards may be developed and accepted as well (e.g. ASTM). Manufactured treatment filter devices are typically a part of a treatment train. Treatment trains were added to the rule.

Comment 66: Per Chapter 0400-40-10.04(2)(c) and the table therein, where wet (retention) ponds are provided as a SCM treatment type, the mandatory forebay language is too restrictive in our professional opinion. Forebays have a practical use when dry detention ponds or extended dry detention ponds are provided, but where wet (retention) ponds are provided and water elevations often backs into the forebay, our experience would indicate these have little effect on pollutant removal. Therefore, we would request the language be amended to state the use of forebays be required for dry extended detention, but only as an option for wet retention ponds.

Response: The forebay requirement has been retained in the final rule. Please reference the Tennessee Permanent Stormwater Manual by UT¹³ or the summary in the Illinois Urban Manual Practice Standard Sediment Forebay (no.) Code 914¹⁴ on the use and sizing of forebays in all types of detention basins and constructed wetlands.

Comment 67: Terminology in the Rule 0400-40-10-.04(2)(c) table needs clarification. 1. Define "biologically active filtration" and provide examples of acceptable SCMs and clarify what is mean by "12 inches of internal water storage" (within gravel voids, free-standing water, etc.). Additional clarification is needed regarding "biologically active" as well. Biologically active implies flora and/or fauna are a part of the treatment mechanism. Is it one or both? 2. Define "sand or gravel filtration" and provide examples of acceptable SCMs.

Response: Please see Response to Comment 17 and the North Carolina State University design guidance.¹⁵ Sand or gravel filtration is a treatment system where sand or gravel is used as a media to filter stormwater runoff prior to discharge, usually through an underdrain, whereby pollutants including TSS, BOD, bacteria, hydrocarbons and metals, are removed through settling, filtering and adsorption processes. Example SCMs include sand filters and gravel filters. These filters can be located underground in areas with limited surface space.

Comment 68: The SCM Treatment Type table found in 2(c) states, "SCMs must (emphasis added) be designed, at a minimum, to achieve an overall treatment efficiency of 80% TSS removal from the WQTV." However, TDEC has publicly insisted MEP requires greater removal through use of the treatment table. We respectfully ask TDEC to clarify their position on whether 80% TSS removal meets MEP.

Response: No, 80% TSS removal by itself does not constitute MEP. Instead, the SCM treatment table governs MEP for SCMs. Please see Response to Comment 54.

Comment 69: We support the use of GI practices where possible. In instances when site conditions make GI implementation infeasible, other solutions, such as proprietary filters and biofilters, should be allowed for compliance purposes without being penalized by being sized larger than necessary to treat an equivalent level of runoff. The same treatment standards should apply to all SCMs.

Response: Please see Response to Comment 54.

Comment 70: Specific to bioretention practices, which remain the most commonly deployed and studied GI practice available, the International BMP Database shows that these systems commonly export nutrients, specifically phosphorus. Statistical analysis published in 2017 shows bioretention to be a net exporter of total phosphorus.

Response: Bioretention may be designed with or without underdrain and in some instances with a liner. The International BMP Database includes a variety of bioretention studies for various site settings, climate conditions and rain events. A variety of designs exist for bioretention. Some are designed to retain and infiltrate the treatment volume and bypass all flows that exceed it; some are designed to filter stormwater runoff through media, infiltrate a portion of the filtrate, and discharge the rest through an underdrain; and some are designed with a liner to filter and discharge the entire volume of the filtered runoff through the underdrain. With all these design options, the results of the bioretention studies will show a variety of outcomes as it relates to phosphorus. For bioretention that retains and infiltrates the entire treatment volume, the TP removal approaches 100%, however, any runoff bypassing the bioretention does not receive treatment. Bioretention with an underdrain provides

¹³ [Id.](#)

¹⁴ <http://www.aiswcd.org/wp-content/uploads/2013/04/SEDIMENT-FOREBAY-IUM-914.pdf>

¹⁵ <http://chesapeakestormwater.net/wp-content/uploads/downloads/2014/03/Internal-Water-Storage-for-Bioretention-2009.pdf>

filtration and the engineered media have different removal efficiencies depending on whether the media were amended to remove dissolved phosphorus. Media that have high organic matter content will not effectively retain phosphorus and can leach phosphorus to the filtrate. Media that have low organic matter content will attenuate phosphorus. The WQTV is graduated to increase for bioretention with and underdrain and requires 12 inches of internal water storage to better remove nitrogen and to further enhance particulate phosphorus removal through settling.

Comment 71: The list of SCM treatment types is not all inclusive and it is unclear how other existing or innovative SCMs would be incorporated over time. These include SCMs such as green roofs, permeable pavements, open space preservation, filter technologies, perforated detention systems, and underground plastic chamber systems.

Response: Emerging SCMs can be sufficiently classified by the predominant treatment process upon which they rely. For example, SCM technology in the form of a modular bioretention using retention and storage with or without an underdrain is similar to built-on-site bioretention. Another new SCM technology uses advanced media filtration. Manufactured treatment filter devices are typically a part of a treatment train, which has been added to the rule.

Comment 72: Specific to flow-through manufactured treatment devices referenced in the SCM Treatment Type table found in 2(c):

a. Critical sizing and implementation guidance is lacking and should be considered to ensure program and permit consistency.

b. TDEC makes reference to hydrodynamic separators (HDS) in the clarifications section of the table. TDEC should be aware that HDS devices are only one subset of MTDs. Filtration and Biofiltration MTDs are in use throughout Tennessee and should be included in the clarifications column within the table.

c. To ensure consistent evaluation and implementation of MTDs across the state, TDEC should specify a specific protocol, such as the New Jersey Department of Environmental Protection (NJDEP) Certification for laboratory testing or Washington State's Technology Assessment Protocol- Ecology (TAPE) for field testing, be followed as referencing these protocols will bring credibility to the program and provide performance certainty to the regulated communities. These prescriptive protocols are rigorous in nature and allow MTDs to be evaluated on a level playing field. NJDEP's laboratory certification is the regulatory standard in NJ. NJDEP only provides certification letters for verification reports that are in full compliance with the protocol and process, whereas NJCAT will issue verification reports for MTDs that have been tested against other standards that do not meet NJDEP's requirements. Any references to the New Jersey Corporation for Advanced Technologies (NJCAT) verification should be replaced in this rule with either NJDEP Certification or TAPE General Use Level Designation (GULD) for Basic (TSS) treatment.

Response: The final rule was changed to "maximum runoff generated from the entire design storm" and 1-year 24-hour water quality design storm. The authoritative reference for the design storm is NOAA Atlas 14 providing rainfall depth and intensities. The designer must use good engineering practices and standard of care for hydrologic calculation. Several customary methods are currently used in the engineering profession so a method appropriate to the scope and size of the project can be selected. The rule requires the permittees to use an industry-wide standard for performance evaluation of Manufactured Treatment Devices. The current industry-wide standards include NJDEP certification and Washington DOE TAPE approval (GULD, basic). New industry-wide standard may be developed and accepted as well (e.g. ASTM). Not all proprietary devices fall within the flow-through manufactured device category. Based on the type or treatment process, proprietary devices are modular or prefabricated SCMs. The vast majority of SCMs can be classified by the treatment process they rely on. Retention and storage SCMs rely on infiltration and/or evapotranspiration. SCMs that drain to an outlet provide filtration. Where internal water storage is provided, the filtration is enhanced biologically by nitrogen removal and additional settling. Other SCMs rely on particle settling, either in quiescent conditions, baffled flow-paths or hydrodynamic separators. The SCMs are therefore classified by the predominant treatment process they rely on.

Comment 73: (2)(c) - How will "maximum flowrate of the design storm" be calculated for manufactured treatment devices (MTDs)?

Response: Hydrodynamic separators and other Manufactured Treatment Devices are designed for flowrate that is a function of rainfall intensity. NOAA Atlas 14 provides intensity values for the 1-year, 24-hour storm.

Comment 74: How are MTDs to be sized? Typically, only one size of a particular model of MTD is tested by NJCAT, but several sizes are available.

Response: For Manufactured Treatment Devices, the WQTV is the maximum runoff generated by the design storm. The designer must use good engineering practices and standard of care to for hydrologic calculation. The rule requires the permittees to use an industry-wide standard for performance evaluation of Manufactured Treatment Devices. The current industry-wide standards include NJDEP certification and Washington DOE TAPE approval (GULD, basic). New industry-wide standards may be developed and accepted as well (e.g. ASTM).

Comment 75: The SCM Treatment Types in the table do not include other currently accepted practices like green roof, permeable pavement, open space preservation, and buffer enhancements, etc.

Response: Permeable pavement is a filtration- and/or infiltration-based SCM depending on the specific design and site conditions and as such is included in two of the four alternatives. While green roofs and open space preservation do not typically receive runoff from an impervious surface, their inclusion in site design reduces the overall impervious surface and as such reduces the total WQTV required to be treated.

Comment 76: The ability to incorporate emerging SCM technology is not incorporated in the table.

Response: The emerging SCM can be sufficiently classified by the predominant treatment process on which they rely. For example, SCM technology in the form of a modular bioretention using retention and storage with or without an underdrain is similar to a built-on-site bioretention. Another new SCM technology uses advanced media filtration. Manufactured treatment filter devices are typically a part of a treatment train. The table classifies all SCMs by the type of treatment process on which they rely since the vast majority of SCMs can be classified in this way. Retention and storage SCMs rely on infiltration and/or evapotranspiration. SCMs that drain to an outlet provide filtration. Where internal water storage is provided, the filtration is enhanced biologically by nitrogen removal and additional settling. Other SCMs rely on particle settling, either in quiescent conditions, baffled flow-paths, or hydrodynamic separators. The SCMs are therefore sufficiently classified by the predominant treatment process on which they rely. Local stormwater programs can provide lists of specific SCMs in each category. The WQTV is determined by the type of SCM treatment and the impervious area draining to the SCM where the depth from the Table and impervious area are multiplied to yield volume.

Comment 77: Consider allowing mitigation project elements in addition to the SCM Treatment Types in 0400-40-10-.04(2)(c) like stream or wetland restoration and enhancement, buffer enhancement, etc.

Response: The permittee has the option to develop a mitigation program and/or other incentives as set out in Rule 0400-40-10-.04(2)(e). TDEC will evaluate such proposals based on a reduction in pollutant loading.

Comment 78: USEPA (Region 3) lost a challenge to the regulation of surrogate parameters (VDOT vs. USEPA, 2013), so TSS should not be explicitly identified as a surrogate for other pollutants in a permanent stormwater management standard.

Response: This comment incorrectly seeks to extend a narrow holding in a case challenging a total maximum daily load document to the stormwater regulation context and misstates the holding. That case construed regulatory language specific to TMDLs, and there is no reason to believe the holding would be extended to the regulation of pollutants in post-construction stormwater. In addition, the court held that flow could not be used as a surrogate for sediment because the statutory language for TMDLs specifically requires limits on pollutant loading, noting that sediment is a pollutant. TSS is a recognized way of regulating sediment discharges so, if anything, the use of TSS as an indicator pollutant is supported by this case.

Comment 79: Instead of a generic standard, please consider basing the TSS reduction on the difference in pollutant impact between the redeveloped conditions as compared to the existing conditions.

Response: The final version of Rule Chapter 0400-40-05 will include a definition of redevelopment that will also apply to this chapter. In addition, the incentive section of the rule is substantively similar to the 2016 NPDES Permit. Overall, the regulated community has not expressed much confusion with this requirement. Furthermore, Rule 0400-40-10-.04(2)(f)3. allows municipalities to identify jurisdiction-specific incentives.

Comment 80: Why does the filter identified in row 2 of Table (2)(c) need to be “biologically active,” when TSS removal is the sole performance criteria? In addition, the 12” of internal water storage in these practices is meant for N rather than TSS removal, so is also irrelevant. If N removal is a requirement for this row of practices, how do we justify leaving that out of the other rows? If TSS removal is truly the sole performance criterion, then those two specifications for N removal found in this row should be deleted. This should solely require filter material providing 80% TSS removal from the influent.

Response: TSS removal is not the sole performance criterion. The federal requirement, as reflected in this rulemaking, is to maximize removal of all pollutants to the extent practicable. Larger volumes correspond to less efficient treatment processes (e.g. infiltration vs. settling) but provide equivalent overall treatment efficiency. To account for the more effective overall pollutant reduction, biologically active filtration is identified with a smaller WQTV than physical filtration using sand or gravel.

Comment 81: Vertical density by itself is not directly related to TSS removal; however, if rooftops are downgraded (as most should be) because of lower pollutant contributions, then a vertical credit would have already been achieved by both this reduction and the reduction in overall impervious area that is inherent with vertical construction as opposed to single story building of the same square footage.

Response: Again, TSS reduction is not the performance criterion for this rulemaking: maximizing pollutant reduction is. The incentive for vertical density is based on the water quality benefits of retaining greenspace, not TSS removal. In addition, a provision was included in the revised rule whereby permittees may allow uncontaminated roof runoff to be excluded from the WQTV calculation. The table provides the WQTV for engineering calculations to meet the standard of reducing pollutants to the MEP where TSS may be used as an indicator.

Comment 82: Proposed Rule 0400-40-10-.04(2)(b) provides that TSS "may be used as the indicator for the removal of pollutants." However, Rule 0400-40-10-.04(2)(c) then provides that SCMs "must be designed, at a minimum, to achieve an overall treatment efficiency of 80%." These provisions are inconsistent as to whether TSS is an optional indicator or mandatory. The "must be designed" language in subsection (c) raises additional concerns. The rule should be clarified that if the developer implements a SCM treatment type set forth in the table, that it is deemed to have met the performance standard. Furthermore, it should be clarified that the MS4 is not required to independently undertake monitoring to confirm an 80% treatment efficiency.

Response: The use of TSS as an indicator pollutant is optional. Compliance with this rule constitutes MEP, so if a developer chooses any one of the SCMs in table (2)(c), or a combination of these in a treatment train as set out in Rule 0400-40-10-.04(2)(d), that complies with the SCM requirements of this rule. However, MTDs do require design verification to ensure that these meet the minimum overall 80% TSS removal standard. Permittees are not separately required to monitor discharges to confirm TSS removal because compliance is based on design standards.

Comment 83: The specified design storm (1-year, 24-hour) for some locations in Tennessee is less than 2.5". In those locations, the WQTV requirement for the SCM treatment types which define the WQTV as the first 2.5 inches of the design storm will exceed the design storm.

Response: The commenter is correct. Accordingly, the final rule has been revised to require the lesser of 2.5 inches or the first 75% of the design storm for the WQTV calculation.

Comment 84: Can a developer apply different SCM Treatment types for different parts of project (and thus different WQTV)? The draft rule implies only one per site vs multiple SCMs on one site. Add new sentence as 2nd sentence in verbiage: "All new dev projects must install one or more SCM types to treat all runoff generated from impervious surfaces."

Response: Yes, a variety of SCMs can be used on one site. The final rule has been revised to include treatment trains to allow sequencing SCMs in series.

Comment 85: The use of a table with prescribed, increasing treatment volumes creates confusion when a designer is attempting to use the flexible advantages of green infrastructure in stormwater management. This is true in two ways:

1. By definition, the table in part (2)(c) (with the exception of row 4 for manufactured treatment devices) eliminates a large number of SCMs that, while not able to manage water quality from an entire project design alone, contribute significant ability to reduce pollutants when used in combination with other SCMs in a "treatment train" approach. There are significant advantages of a "treatment train" approach for capture and treatment of pollutants which incorporates very effective SCMs, just not those indicated in the table.

2. The table does not seem to support a combined SCM approach which includes green infrastructure. This is a backward step in natural green treatment of stormwater runoff.

Response: The Board agrees with the commenter that treatment trains, including those that include a combined SCM approach, are appropriate measures. Moreover, this allows for greater flexibility in the broad range of site development scenarios. It was not the intent of the draft rule to eliminate the use of treatment trains. Accordingly, treatment trains were added as Rule 0400-40-10-.04(2)(d). While green roofs and open space preservation do not typically receive runoff from an impervious surface, their inclusion in site design reduces the overall impervious surface and as such reduces the total WQTV required to be treated. Any green space receiving runoff intended for infiltration may be part of a treatment train for the part of the WQTV it infiltrates.

Comment 86: 3rd sentence. The word "capacity" is incorrectly used in the sentence. Replace with "the WQTV." Exchange "capacity" with "of the WQTV" as indicated in the suggested revision provided for comment 2 above.

Response: Full treatment capacity within 72 hours refers to the maximum drain time of the SCM.

Comment 87: The requirement for forebays to be 10% of the total design volume may increase forebay size in Knox County.

Response: The commenter may be correct. Please reference the UT Permanent Stormwater Manual and the excellent summary in the Illinois Urban Manual Practice Standard Sediment Forebay (no.) Code 914¹⁶ on the use and sizing of forebays in all types of detention basins and constructed wetlands.

Comment 88: Based on an infiltration modeling analysis of the table rows (using STAR, which is an improved version of the RRAT design tool previously approved by TDEC and external reviewers), designers should clearly use the 2nd row. Assuming a sand-compost mixture for the filter material, the sole limiting factor is how fast water can be shoved through the material before reaching the underdrain. Where under the previous Permit requiring some on-site retention the highest impervious-treatment ratio was around 16:1 (matching very well with published results), with filter practices adequately removing TSS but requiring no infiltration this can easily be pushed up to 50:1. If it is assumed that the rainfall is evenly distributed evenly over 24 hours, this can rise even higher. Such a filter (much less a hydrodynamic separator) is clearly not near as representative of the natural hydrologic state as achieving infiltration, but since the Rule includes no infiltration requirement that is irrelevant.

Response: Concurring with the commenter, infiltration is not specifically required by this rule: it is instead one option among several.

Comment 89: MS4s with existing validated and previously-approved methods for defining and determining adequate treatment should be allowed to continue with their current approaches, as those meet the 80% TSS removal criteria, often using a combination of infiltration and other treatment approaches. In other words, the “grandfather clause” present in the current 2016 Permit should be retained in this Rule in some way, as the science on which those previous methods were based went through a rigorous development and approval process. On what basis are those previously-approved methods now presumed to be inadequate? On what basis was that clause removed?

Response: Pursuant to T.C.A. § 69-3-108(s), all effluent limitations for post-construction stormwater must be established by rule, not just the limitations in general permits. The rulemaking notice proposed the same rules for individual MS4 permits and general MS4 permits to promote consistency throughout the state and because these requirements reflect the standard to reduce pollutants to the maximum extent practicable. For example, it would make little sense for a city to have post-construction stormwater requirements that substantially differ from those applicable to its surrounding Phase II communities.

These post-construction stormwater standards represent reasonable and flexible requirements that are expected to protect our water resources in a cost-effective manner. The combination of SCMs, buffers, and other measures are shown to be practicable through their implementation in various communities in Tennessee, and achieve significantly more than 80% TSS reduction. Although these effluent limitations are designed to provide flexible options, individual permittees may choose to adopt more stringent requirements in accordance with the procedures of T.C.A. § 69-3-108(t). However, as reflected in the final rulemaking, the Board is making changes to the effluent limitations for individual permittees based on comments received during the rulemaking process.

Comment 90: Previously-approved Permits allowed use of wet ponds and extended detention basins for 80% TSS removal based on a 1” WQTV. This proposed Rule suddenly jumps that up to a WQTV of 2.5”. Does the State have evidence to justify such a substantial size increase for a previously-approved practice?

Response: To provide equivalency of various treatment processes, the Water Quality Treatment Volume is graduated and an overall treatment efficiency of 80% TSS removal from the WQTV is set as the minimum design. The stormwater programs have the flexibility to set requirements specific to their community within the bounds of this rule and select any or all of the four equivalent alternatives. As such, there is no need for the tiered system of the 2010 permit where SCMs not using infiltration, evapotranspiration, and reuse had to provide technical justification of site limitations.

Comment 91: Add clarification of what storm for extended detention.

Response: The rule establishes a water quality design storm (1-year, 24-hour). Design storms for detention and water quantity, however, are given by local design standards.

Comment 92: In the last row of table (2)(c), please clarify what is meant by the maximum flow rate of design storm? Flow at point where put device or max flow rate of the device you picked?

Response: For Manufactured Treatment Devices, the WQTV is now specified as the maximum runoff generated by the design storm.

Comment 93: Modify language in table to "e.g. manufactured treatment devices with 3rd party testing and verification."

¹⁶ <http://www.aiswcd.org/wp-content/uploads/2013/04/SEDIMENT-FOREBAY-IUM-914.pdf>
SS-7039 (October 2021)

Response: The final rule adds Rule 0400-40-10-.04(2)(d), which requires the permittees to use an industry-wide standard for performance evaluation of Manufactured Treatment Devices. The current industry-wide standards include NJDEP certification and Washington DOE TAPE approval (GULD, basic). New industry-wide standards may be developed and accepted as well (e.g., ASTM).

Comment 94: Duplicate comment omitted.

Comment 95: Consider removing the table and modifying as follows: “The water quality treatment volume (WQTV) is a portion of the runoff generated from impervious surfaces at a new development project by, at a minimum, the first one-inch of the design storm. SCMs must be designed, at a minimum, to achieve an overall treatment efficiency of 80% TSS removal from the WQTV.”

Response: The proposed language would not comply with the minimum requirements of federal law because it does not ensure that pollutant removal is maximized to the extent practicable or protect water quality. Therefore, the requested change has not been made.

Comment 96: Modify row 4, clarifications to state “e.g. manufactured treatment devices with 3rd party field or lab testing certification,” or delete this column in its entirety. NJCAT verification is not the appropriate program. If a program must be suggested in this row, NJDEP certification, or equivalent certification program, is the appropriate reference.

Response: The reference was deleted in row 4. Rule 0400-40-10-.04(2)(d) was added to the final rule and requires the permittees to use an industry-wide standard for performance evaluation of Manufactured Treatment Devices. The current industry-wide standards include NJDEP certification and Washington DOE TAPE approval (GULD, basic). New industry-wide standards may be developed and accepted as well (e.g. ASTM).

Comment 97: Regarding the second item on SCM chart biologically active filtration could be designed without the internal water storage. The requirement for 12” of internal storage decreases the flexibility of designers.

Response: Where internal water storage is provided, the filtration is enhanced biologically by nitrogen removal and additional settling. Biologically Active Filtration must provide 12 inches of 48-hour internal water storage as referenced in the North Carolina State University design guidance.¹⁷ This is required to achieve equivalency with the other rows in the table.

Comment 98: In the last line of table (2)(c), you could also include the acceptable particle distribution (micron sizes).

Response: The rule requires the permittees to use an industry-wide standard for performance evaluation of Manufactured Treatment Devices. The current industry-wide standards include NJDEP certification and Washington DOE TAPE approval (GULD, basic). New industry-wide standards may be developed and accepted as well (e.g. ASTM).

Comment 99: How will WQTV be calculated?

Response: The WQTV is determined by the type of SCM treatment and the impervious area draining to the SCM where the depth from the table and impervious area are multiplied to yield volume.

Comment 100: For the WQTV column in table (2)(c), could the table clarify what is meant by “first 1 inch of the design storm?” Is it the first inch of precipitation that is to be captured? Or, is it the runoff volume generated from the first inch of the storm? Those are two different values.

Response: The wording in the final rule has been changed to: “runoff generated from the first X inch(es) of the design storm.”

Comment 101: Duplicate comment omitted.

Comment 102: The draft rule is clear that 80% TSS removal efficiency is the goal of design. However, within the table, volume is the goal apart from a pollutant. When questioned during the July 15, 2019 public comment/questioning session, replies from Department staff as to what, exactly, is the standard were inconsistent (i.e., the standard is MEP, the standard is 80% TSS removal, the standard is the WQTV). Is it 80% TSS? Is it volume removal? Is it an array of targeted pollutants state-wide? Is it site or watershed specific pollutants? There has always been some question in making the standard a treatment volume, as is done by the part (2)(c) table, without directly associating it with an actual pollutant. In most places, the treatment volumes (termed the WQTV in the draft rule language) specified are tied to a pollutant removal standard and the water volume is used to

¹⁷<http://chesapeakestormwater.net/wp-content/uploads/downloads/2014/03/Internal-Water-Storage-for-Bioretenion-2009.pdf>

measure the pollutant removed. This is a fine but important point. The table in part (2)(c) does not have a clear connection with pollution even though the 80% TSS requirement occurs above the table. It is recommended the table be changed or eliminated, and that the actual underlying science behind the table in the removal of an actual pollutant be referenced instead. Part (2) of the draft rule could be changed to state: "SCMs must be designed, at a minimum, to achieve an equivalent overall treatment efficiency of 80% TSS removal from the first 1.25 inches of the design storm," with reference to increasing WQTVs per the table. However, the gradual increasing of WQTV still incurs a larger issue, described in comment #3.

Response: As previously stated, 80% TSS removal is not the design standard and does not constitute MEP by itself. Rather, applying the SCM types in accordance with the table ensures compliance with the MEP standard. Moreover, the rule does not require flow reduction. The Board most certainly appreciates the complexities, history and science of post-construction stormwater management, treatment and design. With much consideration to the existing approach to stormwater treatment in Tennessee, the rules reflect an acceptable degree of complexity yet provide design specificity and management flexibility to achieve equitable implementation and protection of state's waters. While used in the past with many complications and without sufficient design standard specificity, a singular WQTV disregards the lower efficiencies of treatment processes such as settling, gravel filtration, or hydrodynamic separators and does not provide treatment equivalent to the infiltration and evapotranspiration process.

Comment 103: If the table in (2)(c) is eliminated, the rule should allow the use of design or pollutant standard incentives to promote the use of green infrastructure and LID practices. 2. If the table in (2)(c) is retained, the draft rule should explicitly recognize and allow non-structural green space SCMs, such as trees and green space, impervious area disconnection, reforestation, soil restoration, and buffer enhancements. These features, when properly situated, can infiltrate and evapotranspire stormwater from impervious areas and provide pollutant removal. Revise (2)(e) as follows. "The permanent stormwater management program may include incentives for the use of low impact planning techniques and/or SCMs that infiltrate, evapotranspire, or reuse stormwater." Then add green infrastructure SCMs (bioretention, infiltration trench, etc.) and LID approaches to the list of accepted conditions and offer acceptable incentive options such as a lower rainfall than the standard for the WQTV (e.g., 1-inch as opposed to 1.2 inches). Add the following sentence to (2)(c): "Permittee programs may recognize nonstructural vegetated SCMs and vegetated areas which receive stormwater discharges from impervious areas as infiltration and/or evapotranspiration SCMs when such SCMs and areas are designed or otherwise can be shown to sufficiently infiltration and/or evapotranspire the stormwater discharged to them."

Response: The rule allows permittees to develop custom incentives. While green roofs and open space preservation do not typically receive runoff from an impervious surface, their inclusion in site design reduces the overall impervious surface and as such reduces the total WQTV required to be treated. Any green space receiving runoff intended for infiltration may be part of a treatment train for part or WQTV it infiltrates.

Comment 104: Proposed Rule 0400-40-10-.04(2)(b) and (7)(b) impose stormwater control measures (SCMs) for the life of the project. It is not appropriate to impose a requirement in perpetuity. This concern is further exacerbated by the definition of "Stormwater control measure" proposed in Rule 0400-40-05-.02(85) which refers to "permanent practices and measures." The standard is impossible to meet. Instead, the regulation should provide for the imposition of SCMs in the five-year MS4 permit and reimposition of such requirement in a new permit, as deemed appropriate at such time. Inasmuch as this requirement is more stringent than federal regulations, the proposed rule conflicts with T.C.A. § 69-3-108(s), as discussed above. This provision should be modified to recognize that the appropriateness of continuing the requirement will be determined on a permit-by-permit basis.

Response: The term "permanent" refers to stormwater control measures that provide long-term treatment for the life of the project. As required by federal law, MS4 permits must impose conditions for maintenance of these measures. The use of the term "permanent" here does not mean that the effluent limitations established by rule will never change. However, per Tennessee Code Annotated section 69-3-108(s), effluent limitations must for post-construction stormwater must be established by rule, so these are unlikely to change with each five-year permit cycle.

Comment 105: Site limitations such as highwater table, karst topography, and other unique site restrictions should be taken into consideration when allowing a reduction in WQTV. This was allowable in the previously issued MS4 permit but not explicitly stated in this Rule. Clarify if the Rule allows for a permittee to develop a list of exemptions or site limitations in which a reduced WQTV may be allowable.

Response: The rule does not allow for exemptions or site limitations because it provides for alternatives to allow the designer to address site-specific conditions. As such, there is no need for the tiered system of the 2010 permit where SCM not using infiltration, evapotranspiration, and reuse had to provide technical justification of site limitations. With equivalent treatment options, designers will be able to select the optimum treatment for each site with respect to effectiveness, economics, and expediency.

Comment 106: The mitigation credit provided in Rule 0400-40-10-.04(2)(e) is ambiguous and generic. Why not use engineering calculations for the specific design to achieve a specific result?

Response: This provision is intended to provide flexibility to local MS4 communities to adopt mitigation credits to compensate for any post-construction stormwater that is not fully managed on-site. Such credits must ensure equivalent control measures to reduce the discharge of pollutants in stormwater.

Comment 107: The rule should allow incentives to be defined by the permittee outside of the WQTV reductions already identified in Rule 0400-40-10-.04(2)(f). Please modify this rule to read, "The permanent stormwater management program may provide incentives for new development and redevelopment projects which are designed and constructed using low impact development (LID) practices. The LID practices incentivized must be measurable (e.g., reduction in impervious surface areas over existing impervious areas (redevelopments only); surface area established vertically vs what could be established at ground level, etc.) and the incentives provided must correlate to the pollutant reduction being provided (e.g. reduction in impervious surface area correlates directly to reduced WQTV or improved pollutant discharges)."

Response: The rule allows permittees to develop custom incentives, subject to TDEC approval.

Comment 108: TDEC should clearly address the on-going acceptance of STAR-derived design as compliant with Permanent Stormwater Standards in the rule. TDEC should continue to support of development of the STAR tool, as it has demonstrated utility in meeting the needs of land development permit applicants, MS4s, and property owners who will be responsible for maintenance of SCMs.

Response: TDEC approved and used the previous version of the STAR tool. TDEC will continue to be involved with the revisions of the STAR tool and review its new capabilities.

Comment 109: Prior to the current draft, TDEC, in partnership with UTK, invested significant resources in developing a design tool to meet the core EPA permanent water quality standards which this permit is intended to address. In the period contemporary with the appeal process and subsequent to development of the subject Rule, subject experts at UT have successfully refined this tool (currently called STAR) to provide a clear path for site design that (1) effectively addresses pollutants of concern, (2) incentivizes resourcefulness in site design, (3) is demonstrably cost-effective, and (4) minimizes the complexity of SCM design and review.

Response: See Response to Comment 111.

Comment 110: The first row in the "Water Quality Treatment Volume" Table is for infiltration; therefore, a tool like the STAR would be useful. Some MS4s have already found the STAR tool to be an effective solution to infiltration design scenarios.

Response: See Response to Comment 111.

Comment 111: Per Rule 0400-40-10-.04(2)(f), programs have the ability to reduce WQTVs via credits for certain criteria as indicated. Please give consideration for sites with high water tables and/or impermeable soils - which present hardships for development/redevelopment. Additionally, a condition for high-density development be included consisting of a density of 8 units per acre.

Response: The rule describes incentives municipalities may provide to encourage development in areas of preference (e.g., brownfields). The rule also incentivizes reduction of impervious surface and the use of infiltration, evapotranspiration, and reuse of stormwater. Providing incentives for sites with impermeable soils and/or high water table in the form of a reduced WQTV would negate the intent of the rule, which is to reduce the discharge of pollutants to the maximum extent practicable. In addition, the Board does not agree that eight units per acre constitutes high density development that should be eligible for incentives. That provision is intended to promote truly high-density development, with offsetting water quality benefits from reduced sprawl.

Rule 0400-40-10-.04(3) Stormwater Mitigation and Public Stormwater Fund

Comment 112: Are there any existing permittees using stormwater mitigation and public stormwater funds? Is this an option or mandated for permittees? All permittees should not be required to accept Offsite Stormwater Mitigation or offer a Stormwater Fund.

Response: There are municipalities in Tennessee with a mitigation program, and there may be others interested in developing such programs. This rule allows for this additional flexibility to meet the post-construction standard. The rule has been revised to reflect that the development of a mitigation program or payment in lieu into a public stormwater fund are both at the discretion of the permittee. In the rule, the word "may" applies to both the mitigation program and the stormwater fund indicating both options are optional. The language of the rule has been revised to clarify this intent.

Comment 113: Mitigation should be required on site with a pollutant loading equal to or greater than the design site. Example: It wouldn't work for a trucking company that expands its parking lot (high amounts of hydrocarbons) to perform offsite mitigation at a public park. The water quality benefit is lessened even if the volume mitigated is 1.5x the unmet volume.

Response: It is not necessarily practicable for mitigation to be provided on-site. In fact, if it were practicable, then mitigation would not be necessary. The rule requires that mitigation be provided in the same watershed, which is sufficient.

Comment 114: Proposed Rule 0400-40-10-.04(3) addresses stormwater mitigation and public stormwater fund. a. Subsection (a) indicates that a "permittee may choose to develop an offsite mitigation program in lieu into a stormwater fund..." The rule should be clarified that the mitigation applies "in lieu of meeting the standard on-site." As written, it fails to identify what the words "in lieu" are referencing. B. Subsection (b) provides that if "the permittee allows payment into a public stormwater fund, the permittee assumes responsibility to provide the required mitigation projects." In no case should the developer's liability, associated with meeting its standards, be transferred to the MS4. Moreover, it is unclear what the term "public stormwater fund" means. The MS4 permittee should not be liable if it were to allow a developer to undertake off-site mitigation by one of these other entities.

Response: The commenter is correct that offsite mitigation would be provided in lieu of meeting standards on-site. If the MS4 community does allow payment into a fund, then it must provide the offsetting mitigation.

Comment 115: Regarding proposed Rule 0400-40-10-.04(3), we request that the MS4 be allowed to authorize off-site mitigation within the hydrologic unit code watershed regardless if the WQTV can be treated on-site.

Response: The Board declines to make this change. If it is practicable to treat the WQTV on-site, then it is required under the federal MEP standard. The rule allows for off-site mitigation where WQTV treatment is not practicable on site. The permittee has the option to develop a mitigation program or other incentives. TDEC will evaluate such proposals based on a reduction of pollutant loading. However, any offsite mitigation must be in the same 12-digit hydrologic unit code.

Comment 116: MS4s need more guidance regarding acceptable mitigation projects.

Response: The rule outlines the requirements of the mitigation program. It is recommended that the commenter reach out to other cities and organizations such as TNSA for guidance regarding mitigation projects.

Comment 117: We ask TDEC to provide additional guidance for valuation of mitigation projects. At a minimum, we ask these questions be addressed:

1. Are mitigation projects to be traditional projects such as streambank restoration or wetland creation?
2. Will site hydrology SCMs be considered acceptable means of mitigation?
3. Will TDEC support a standardization currency for water quality mitigation such that projects can efficiently be engaged across MS4 jurisdictional boundaries?
4. If a watershed management plan indicates a prioritization of particular potential mitigation areas within an MS4 for impact to water quality, should the 1.5 multiplier be required?

The mitigation approach is a smart watershed management tool from which all parties involved in the land development process will benefit.

Response: The permittee has the option to develop a mitigation program or other incentives. TDEC will evaluate such proposals based on a reduction of pollutant loading.

Comment 118: The mitigation approach is a smart watershed management tool which can effectively benefit all parties involved in the land development process. We recommend that TDEC endorse a replicable method of evaluating watershed condition such as the Urban Water Report Card. This will help create a standardized platform and working language from which permittees and policymakers can work together to determine the most effective placement of SCMs within a watershed.

Response: The Board encourages the collaborative approach of the development of the urban waters report card and is supportive of the voluntary use of the urban waters report card in the future.

Comment 119: "The payment amount into a public stormwater fund must be sufficient to design, install, and maintain the stormwater mitigation measures." We recommend that TDEC consider adding "monitor" after "maintain," if appropriate for the project type. Monitoring of mitigation measures is often overlooked in the funding.

Response: The Board understands that to properly maintain a SCM, municipalities may require monitoring. The monitoring requirement is inherent in the maintenance requirement, so the requested change has not been made.

Comment 120: It says that "public stormwater fund should be used to fund public mitigation projects." Can it be

assumed that grant funds or other types of local funding (utility revenue, bonding) can be added to this fund to pay for these projects? It would seem rare that such a fund would be capable of funding all the required needs.

Response: The rule does not limit the types of revenue sources that can be placed toward a public stormwater fund.

Comment 121: Duplicate comment omitted.

Comment 122: The rule should be clarified to specifically recognize that, when a public stormwater fund is used to fund public mitigation projects, grant funds or other types of local funding (utility revenue, bonding) can be added to this fund to pay for these projects. It would seem rare that such a fund limited to development off-site mitigation would be capable of funding all the required needs.

Response: The rule does not limit the types of revenue sources into a public stormwater fund.

Comment 123: Duplicate comment omitted.

Rule 0400-40-10-.04(4) Water Quality Riparian Buffers

Comment 124: In Rule 0400-40-10-.04(4), does the term "unassessed waters" refer to any water in the State that TDEC hasn't assessed? This should be further defined as it is not clear to the extent that this requirement covers ditches, swales, wet weather conveyances, etc.

Response: This term refers to streams that have not been assessed pursuant to Section 303(d) of the Clean Water Act. The introduction to the water quality riparian buffers rule applies this requirement only to streams, so buffers are not required for wet weather conveyances.

Comment 125: Multiple commenters requested a measurable term below the table in Rule 0400-40-10-.04(4)(b) be used to describe where vegetation in the area near the stream should be.

Response: The language has been changed to "within the minimum buffer width area," which is now defined in the table.

Comment 126: In Rule 0400-40-10-.04(4)(e), consider defining "top of bank" as "the ordinary high water level and break in slope of a water resource."

Response: The Division will consider defining the common term "top of bank" in the permit.

Comment 127: Duplicate comment omitted.

Comment 128: On the two sentences describing vegetation in the buffer. The second sentence begins, "the remaining riparian buffers maybe be composed..." The use of buffers, plural, is odd. Also, why not say something like: Areas of the buffer not in trees may be composed of herbaceous cover or infiltration-based SCMs.

Response: The term buffer(s) is plural because the term refers to buffers on both sides of the stream. While the rule does not prohibit infiltration-based SCMs in the buffer, the specifics of buffer use are at the discretion of the local jurisdiction that has site specific knowledge or community-wide experience, to decide if infiltration-based SCMs in their buffers areas should not be allowed or if the designer evaluates the applicability of infiltration-based SCMs to the buffer areas on a specific site.

Comment 129: We suggest adding to the sentence "The remaining riparian buffers may be composed of herbaceous cover or infiltration-based SCMs" the clause "...providing that the SCM does not introduce concentrated flow into the buffer."

Response: The rule already requires that stormwater discharges should enter the buffer as sheet flow, rather than concentrated flow. Moreover, the effectiveness of buffers to provide pollutant reduction is maximized where stormwater enters the buffer as dispersed sheet flow, thus allowing contact with plants to provide filtration. Where site conditions exist such that sheet flow is practicable, this condition represents pollutant reduction to the MEP from this element of permanent stormwater controls and has been retained. The specifics of buffer use are at the discretion of the local jurisdiction that has site specific knowledge or community-wide experience, to decide if infiltration based SCMs in their buffers areas should not be allowed or if the designer evaluates the applicability of infiltration-based SCMs to the buffer areas on a specific site.

Comment 130: MS4s need clarification as to what SCMs are acceptable and practical to be use in buffers and/or floodplains.

Response: While the rule does not prohibit infiltration-based SCMs in the buffer, the specifics of buffer use are at the discretion of the local jurisdiction that has site-specific knowledge or community-wide experience, to decide if

infiltration-based SCMs in their buffers areas should be allowed or if the designer evaluates the applicability of infiltration-based SCMs to the buffer areas on a specific site.

Comment 131: A number of commenters noted that infiltration-based SCMs in buffers may be problematic due to flooding, scouring, soil and vegetation loss, and the associated maintenance requirements.

Response: While the rule does not prohibit infiltration-based SCMs in the buffer, the specifics of buffer use are at the discretion of the local jurisdiction that has site specific knowledge or community-wide experience, to decide if infiltration-based SCMs in their buffers areas should be allowed or if the designer evaluates the applicability of infiltration-based SCMs to the buffer areas on a specific site.

Comment 132: It is unclear from the proposal whether any SCM will be allowed in the riparian buffers, i.e., pervious concrete, pavers, asphalt, underground detention, etc. As we interpret the proposed language a pervious pavement parking lot could be placed all the way up to top of bank. Would this interpretation be correct?

Response: The final rule clarifies a minimum and average buffer width that matches the construction stormwater general permit. Infiltration-based SCMs are allowed outside of the minimum buffer width, at the discretion of the permittee.

Comment 133: Non-infiltration SCMs should be allowed in the buffer provided they are fully vegetated and do not discharge concentrated water (e.g., engineered wetlands) or discharge directly to the stream. Modify the first sentence to, "Permittees may establish permissible land uses or activities within the buffer, such as biking and walking trails, infiltration-based SCM, other SCMs provided they are fully vegetated and do not discharge stormwater to the surface of the buffer in a shallow concentrated or channelized manner, selective landscaping, habitat improvement, road and utility crossings or other limited uses as determined by the permittee."

Response: The rules allow the permittees to establish permissible land uses or activities within the buffer as long as the uses and activities retain the pollutant removal function of the buffer. However, only infiltration-based SCMs are allowable in the buffer.

Comment 134: I wish the buffer width for unimpaired waters were more – maybe 45 feet. I understand of course that the 30 feet is a minimum and that a local government may adopt a larger width.

Response: The buffer requirements have been adjusted to conform to those in the construction general permit, which have proven to be practicable. Local governments may adapt larger buffer widths in accordance with the provisions of Tennessee Code Annotated section 69-3-108(t).

Comment 135: Section 4.b. Is the minimum width a total width or just for one side?

Response: The minimum buffer width is for each side of the waterbody. So, if a property includes both sides of a stream with available parameters, each side must have at least a 30-foot average buffer. The rule language has been changed in paragraph 4(b) to clarify that if the construction site encompasses both sides of a stream, buffer averaging can be applied to both sides, but must be applied independently.

Comment 136: Several commenters requested that the rule expressly allow for buffer averaging and change the buffer requirements so that permanent buffers are the same as those required during the construction phase.

Response: The final rule has been changed to reflect the language in the construction general permit, with an allowance for buffer averaging. The permanent buffer requirement is now the same as the buffer requirement during construction.

Comment 137: It is conflicting to say in Proposed Rule 0400-40-10-.04(2) that the permittee is providing treatment to the MEP, and then in this section say that buffers "provide additional water quality treatment." The rule should be crafted to account for the benefit of water quality buffers in addition to an SCM in series to meet the 80% TSS reduction goal. To the extent buffers would be authorized to be included in the Rule or voluntarily implemented by MS4's, buffers are SCMs.

Response: The final rule has been changed to clarify that compliance with the entire rule constitutes MEP. The standard is to reduce pollutants to the MEP. Compliance with permanent stormwater standards for new development and redevelopment projects is determined by designing and installing SCMs as established by this rule and complying with all other requirements of this rule. Buffers are other requirements of the rule and as such, are a component of MEP.

Comment 138: This paragraph allows the permittee to establish alternate buffer widths "based upon the type of project, existing land use, and physical conditions that restrict the use of water quality riparian buffers." We recommend the paragraph be changed to read: "Permittees may authorize alternate buffer widths for New Development Projects where water quality riparian buffers cannot be fully implemented on-site. In order to allow alternate widths, the permittee must determine the circumstances under which required buffer widths cannot be

achieved based upon the type of project, existing land use, and physical conditions that limit the use of water quality riparian buffers. Any such decision to use alternate buffer widths must ensure that implementing full buffer widths would be impracticable.”

Response: The final rule has been changed to reflect the construction general permit buffer requirements, which have proven to be practicable.

Comment 139: Riparian Buffers are more stringent than federal minimum: Proposed Rule 0400-40-10-.04(4) requires the use of riparian buffers. The federal regulations, however, do not contain a minimum requirement for riparian buffers. Federal regulations merely provide guidance; suggesting buffers, but not requiring buffers, for post-construction in new development and redevelopment. 40 C.F.R. § 122.34(b)(S)(ii). Furthermore, the guidance only suggests the use of riparian buffers for sensitive waters. Inasmuch as the riparian buffer requirement is more stringent than the federal minimum, such proposal is in contravention of TCA 69-3-108(s), as discussed above. Instead, the rule should recognize the discretion of the MS4 to impose riparian buffer requirements through its local program, as it deems appropriate.

Response: The Board does not agree that buffers are more stringent than federal minimum requirements. The final rule’s buffer requirements have been in place in the construction general permit for many years, and have proven to be practicable: construction across Tennessee has proceeded, notwithstanding these buffer requirements. Moreover, buffers are very effective at reducing pollutant in stormwater, and thus are a component of the MEP requirement.

Comment 140: What is the true minimum width of a buffer, how close to the stream can grading activity occur, and what grading/disturbance activities are allowed in order to construct allowable uses (i.e. trails and SCMs)?

Response: The proposed rule has been changed in paragraph 4(b) to include a minimum buffer width and that the criteria for the width of the buffer zone can be established on an average width basis at a project, as long as the minimum width of the buffer zone is more than the required minimum width at any measured location. If the construction site encompasses both sides of a stream, buffer averaging can be applied to both sides, but must be applied independently. This is consistent with the CGP requirement. Moreover, this rule does not govern activities during the construction phase. Any such activities must comply with the CGP and any applicable local stormwater requirements.

Comment 141: Regarding the circumstances for allowing alternative widths, it would be helpful to have explicit guidance on whether “physical conditions” includes property line shape/dimensions, versus other site conditions such as topography/soils/geology/etc.

Response: The rule allows local MS4 communities to establish criteria for alternative buffer widths, subject to approval by the Division. This approval process is intended to occur upon initial approval and when the permittee wishes to revise the procedure. The Board does not intend for every site with alternative buffers to go through the Division for approval.

Comment 142: Consider adding a timeframe under which the Division has to provide a response in writing to the permittee, such as "Procedures and criteria for alternative buffer widths must be submitted to the local EFO, approved by the Division in writing, and documented in the SWMP. The Division shall provide a written response within 30 calendar days. If a permittee has not received a response in writing within 30 calendar days, the procedures and criteria shall be considered approved."

Response: The Board anticipates that the Division will provide timely review of proposals for alternative buffer widths, but declines to establish a response deadline.

Comment 143: Proposed Rule 0400-40-10-.04(4)(a) provides that stormwater discharges should enter the water quality riparian buffer as sheet flow where site conditions exist. If the stormwater enters the riparian buffer as sheet flow it is not a "discharge from a point source" and is not subject to the NPDES program.

Response: The Board disagrees with this comment. Any stormwater that has entered the municipal storm sewer system and then reaches waters is subject to federal NPDES requirements.

Comment 144: Multiple commenters addressed stormwater discharges entering the water quality riparian buffer as sheet flow:

- Is it allowed for discharges to enter buffers as concentrated flow where site conditions do not allow entry as sheet flow? It is not clear whether local programs would be required to submit procedures and criteria used to determine site limitations to TDEC/local EFO in writing for approval prior to making any allowances for discharges to enter buffers as concentrated flow.
- As written, this statement is too vague to be enforceable. Sheet flow is needed to allow the sediment particles time to settle as the water spreads and flows across the land toward the stream. If diffuse flow is listed in the rule as a requirement, such as "Sheet flow is required on all buffered streams and must be

achieved before stormwater enters the riparian buffer from any new development," then options should be given for how to achieve diffuse flow such as a level spreader or a variance from this rule.

- This provision should not be mandated but, instead, should be most be encouraged and left to the discretion of the MS4.
- Anecdotally, ninety-five percent of the water leaving a developed site is concentrated. As written, this regulation applies to the five percent or least commonly occurring situation. Therefore, in order to achieve this criterion, for almost every situation, water will need to be converted from concentrated flow to sheet flow. Given this, it would be more useful to describe the acceptable criteria for achieving this (e.g., level spreaders).
- This is part of a list of standards that the riparian buffer must meet. However, it uses permissive language (should as opposed to shall). We recommend the paragraph be changed to read: "Stormwater discharges shall enter the water quality riparian buffer as sheet flow where site conditions allow."

Response: This condition is not mandated as the site conditions often dictate how runoff enters riparian buffer zones. Moreover, the effectiveness of buffers to provide pollutant reduction is maximized where stormwater enters the buffer as dispersed sheet flow, thus allowing contact with plants to provide filtration. Where site conditions exist such that sheet flow is practicable, this condition represents pollutant reduction to the MEP from this element of permanent stormwater controls and has been retained.

Comment 145: We suggest adding to the last clause ("where site conditions allow") something to the effect of "or, where site conditions prohibit this, dispersing concentrated flow as quickly as possible"

Response: The suggested language is not incorporated since the site conditions often dictate how runoff enters riparian buffer zones.

Comment 146: We appreciate the change in buffer width based on these parameters. We predict it will benefit developers with more developable land on streams that are relatively small.

Response: Noted.

Comment 147: Water quality riparian buffers are sometimes deeded to the permittee to ensure no future development in those areas. Can the new development still use this area for calculating treatment of WQTV?

Response: Yes, the rule allows this, but this would ultimately be at the discretion of the permittee.

Comment 148: The draft rule does not allow for development situations where water quality riparian buffers may not be possible. In northeast Tennessee, land developments tend to occur in the valleys between ridges and hills. However, even when in a valley, individual properties can have a significant slope and /or other topographic features which significantly limit development. While not a frequent occurrence, there are instances where the addition of a riparian buffer, even with a maximum practicable buffer width, is not possible. In such cases, engineering practices other than buffers can be used to treat runoff prior to discharge to a stream, provide some degree of shading, and prevent streambank erosion. Please add the following sentences to (4)(b) below the table. Buffer width averaging is allowed provided the minimum total buffer width (in the table above) is used as the minimum average total buffer width and the actual buffer width is not less than the minimum allowable width (as shown in the table above) at any location along the buffer. Then add a right column to the table with the heading "Minimum Allowable Width for Buffer Averaging) with the State's acceptable minimum widths in an averaging scenario. 2. Add the following paragraph to (d) or as new part (e). Permittees may allow waiver of riparian buffer requirements in limited circumstance where it can be proven that a buffer of any width will result in the complete loss of property usage. To obtain the waiver, the permittee must require the new development or redevelopment project to implement practices which prevent the discharge of untreated stormwater into the receiving stream in keeping with part (2) above, prevent erosion of the streambank in the unbuffered area, and provide shade along the stream in the unbuffered area to the maximum extent practicable.

Response: The rule was changed to clarify that buffer averaging is allowable.

Comment 149: Permittees are required to develop and implement a set of requirements to establish protect and maintain buffers. It is not clear what form that set of requirements should take or whether those requirements must be submitted in writing to TDEC/local EFO for review and approval prior to implementation.

Response: The specifics of buffer requirements are at the discretion of the local jurisdiction that has site specific knowledge or community-wide experience.

Comment 150: A number of commenters requested clarification about whether water quality riparian buffers are required on wetlands, springs, lakes, and reservoirs.

Response: Yes. The draft rule referred to "streams" which are broadly defined in the Tennessee Water Quality Control Act as surface waters that are not wet weather conveyances. However, to ensure clarity, the final rule specifies that streams include wetlands, ponds, and lakes.

Comment 151: To the table row that reads "Exceptional Tennessee Waters or waters with unavailable parameters for siltation or habitat alteration", consider also adding the unavailable parameter of nutrients, because riparian buffers are effective at reducing nutrient pollution.

Response: Post-construction buffer requirements were revised to match temporary construction buffer requirements where the temporary buffers apply only under Exceptional Tennessee Waters and waters with unavailable parameters for siltation and habitat alteration. The CGP does not provide for extended buffers for nutrients.

Comment 152: "The predominant vegetation in the area adjacent to the stream should be trees. The remaining riparian buffers may be composed of herbaceous cover or infiltration-based SCMs."

(1) These two sentences do not make sense when referring to a buffer with just one zone. They are too vague to be enforceable. Consider other wording such as, "The riparian buffer must remain undisturbed unless the use or activity is allowed in the local ordinance or code."

(2) We have concerns surrounding the practicalities of regulating vegetation in the buffer. Some questions are, can you approve the developer to plant saplings, and wait for the trees to grow? What vegetated practices are considered SCMs versus natural resource BMPs, and which requires an O&M plan? We also predict developers would balk at having to replant the whole buffer for a stream that was cleared when it was farmland.

Response: The final rule clarifies the minimum buffer width (where the predominant vegetation should be trees), and the average buffer width. The specifics of buffer vegetation are at the discretion of the local jurisdiction that has site specific knowledge or community-wide experience. Additionally, the definition for water quality riparian buffer has been revised in rule 0400-40-05 to state: A "Water quality riparian buffer" is a permanent strip of natural perennial vegetation adjacent to streams, rivers, wetlands, ponds, and lakes, that contains dense vegetation made up of grass, shrubs, and/or trees. The purpose of a water quality riparian buffer is to maintain existing water quality by minimizing the risk of any potential sediments, nutrients or other pollutants reaching adjacent surface waters and to further prevent negative water quality impacts by providing canopy over adjacent waters.

Comment 153: The stream buffer section allows only "infiltration SCMs" in the non-stream-adjacent buffer area, but does not address "evaporation, transpiration, or reuse" SCMs listed in the WQTV table. Were these other types implied to be included, or not? These are certainly achievable through "natural resource protection" BMPs, but are not easily quantified, and therefore not routinely used. Ultimately if infiltration is required for treatment to be allowed, that implies an emphasis on infiltration rates, and thus could incentivize removal of existing riparian vegetation to replace soil with more pervious media. If so, technical guidance for the regulator on how to approach this would be helpful. Frankly on any given clay soil site, we do not know whether a long-term net TSS benefit would be greater from disturbing existing buffer to amend soil, versus keeping it intact. However, we do know that disturbance in those scenarios aids the colonization of invasive species, which in turn may damage nutrient cycling.

Response: The rules allow permittees to establish permissible land uses or activities within the buffer as long as the uses and activities retain the pollutant removal function of the buffer.

Comment 154: Trails in Buffers. Currently, Knox County gives greenways a "free pass" in riparian buffers because they are considered allowable and beneficial uses. Additionally, there is no permanent runoff treatment required for them, because the pervious and vegetated surfaces on either side are considered to manage the limited runoff (from the 10' wide impervious path). Requiring complicated SCMs to manage this water would be not only economically infeasible but also practically more trouble than they are worth, especially considering that increased grading means increased disturbance of intact buffer. Alternatively, requiring the developer to cede an additional 10' would de-incentivize inclusion of greenways in key sites important to connectivity. Thus, we recommend that greenways be allowed to be managed by so-called natural resource protection BMPs, which can effectively manage the small amount of runoff while still minimizing disturbance to an intact buffer and maintaining the developer's incentive to allow trail access through the property.

Response: The rules allow permittees to establish permissible land uses or activities within the buffer as long as the uses and activities retain the pollutant removal function of the buffer. Paved trails, while they may be beneficial to recreation, do not achieve the stormwater objectives of buffers. The rule specifies that impervious trails are only allowed within the buffer if the width is increased, or the runoff is treated. Rule 0400-40-10-.04(4)(d) allows permittees to propose alternative buffer widths where water quality riparian buffers cannot be fully implemented on site.

Comment 155: We have concerns regarding potential conflict/confusion between CGP and Permanent WQ Buffer requirements.

(1) Considering that SCMs are allowed uses within the buffer, that SCMs require grading for construction, and that there is only one single buffer zone, does this mean that in order to construct an SCM, a contractor could legally grade to the bank-full mark, assuming he filled back in around the stream edge with trees?

(2) Or, does the CGP overrule and exclude grading within the inner zone (15/30 ft)? In other words, what is the true and practical minimum width?

(3) Alternatively, within the buffer zone, are there (or perhaps should there be) limitations as to the type/layout/details of the grading activities allowed?

Response: The proposed rule has been changed to include a minimum buffer width and to specify that criteria for the width of the buffer zone can be established on an average width basis at a project, as long as the minimum width of the buffer zone is more than the required minimum width at any measured location. If the construction site encompasses both sides of a stream, buffer averaging can be applied to both sides, but must be applied independently. This is consistent with the CGP requirement. The specifics of buffer use are at the discretion of the local jurisdiction that has site specific knowledge or community-wide experience, to decide if infiltration-based SCMs in their buffer areas should not be allowed or if the designer evaluates the applicability of infiltration-based SCMs to the buffer areas on a specific site.

Comment 156: Waters that meet standards are not addressed in the table. Should the permittee assume that any waters within the jurisdiction that have been assessed and meet current standards do not require a buffer?

Response: The 30-foot buffer applies to waters with available parameters or unassessed waters as described in the table.

Rule 0400-40-10-.04(5) Codes and Ordinances Review and Update

Comment 157: Multiple commenters asked about the reference to "sub-section 4.1.1" in paragraph 5(b).

Response: This reference has been corrected to "subparagraph 1(d) of this rule."

Comment 158: Rule 0400-40-10-.03(5)(b) mentions a compliance timeline for permittees. Can you clarify that this paragraph means that once a permittee is issued a new permit following the approval of this rule, that the permittee has 24 months to implement the permanent stormwater management requirements? The timeline is unclear as it relates to passage of the rule and/or issuance of the permit.

Response: The sentence regarding 24 months applies to codes and ordinances or other legal instruments for newly permitted programs. Existing programs should implement any necessary revisions in accordance with the implementation plan submitted in accordance with Rule 0400-40-10-.04(1)(d).

Rule 0400-40-10-.04(6) Development Project Plan Review, Approval, and Enforcement.

Comment 159: Rule 0400-40-10-.04(6)(b) states, "The process must also include incentives as authorized by paragraph (3) of this rule, along with water quality buffers as required by paragraph (5) of this rule." Paragraph (3) discusses stormwater mitigation or payment in lieu stormwater fund which municipalities may or may not choose to establish. If paragraph references are not corrected, the casual reader may think they "must" (not "may") establish mitigation/fund.

Response: The rule has been revised to reflect that the development of a mitigation program or payment in lieu into a public stormwater fund are both at the discretion of the permittee. In the rule, the word "may" applies to both the mitigation program and the stormwater fund indicating both are optional. The language of the rule has been revised to clarify this intent.

Comment 160: Rule 0400-40-10-.04(6)(b) 2nd sentence. As written, the sentence requires incentives be included in the process, but incentives are not necessarily required of the permittee in part (3) of the rule. It would be better to allow, but not require, incentives. Modify the 2nd sentence in (6)(b) to say, "The process must also include incentives as authorized by paragraph (3) of this rule if implemented by the permittee, along with water quality buffers as required by paragraph (5) of this rule."

Response: The incentives are optional. The language of the Rule has been changed to reflect this comment. The language has been changed to "The process must also include incentives adopted by the permittee as authorized by paragraph (2) of this rule, if any, along with water quality buffers as required by paragraph (4) of this rule; and..."

Comment 161: Multiple comments were received related to Rule 0400-40-10-.04(6)(b) - The language references "incentives as authorized by paragraph (3) of this rule"; this reference is likely to Rule 0400-40-10-.04(2)(e).

Response: The commenter is correct, the reference is to Rule 0400-40-10-.04(2)(e), and the rule has been changed accordingly.

Comment 162: The permittee has no authority over private permanent stormwater control measures that are not installed in the municipal system. As such, enforcement action is limited to illicit discharges to the MS4 as identified in the permittee's ordinance or other regulatory device. We recommend paragraph Rule 0400-40-10-.04(6)(c) be changed to read: "PA process for the project engineer to certify that SCMs have been installed per design specifications. This process should include submission of as-built plans to the permittee."

Response: The Board does not agree with the premise of the comment. Local governments have the authority to regulate new permanent stormwater controls and the obligation to adopt ordinances or other regulatory measures to require that these controls are properly operated and maintained. This maintenance is critical to the success of post-construction stormwater measures and has been retained in the final rule. The rule provides the option of the submission of as-built plans to the permittee.

Comment 163: Rule 0400-40-10-.04(6)(c) would require an enforcement response plan. An ERP should not be required. Federal regulations only require an ERP for a pretreatment program, not for an MS4 program. Compare, e.g., 40 CFR 403.8(f)(4) with 40 CFR 122.26 and 122.32-37. As such, when EPA was permitting the DC WASA MS4 facility, EPA deleted the proposed ERP requirement and replaced it with enforcement procedures for illicit dischargers. This is more stringent than the federal regulations and should be deleted.

Response: Federal law requires an enforcement mechanism as part of MEP for post-construction stormwater management, and this provision has been retained in the final rule. The enforcement response plan required by this rule is not the same as that required for pretreatment. This rule applies to post-construction stormwater, not illicit discharges.

Comment 164: Rule 0400-40-10-.04(6)(c) requires "Verification that SCMs have been installed per design specifications within 90 days of installation." Certain SCMs may be installed during construction of project and activated once the site is completely stable. In these instances, a 90-day verification from installation requirement is overly restrictive. TDEC should consider allowing the permittee flexibility to establish local processes and policies that consider construction sequencing and as-built and inspection scheduling.

Response: The 90-day period starts at the completion of the installation of the post-construction SCMs. This is independent of building completion. The permittee has the option for verification, which includes submittal of as-built plans, permittee inspection, or inspection by a qualified design professional. The rules do not prohibit the permittee from establishing a process or policy that more clearly defines when a post-construction SCM has completed installation.

Comment 165: We do not think 90 days to receive as-builts is realistic, and ask why this timeframe was chosen. Some detention ponds and other SCMs are used as sediment basins during construction, and we often do not receive as-builts until far later than 90 days, especially on subdivisions.

Response: The 90-day period starts at the completion of the installation of the post-construction SCMs. See Response to Comment 167.

Comment 166: Rule 0400-40-10-.04(6) would require the permittee to have a project plan and review process that ensures SCMs are properly designed, installed, and maintained to meet performance standards. The burden should be on the developer, not on the MS4, to make sure that the developer's plans are properly designed. The City should not be responsible for approving a plan - especially if it turns out the plan does not appropriately work. In such case, the City would have compromised its ability to require changes in the plan that it approved. While the City can oversee what is being done, it should not be required to approve the plan.

Response: The permittee is required to conduct appropriate oversight via the project plan and review process. The developer is still responsible for submitting a plan that meets the performance standards.

Comment 167: The first sentence of Rule 0400-40-10-.04(6)(b), as written, implies that the permittee has the responsibility to ensure SCMs are designed to meet performance standards. This is the responsibility of the design engineer. The permittee may review the plans of SCMs and, based upon the data provided by the project engineer, make a determination that the SCMs appear to meet the performance standards, but the permittee cannot be expected to ensure the design meets the performance standard. This would be a function of reviewing the as-built data provided by the design engineer following construction.

Response: The Board recognizes the different roles of the permittee (municipality) and the design engineer. The language of the Rule has been changed to reflect this comment. This first sentence in Rule 0400-40-10-.04(6)(b) has been changed to "[a] plans review process that requires SCMs to be properly designed...."

Comment 168: The requirements of Rule 0400-40-10-.04(6)(c) appear to make the permittee responsible for verifying that SCMs were installed to design specifications. Although the permittee has regulatory authority in regard to the MS4, the permittee has no authority over private permanent stormwater control measures that are not installed in the municipal system. As such, requiring the permittee to verify SCMs are installed per design specifications and enforcement action for non-compliance exceeds the regulatory authority of the permittee. This is a certification by the designer.

Response: The Board does not agree with the premise of the comment. Local governments have the authority to regulate permanent stormwater controls and the obligation to adopt ordinances or other regulatory measures to ensure that these controls are properly installed.

Comment 169: The design engineer is responsible for the verification of SCM installation. The permittee may review the as-built data and, based upon the data provided by the project engineer, make a determination that the SCMs appear to have been installed to meet the design specifications.

Response: The Division clarified the language related to the verification process to reflect the different roles of the permittee (municipality) and the design engineer. Rule 0400-40-10-.04(6)(c) has been clarified as follows: "Verification process to document that SCMs have been installed per design specifications within 90 days of installation."

Comment 170: The "within 90 days of installation" requirement appears to be rather arbitrary. Especially since the verification can be based upon as-built data. As-built data usually isn't provided until after construction projects are complete. Additionally, SCMs installed and verified early in the construction process could easily be damaged during construction occurring after SCM has been constructed and verified. When does the 90 days start? When the owner does install or when the building is complete? These are two different time frames.

Response: The 90-day period starts at the completion of the installation of the post-construction SCMs. This is independent of building completion. The permittee has options for verification, which include as-built plans to the permittee, permittee inspection, or inspection by a qualified design professional.

Comment 171: The requirement for verification of SCM construction as designed is concerning. It could impact the ability of permittees to keep the site owner/operator liable for SCM construction through the end of construction and afterward (during post-construction vegetation or construction warranty periods). Typically, final verification of SCM construction occurs at the end of construction, when all construction activities have ceased and SCM integrity and cleanliness (removal of sediment, debris, EPSC measures, etc.) can also be assessed. The 90-day verification inspection required by the rule is premature as construction activities may still be on-going and could damage or otherwise impact SCM construction and/or function. Modify the 1st sentence in (6)(c) to "Verification that SCMs have been installed per design specifications within 30 days after termination of land disturbance activities."

Response: The 90-day period starts at the completion of the installation of the post-construction SCMs. This is independent of building completion. The permittee has options for verification, which include as-built plans to the permittee, permittee inspection, or inspection by a qualified design professional.

Rule 0400-40-10-.04(7) Maintenance of Permanent Stormwater Control Measure Assets

Comment 172: Rule 0400-40-10-.04(7)(a) says to "provide full treatment capacity within 72 hours following the end of the preceding rain event." Just refer to the presumptive standard and allow permittees to determine the most appropriate methods for inspection to ascertain SCM compliance at the post-construction stage. Delete the text after the comma ("~~and provide full treatment capacity within 72 hours following the end of the preceding rain event~~").

Response: Full treatment capacity within 72 hours, following the end of the preceding rain event, refers to the maximum drain time of the SCM. The rule does not specify inspection methods. The referenced language has been retained in the final rule.

Comment 173: In Rule 0400-40-10-.04(7)(b), the first sentence is an unattainable standard for even the most well-funded and mature stormwater management program ("ensure implementation...of maintenance procedures to sustain pollutant removal efficiency for the life of the project"). This sentence should be re-written to say, "The permittee must develop and implement a program to require on-going maintenance of SCMs consistent with industry standard practice, such as those maintenance practices described in the TN Permanent Stormwater and Design Guidance Manual or approved equivalent."

Response: Proposed Rule 0400-40-10-.04(7)(b) has been revised to change the term "ensure" to "require" to make it clear that the MS4 community sits in a regulatory role with respect to post-construction stormwater management.

Comment 174: In the first sentence of Rule 0400-40-10-.04(7)(b)(3), please eliminate the requirement for a legally-binding maintenance agreement. There is significant variability among Tennessee permittees regarding whether and how legally binding maintenance agreements are used. Much of this variability is the result of how permittee legal staff interpret state law regarding property rights and municipal authorities and processes. Modify the first sentence of Rule 0400-40-10-.04(7)(b)(3) to state, “An ordinance or regulatory mechanism, deed restriction, legally binding agreement or other legal instrument allowing permittee personnel to lawfully access the SCMs for inspections and provide for enforcement action for failure to maintain SCMs.”

Response: The rule has been modified to refer to a “legally binding document” to allow for a full range of legal instruments to be used.

Comment 175: New and redevelopment projects also apply to land disturbances of less than one acre. These are typically home builder lots. How does TDEC envision these rules to apply to those land disturbance activities? Is TDEC envisioning that Rule 0400-40-10-.04(7)(b)(3) of this rule results in an exemption for home builders, placing the responsibility upon the developer? If so, we question that logic. Since the SCMs are designed for runoff from impervious surfaces, the developer of a housing subdivision would only have impervious streets to design to whereas the builders will have impervious surfaces created by the footprint of the house, driveway, sidewalks and any other structures.

Response: Because the rules apply to common plans of development, the responsibility of the developer and the home builder should be determined by the permittee (municipality) in the approval process of the development. Home builders are not exempted by this rule.

Comment 176: Regarding Rule 0400-40-10-.04(7)(b), although the permittee has regulatory authority in regard to the municipal separate storm sewer system (MS4), the permittee has no authority over private permanent stormwater control measures that are not installed in the municipal system. Based upon this comment, we recommend the paragraph be changed to read: “The permanent stormwater management program shall include plans review, prior to the start of construction to ensure that permanent stormwater control measures are to be installed.”

Response: The Board does not agree with the premise of the comment. Local governments have the authority to regulate permanent stormwater controls and the obligation to adopt ordinances or other regulatory measures to ensure that these controls are properly maintained. The rule has been changed to substitute the word “require” for the word “ensure” to reflect the fact that the permittee sits in a regulatory oversight role.

Comment 177: Clarification is needed regarding the language of SCM inspection requirements in Rule 0400-40-10-.04(7)(b)(1). Can the permittee accept five-year inspection reports from the SCM owner (or a P.E./L.A./qualified professional hired by the owner), or is the permittee (or a P.E./L.A./qualified professional hired by the permittee) required to perform inspections every five years?

Response: The rule states that the SCMs should be inspected by the permittee, a licensed professional engineer, a licensed landscape architect, or other qualified professional familiar with applicable SCM design and maintenance requirements. If the SCM owner meets one of those qualifications, the permittee can accept inspections from the SCM owner.

Comment 178: Please clarify who is responsible for inspection and maintenance of SCMs. Can the permittee accept inspections from the SCM owner?

Response: The rule states that the SCMs should be inspected by the permittee, a licensed professional engineer, a licensed landscape architect, or other qualified professional familiar with applicable SCM design and maintenance requirements. If the SCM owner meets one of those qualifications, the permittee can accept inspections from the SCM owner.

Comment 179: Maintaining full functionality of SCMs is required in Rule 0400-40-10-.04(7)(a). With the emphasis placed on GI practices known to have more frequent inspection and maintenance intervals than other practices, has TDEC considered the additional burden this may put on private property owners and the MS4 community? More frequent inspection and maintenance requirements will lead to increased costs.

Response: The minimum inspection frequency of once every five years is practicable, and therefore part of the MEP requirement.

Comment 180: A majority of SCMs must be inspected and maintained quarterly and some more often to ensure they are functioning as designed and protecting water quality. This will save money to the owner because if you wait too long to do general regular maintenance, remedial maintenance could be more expensive and result in having to redo, replace, or redesign the system along with notice of violation from the MS4 and monetary penalty and/or court visit or cost. It is good to have the requirement to also have ‘engineers and LAs’ inspect every 5 years to ensure that the devices still function per designed; it is NOT good to allow the ‘permittee’ to do the 5-year

inspections unless they are an engineer or a LAs and familiar with design and maintenance requirements and have the credentials to 'certify' that the practices still accomplish the intended pollutant removal for the site design. Maybe the sentence could be rewritten: "The development and documentation of maintenance and inspection procedures and frequencies for approved SCMs which shall require all SCMs to be inspected at least once every five years by a qualified professional familiar with applicable SCM design and maintenance requirements which could be the permittee, a licensed professional engineer or a licensed landscape architect and certify that the SCMs still function as designed." Also, the permittee must develop a Certification process for all third-party inspectors and qualified professionals.

Response: The permittee in this instance refers to the MS4. The Division recognizes the different roles of the permittee (municipality) and the design engineer.

Comment 181: Does Rule 0400-40-10-.04(7)(b)(1) mean that permittees must require the owner/operator to conduct inspections, or is it up to the MS4 to decide who inspects? We recommend more clarification here.

Response: The rule states that the SCMs should be inspected by the permittee, a licensed professional engineer, a licensed landscape architect, or other qualified professional familiar with applicable SCM design and maintenance requirements. If the SCM owner meets one of those qualifications, the permittee can accept inspections from the SCM owner.

Rule 0400-40-10-.04(8) Inventory and Tracking of Permanent Stormwater Control Measure Assets

Comment 182: SCM location should be added to the list of require tracking elements in Rule 0400-40-10-.04(8)(b).

Response: The rule does require SCM location: "The inventory and tracking system must be a searchable database, either paper or electronic, that retrieves SCM information **by location or other similar identification**. The system must be made available to the Division or to members of the public upon request. Other than the basic information of location and project identification..."

Regulatory Flexibility Addendum

Pursuant to T.C.A. §§ 4-5-401 through 4-5-404, prior to initiating the rule making process, all agencies shall conduct a review of whether a proposed rule or rule affects small business.

- (1) The type or types of small business and an identification and estimate of the number of small businesses subject to the proposed rule that would bear the cost of, or directly benefit from the proposed rule.

This rule does not have a direct effect on small businesses. The rule directly affects and provides flexibility to local governments that operate a municipal separate storm sewer system (MS4), who bear the burden for compliance. One secondary effect of the rule may be on the development community, which will be required to comply with the MS4 program implementation decisions by municipalities and will benefit from reduced permitting risk (improved regulatory certainty) created by the rule. However, it is not possible to estimate the number of such members of the development community who may benefit from the rule, or if they are small businesses, since that number is dependent on implementation decisions by municipalities.

- (2) The projected reporting, recordkeeping, and other administrative costs required for compliance with the proposed rule, including the type of professional skills necessary for preparation of the report or record.

No new requirements are introduced that would result in additional costs associated with report or record preparation. Governments operating small MS4s have been subject to permitting for post-construction storm water runoff since before 2003. These programs are already developed, but the rule provides more regulatory certainty.

- (3) A statement of the probable effect on impacted small businesses and consumers.

The rule is expected to have a neutral to positive effect on small businesses and consumers. The rule provides regulatory certainty, and ensures that post-construction stormwater requirements will not change from one 5-year permit cycle to the next. Critically, this rule substantially increases the range of options developers, including homebuilders, may select for post-construction stormwater control measures. In addition, this rule aligns permanent buffer requirements with the temporary buffer requirements imposed by the construction stormwater general permit. The Homebuilders Association of Tennessee settled its appeal of the 2016 Phase II MS4 permit based on the language adopted in this rule.

- (4) A description of any less burdensome, less intrusive or less costly alternative methods of achieving the purpose and objectives of the proposed rule that may exist, and to what extent the alternative means might be less burdensome to small business.

This rule provides the least burdensome, least costly, least intrusive, and most flexible, way to comply with federal post-construction requirements in Tennessee. The rule is for municipalities and provides flexibility for each municipality to determine whether/how to implement certain elements. The rule includes complementary elements that align with local requirements so that stormwater management and water quality requirements can be met simultaneously (e.g., regional ponds and regional detention).

- (5) A comparison of the proposed rule with any federal or state counterparts.

This rule complies with the minimum requirements of federal law. EPA's rule, 40 C.F.R. § 122.34(b), provides "For any permit issued to a regulated small MS4, the NPDES permitting authority must include permit terms and conditions to reduce the discharge of pollutants from the MS4 to the maximum extent practicable (MEP), to protect water quality, and to satisfy the appropriate water quality requirements of the Clean Water Act. Terms and conditions that satisfy the requirements of this section must be expressed in clear, specific, and measurable terms. Such terms and conditions may include narrative, numeric, or other types of requirements." The EPA rule requires implementation of six minimum control measures, one of which is post-construction stormwater management for new development and redevelopment sites that disturb one or more acres or are part of a larger common plan of development. This rule mandates that NPDES permits require structural and/or nonstructural best management practices appropriate for the community, require an ordinance or other regulatory mechanism, ensure adequate long-term operation and maintenance of best management practices, and ensure that controls are in place that would prevent or minimize water quality impacts. 40 C.F.R. § 122.34(b)(5).

- (6) Analysis of the effect of the possible exemption of small businesses from all or any part of the requirements contained in the proposed rule.

Federal law defines which MS4 communities are subject to regulation. This rule does not directly regulate small business. However, homebuilders and other developers must comply with local stormwater ordinances adopted in accordance with this rule. This is mandated by federal law and no exemption would be legal.

Impact on Local Governments

Pursuant to T.C.A. §§ 4-5-220 and 4-5-228, “On any rule and regulation proposed to be promulgated, the proposing agency shall state in a simple declarative sentence, without additional comments on the merits for the policy of the rule or regulation, whether the rule or regulation may have a projected financial impact on local governments.” The statement shall describe the financial impact in terms of increase in expenditures or decrease in revenues.

The Board anticipates that these amended rules will result in an increase in expenditures for local governments.

Additional Information Required by Joint Government Operations Committee

All agencies, upon filing a rule, must also submit the following pursuant to T.C.A. § 4-5-226(i)(1).

- (A)** A brief summary of the rule and a description of all relevant changes in previous regulations effectuated by such rule;

This is a new rule that establishes narrative and/or numeric effluent limitations for the management of post-construction stormwater to comply with, but not exceed, the minimum requirements of federal law. It provides a suite of compliance options that local government MS4s may select to comply with these effluent limitations.

- (B)** A citation to and brief description of any federal law or regulation or any state law or regulation mandating promulgation of such rule or establishing guidelines relevant thereto;

This rule was adopted to comply with Tennessee Code Annotated section 69-3-108(s), which requires any numeric or narrative effluent limitations for post-construction stormwater management by a local government MS4 to be adopted by rule. Such limitations may not be more stringent than the minimum requirements of federal law. Tenn. Code Ann. § 69-3-108(s) and (t).

TDEC is required to operate an MS4 permitting program by the EPA as part of its delegation of National Pollutant Discharge Elimination System (NPDES) authority. Section 402(p)(3)(B)(iii) of the Clean Water Act requires that MS4 permits “shall 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 determine appropriate for the control of such pollutants.” EPA regulations require MS4 permits to include provisions to manage post-construction stormwater at new development and redevelopment sites. 40 C.F.R. § 122.34(b).

- (C)** Identification of persons, organizations, corporations or governmental entities most directly affected by this rule, and whether those persons, organizations, corporations or governmental entities urge adoption or rejection of this rule;

Governmental entities that operate MS4s are most directly affected by this rule. These entities generally accept this rule, and appreciate the increased regulatory certainty the rule will achieve.

Because these governments will establish local stormwater ordinances and requirements in compliance with this rule, developers are indirectly affected. The Homebuilders Association of Tennessee settled its appeal of the 2016 Phase II MS4 permit based on the provisions of this rule.

Finally, the people of Tennessee who use and enjoy our waters are also affected by this rule. The MS4 rule ensures the maximum practicable reduction of pollutants discharged to our waters. A number of nongovernmental organizations that had appealed the 2016 Phase II MS4 permit, including the Tennessee Environmental Council, the Sierra Club, and the Obed Watershed Community Association, settled their appeal based on the provisions of this rule.

- (D)** Identification of any opinions of the attorney general and reporter or any judicial ruling that directly relates to the rule or the necessity to promulgate the rule;

No attorney general and reporter opinions or judicial rulings directly relate to the rule or the necessity to promulgate the rule.

- (E)** An estimate of the probable increase or decrease in state and local government revenues and expenditures, if any, resulting from the promulgation of this rule, and assumptions and reasoning upon which the estimate is based. An agency shall not state that the fiscal impact is minimal if the fiscal impact is more than two percent (2%) of the agency's annual budget or five hundred thousand dollars (\$500,000), whichever is less;

No change in state revenues and expenditures is anticipated. Local governments may have an increase in expenditures from upfront labor costs that may be associated with aligning municipal programs to meet this rule, such as changes to stormwater ordinances, training staff, and providing guidance materials. This cost, if necessary, is anticipated to be minimal for any affected municipality and municipalities have the option to assess stormwater utility fees to offset such labor costs. The expenditure is not expected to be more than \$500,000 or more than 2% of a municipality's budget.

- (F) Identification of the appropriate agency representative or representatives, possessing substantial knowledge and understanding of the rule;

Karina Bynum, P.E., Stephanie Durman, Esq.

- (G) Identification of the appropriate agency representative or representatives who will explain the rule at a scheduled meeting of the committees;

Horace Tipton
Legislative Liaison
Office of General Counsel

- (H) Office address, telephone number, and email address of the agency representative or representatives who will explain the rule at a scheduled meeting of the committees; and

Office of General Counsel
Tennessee Department of Environment and Conservation
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 2nd Floor
Nashville, Tennessee 37243
(615) 253-2027
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- (I) Any additional information relevant to the rule proposed for continuation that the committee requests.

- (1) A description of the action proposed, the purpose of the action, the legal authority for the action and the plan for implementing the action.

This rulemaking adopts effluent limitations for post-construction stormwater in small MS4 communities across Tennessee. The purpose of this action is to comply with recent legislation and federal law.

This rulemaking is authorized and required by Tennessee Code Annotated section 69-3-108(s). TDEC's regulation of post-construction stormwater in MS4 communities is required by section 402(p)(3)(B)(iii) of the Clean Water Act and 40 C.F.R. § 122.34(b). The limitations in this rule meet, but do not exceed, the minimum requirements of federal law as required by Tennessee Code Annotated section 69-3-108(s) and (t).

During the time period between when the rule is adopted and when it becomes effective, TDEC will continue to work with MS4 communities to ensure they understand the rule and to help them evaluate any impact on their existing programs. TDEC will publish a draft renewal of the Phase II general permit based on this rule, which will be finalized after the rule becomes effective. As set out in 0400-40-10-.04(1)(d), small MS4 communities will have 90 days from the effective date of the permit to submit an implementation plan and up to 24 months to fully implement the rule.

- (2) A determination that the action is the least-cost method for achieving the stated purpose.

This rule represents the least-cost method to comply with applicable statutes and regulations. Compared to the post-construction stormwater conditions of the current Phase II MS4 permit, it allows greater flexibility to comply with the federal requirement to reduce pollutants to the maximum extent practicable. This will allow builders to determine, on a site-by-site basis, what is the most cost-effective way to comply.

- (3) A comparison of the cost-benefit relation of the action to nonaction.

Action is required by the Tennessee Water Quality Control Act, Tenn. Code Ann. § 69-3-108(s), which requires effluent limitations for post-construction stormwater management to be adopted by rule. These effluent limitations are required by federal law, and by TDEC's memorandum of understanding with EPA for delegation of NPDES permitting authority in Tennessee. Therefore, nonaction is not an available option.

However, compared to the post-construction stormwater measures in the current Phase II general permit, those in this rule provide more flexibility, allowing developers to choose lower cost options from a broader range of choices.

- (4) A determination that the action represents the most efficient allocation of public and private resources.

This rule represents the most efficient allocation of public and private resources because it provides both regulatory certainty and flexibility, while ensuring compliance with mandatory federal stormwater requirements.

- (5) A determination of the effect of the action on competition.

This rule is not anticipated to have a direct impact on competition. This rule provides regulatory certainty, which establishes a starting point for Tennessee municipalities to implement their permanent stormwater management programs. Any other effects on the development community are at the municipal level.

- (6) A determination of the effect of the action on the cost of living in the geographical area in which the action would occur.

While no effects are anticipated on the cost of living, the rule applies across the state and are equitable for all regulated municipalities.

- (7) A determination of the effect of the action on employment in the geographical area in which the action would occur.

This rule is not anticipated to have an impact on employment.

- (8) The source of revenue to be used for the action.

This rule, and any required implementation by TDEC, will be funded through existing revenues. No additional revenue is required for this action.

- (9) A conclusion as to the economic impact upon all persons substantially affected by the action, including an analysis containing a description as to which persons will bear the costs of the action and which persons will benefit directly and indirectly from the action.

This rule is not anticipated to have a substantial economic impact on any person. The development community and small MS4 communities have been affected by federal requirements since 2003. Both communities will benefit from the additional regulatory certainty provided by this rule. No new costs are anticipated beyond those labor costs necessary to align existing municipal stormwater programs with these requirements (changes to stormwater ordinances, training staff, providing guidance materials, etc.).