

Rationale Sheet
for
**NPDES General Permit for Discharges
from
Small Municipal Separate Storm Sewer Systems
(MS4s)**

Permit No. TNS000000

February 25, 2016

Table of Contents

I. PURPOSE AND BACKGROUND	1
A. PURPOSE OF THIS RATIONALE SHEET	1
B. PHASE I AND PHASE II EPA STORMWATER RULES	1
C. DEFINITION OF PHASE II MS4S	1
D. SIMILARITY OF STORMWATER DISCHARGES FROM SMALL MS4S.....	1
E. APPLICABILITY OF A GENERAL PERMIT	2
II. DESCRIPTION OF DISCHARGES	2
III. RECEIVING STREAMS.....	2
IV. PERMIT CONDITIONS	2
A. NOTICE OF INTENT	2
B. SPECIAL CONDITIONS.....	2
1. <i>Discharges to Water Quality Impaired Waters</i>	2
2. <i>Co-permittees and Coordinated Programs</i>	3
C. STORMWATER MANAGEMENT PROGRAM.....	3
D. STAKEHOLDER INPUT CONSIDERATIONS.....	3
V. PROPOSED PERMIT CONDITIONS – THE SIX MINIMUM MEASURES.....	4
A. PUBLIC EDUCATION AND OUTREACH.....	4
B. PUBLIC INVOLVEMENT/PARTICIPATION	4
C. ILLICIT DISCHARGE DETECTION AND ELIMINATION (IDDE).....	5
D. CONSTRUCTION SITE RUNOFF CONTROL.....	6
E. PERMANENT STORMWATER MANAGEMENT IN NEW DEVELOPMENT AND REDEVELOPMENT.....	6
1. <i>Codes and Ordinances Review and Update</i>	10
2. <i>Project Plan Review, Approval and Enforcement</i>	10
3. <i>BMP Maintenance</i>	10
F. POLLUTION PREVENTION/GOOD HOUSEKEEPING FOR MUNICIPAL OPERATIONS.....	11
VI. QUALIFYING TRIBE, STATE OR LOCAL PROGRAM (QLP).....	11
VII. ANTIDEGRADATION REVIEW	11
VIII. REVIEWING AND UPDATING STORMWATER MANAGEMENT PROGRAMS	12
IX. ENFORCEMENT RESPONSE PLAN.....	12
X. MONITORING, RECORDKEEPING, AND REPORTING	12
XI. PERMIT ISSUANCE PROCEDURES	13
A. ADMINISTRATION.....	13
B. NPDES PROCEDURES	13
C. SCHEDULE FOR PERMIT ISSUANCE	13
D. CONSIDERATION OF COMMENTS AND PERMIT ISSUANCE DECISIONS	14

I. Purpose and background

A. Purpose of this rationale sheet

This rationale sheet is intended to explain the basis for conditions of a proposed NPDES general permit to cover discharges of stormwater runoff from Phase II MS4s, including city and county-operated MS4s as well as similar MS4 systems such as those operated by large military bases and universities.

B. Phase I and Phase II EPA stormwater rules

Over the past 30 years, EPA and state water quality agencies have realized the tremendous impact that rain water runoff has on surface waters - streams, rivers, lakes, estuaries and ocean waters. Rain water falling on industries, urban areas and construction activities can become contaminated with sediments, suspended solids, nutrients (phosphorus and nitrogen), metals, pesticides, organic material and floating trash. These pollutants are then carried into the surface waters. Unlike sanitary wastewater and industrial wastewater, historically most stormwater has not been treated prior to entering streams. EPA has traditionally focused on reducing pollution through two main pathways; pollutant removal at the source or in runoff, and flow volume reduction.

Federal, state and local governments have passed laws and regulations to address the problem of polluted runoff. Phase I EPA stormwater regulations initiated a national stormwater permitting program in 1990 that applied to industrial activities, to construction sites of five acres or more and to urban runoff from larger cities. Phase II regulations in 1999 address additional urbanized areas, certain cities with population over 10,000, and construction activities of one to five acres.

The Tennessee Department of Environment and Conservation, Division of Water Resources implements the EPA [Phase I and Phase II programs in Tennessee](#).

C. Definition of Phase II MS4s

The definitions for *Municipal separate storm sewer* and Small *municipal separate storm sewer system* are consistent with EPA rules found at [40 CFR 122.26\(b\)](#) and are included in Part 7 of the permit.

D. Similarity of stormwater discharges from small MS4s

Discharges of stormwater runoff from MS4s are similar. In all MS4s, stormwater runoff is generated by construction sites; roads; community oriented operations such as garages, schools, storage facilities, golf courses, etc.; residential properties; and, in most instances, commercial and industrial properties.

Likewise, the Phase II six minimum measures (40 CFR 122.34) that small MS4s must adopt to prevent pollution of runoff are the same. These six minimum measures are part of the existing general permit and will be retained in the reissued general permit.

However, it is obvious that every city and county is different. Stormwater discharges will vary based on source areas, activities, soils, topography, weather, etc., and MS4 management programs will vary based on the types of activities needing regulation and the specific needs and priorities of the individual community. This permit was developed to address the variability of communities across the state. This variability includes not only the geology, climate, and topography found from one end of the state to the other, but also of the individual differences in communities. This variability was addressed through setting general, flexible permit standards and requirements that allow the individual jurisdiction considerable leeway in choosing its own overall plan of compliance with the Clean Water Act standard of Maximum Extent Practicable (MEP). These requirements and standards are discussed under the paragraphs that follow.

E. Applicability of a general permit

Given the similarity of discharges and necessary NPDES permit conditions, it is appropriate to regulate discharges of runoff from small MS4s via a general permit.

II. Description of discharges

As noted above, stormwater runoff from MS4s includes runoff from construction sites, roads, municipal operations such as garages, schools, storage facilities, golf courses, etc.; and residential, commercial and industrial properties.

Pollutants can be introduced to stormwater through two different pathways, as contaminants deposited on or leached or eroded from surfaces, or as non-stormwater discharges from another source. Examples of contaminants that are deposited on or removed from surfaces are fertilizers and herbicides from landscaping, and sediment from construction site runoff. Examples of non-stormwater discharge contamination include, illicit discharges of industrial process-related wastewater; dumping of wash water from business operations; car wash water from homes or special car wash events; parking lot wash water; spills and leaks from equipment, vehicles and storage tanks; and potable water from water lines and fire hydrants. These are only some of the common sources of contamination in storm sewers. It is important to note that the general permit does not authorize the discharge of non-stormwater except for those that the permittee determines are not substantial contributors of pollutants of concern. Subsection 1.3.3.2 of the permit lists the allowable non-stormwater discharges.

III. Receiving streams

The receiving streams under consideration in this permit are any waters of the state to which a regulated MS4 discharges. The definition of waters of the state is found in the Tennessee Water Quality Control Act and is included in Part 7 of the permit.

IV. Permit conditions

A. Notice of Intent

The division has developed a Notice of Intent (NOI) Form to be used by new or renewing potential permittees to request coverage under the new Phase II general permit. One can find this on TDEC's [MS4 permitting web page](#) and it is attached to the draft permit as Appendix A. The NOI was designed to include all information that the division must review prior to providing coverage. Previously permitted MS4s should submit their NOI within 90 days of the effective date of this permit, while the permit allows up to 180 days for new MS4s.

B. Special Conditions

1. Discharges to Water Quality Impaired Waters

Discharges from MS4s cannot cause or contribute to an in-stream exceedance of water quality standards. For discharges into waters assessed as having unavailable parameters for nutrients, pathogens, siltation or other stormwater pollutants, there are two scenarios – where a TMDL is developed and a TMDL is not developed. Where a TMDL is developed, MS4s are required to demonstrate compliance with waste load allocation(s) as defined in the implementation part of the TMDL. WLAs are calculated and presented in in the assessment and development sections of the TMDL document. However, permittees are only responsible for complying with the section of the TMDL titled “Implementation Plan.” Where a TMDL is not developed, the permittee’s stormwater management plan (SWMP) must include a monitoring component that assesses the effectiveness of BMPs in controlling the pollutants of concern.

As expressed in the permit, the monitoring component is not intended to be a prescribed sampling and analytical reporting program. It could include anything from outfall monitoring to modeling to BMP monitoring to watershed monitoring or any other method that the permittee might devise to show compliance with the MEP. Depending on the pollutant parameter, the monitoring could contain a system of public observation and feedback. Monitoring is discussed more in the sections that follow.

2. Co-permittees and Coordinated Programs

This permit recognizes that adjacent urban areas may benefit from working cooperatively as co-permittees or by coordinating MS4 activities. The benefits may include, but are not limited to further protection of state waters and reduction of overhead cost of running an effective MS4 program.

C. Stormwater Management Program

The federal small MS4 rule, 40 CFR 122.34, requires MS4s to develop, implement, and enforce a program designed to reduce the discharge of pollutants from the MS4 to the MEP and to protect water quality. In the language of MS4 permits, this program has been named the Stormwater Management Program (Program). The six minimum measures, as written by the EPA in the Phase II final rule, serve as the backbone of the Program and, therefore, the general permit requirements. The Program consists of all the ordinances, policies, procedures, plans, practices and other activities that the permittee uses to comply with the six minimum measures and accomplish its goals of maintaining and/or improving water quality to meet the permit requirements and conditions. Since each MS4 jurisdiction has flexibility to develop its own Program components, the Program has to be documented in the Stormwater Management Plan (SWMP), which contains the latest copies of all appropriate plans and procedures mentioned in the previous sentence, as well as records of monitoring, evaluation, enforcement and other program related activities. The permit specifies the documentation required in the SWMP.

Also, this draft permit proposes deadlines for implementing certain requirements. Newly permitted MS4s will be allotted more time for implementation than current permittees.

D. Stakeholder Input Considerations

During the preparation of this permit, the division sought input from various stakeholders associated with MS4 permits. The stakeholders included representatives from the MS4 permittee, development, construction, and academic and environmental advocate communities. The input that we received was very helpful in making modifications that provide clarification, greater flexibility, and additional options that allow each permittee to tailor its Program to individual jurisdictional needs. The following list summarizes the main modifications:

1. Permittees must submit a permanent stormwater standards implementation plan and may take up to an additional 24 months for full implementation;
2. Permanent stormwater standards now allow the first inch of rainfall to be expressed as a regionally defined representative rain event (with intensity and duration), or an average annual rainfall capture. Permittees may also use an alternate, equivalent approach with prior approval by the division;
3. Permanent stormwater standards were revised to be specific to pollutant removal efficiencies rather than runoff reduction;
4. The list of existing site conditions where the Water Quality Treatment Volume (WQTV) cannot be fully treated on-site has been expanded, and also allows permittees the flexibility to add others;
5. The permit has been revised to allow cost to be considered in determining whether permanent stormwater standards can be met;
6. The permittee must now base the amount of the payment into the optional Public Stormwater Fund on the cost of the design, installation, and maintenance of the mitigation measures;
7. Extended and dry detention have been added to the list of acceptable pollutant removal practices;

8. The standard reduction in WQTV has been increased to provide jurisdictions greater flexibility to incentivize certain types of development;
9. The permit has been revised to allow permittees greater flexibility in developing their permanent BMP operation, inspection and maintenance programs;
10. The permit now provides permittees the option of including a 45' buffer width for drainage areas greater than 1 mi² but less than 2 mi²;
11. The permit has been revised to address the conflict between Construction General Permit (CGP) temporary buffers and permanent water quality buffers;
12. The permit now allows permittees to include permissible land uses and/or activities within the permanent buffer;
13. The permit requirement to coordinate with federal and state wildlife agencies concerning the protection of listed species has been removed; and
14. The permit now includes an option for the permittee to develop a monitoring program specific to the jurisdiction's needs.

V. Proposed permit conditions – the six minimum measures

EPA established the six minimum measures at 40 CFR 122.34, which are as follows:

- A. Public Education and Outreach
- B. Public Participation/Involvement
- C. Illicit Discharge Detection and Elimination
- D. Construction Site Runoff Control
- E. Post-Construction Runoff Control
- F. Pollution Prevention/Good Housekeeping

A. Public Education and Outreach

Permittees are required to develop public education and outreach programs that are designed to reach all members of the community including residential, commercial, industrial, professional, and institutional stakeholders. The education program must focus on the water quality impacts of stormwater pollutants and the specific actions that the public can take to directly affect those water quality impacts. The permit lists eight specific stakeholder populations and specific stormwater water quality issues that almost all permittees face. These stakeholders and issues must be addressed unless the permittee can provide a justification for omitting an issue. Of course the permittee is free to address any other stormwater issue that the jurisdiction deems appropriate. For instance, many permittees find it necessary to conduct an education program concerning the proper handling and disposal of restaurant grease in order to eliminate sanitary sewer clogging and illicit discharges from these establishments.

The permit requires that the permittee develop a Public Information and Education Plan (PIE). The PIE is a relatively simple management framework that will help the permittee to develop goals specific to the needs of the permittee and plan, evaluate, and document the activities that will meet the permittee's needs and satisfy the education program goals.

B. Public Involvement/Participation

The permit and EPA guidance recommend that the permittee involve the public in all aspects of the development and implementation of the SWMP. These opportunities could range from stream clean-up weekends to policy advisory committees and all activities in between. However, the permittee's Program must include these three simple requirements:

- Develop a mechanism for citizens to report illegal or illicit discharges;
- Develop a mechanism for receiving and considering public input concerning construction sites;
- Develop a mechanism for publicizing all public involvement opportunities including the two bulleted above.

In each case, the actual communication/reporting mechanism is not defined and it may be as simple or complicated as the permittee wishes. The methods used should be available to all citizens. Publicizing in a widely circulated newspaper as well as broadcast on a local radio or television station or the implementation of a permittee's website are all acceptable and verifiable methods.

The publicizing plan must be complete within 180 days of coverage under this permit. The permittee is also required to track and maintain records of public participation opportunities and involvement and include a summary of this information in the annual report.

C. Illicit Discharge Detection and Elimination (IDDE)

Illicit discharges consist of widely varied types of pollutants from various sources throughout the permittee's jurisdiction. The pollutants may include sediment or oil and grease from commercial and industrial discharges, chemicals and fertilizers from leaking containers or storage tanks, and illegal storm sewer connections and dumping activities. The sources range from the municipality's own operations to commercial and industrial activities to everyday residential life. Phase II MS4s are required to develop a program to detect and eliminate illicit discharges. This includes the development of appropriate ordinances (or alternate legal authority) to ban illicit dischargers and bring appropriate enforcement action if necessary.

Since the sources of these discharges are spread across the entire jurisdiction, the permittee must develop appropriate tools and procedures. To provide one of the major tools for aiding in the success of the IDDE program, the permit requires permittees to develop a system map of their stormwater collection system that shows all of the system's outfalls that discharge to waters of the state or another permittee. The map must also identify the receiving streams by name. The permit also requires that the map show stormwater inflows such as inlets, catch basins, drop structures or other defined contribution points along with a general indication of the direction of stormwater flow.

Many permittees have found that the use of Geographic Information System (GIS) mapping is very helpful in developing this mapping system. A GIS system can not only be used to help in tracking illicit discharges but also in the identification of hot spots. GIS could also be used to track system maintenance and expanded to track construction and other activities as well.

As part of the IDDE program and as noted above, permittees are also required to develop a mechanism for the public to report suspected illicit discharges. The permit does not require any specific method, and the permittee may use whatever technique is appropriate for its organization, as long as records are kept. The permittee must also develop procedures to investigate and resolve, if possible, these reports. Records of these reports and the actions taken, along with records of the permittee's illicit discharge detection and elimination activities should be maintained in the SWMP.

40 CFR 122.34(b)(3)(ii)(C) & (D) require MS4s to detect and address "illegal dumping" and inform all stakeholders of the hazards associated with "illegal discharges" into the MS4's system. Even though these regulatory requirements are covered to some extent within various parts of the permit, there is one possible source of pollutants that is not mentioned in other areas of the permit, that of emergency spills. Under the circumstances of many emergency spills, the permittee may not hold the primary jurisdictional responsibility for dealing with the emergency situation. Unfortunately, the spilled substance may have far-reaching environmental repercussions. Therefore, the permit requires permittees to work with the appropriate emergency management personnel and agencies to provide information to minimize the spill's environmental impacts. Additionally, the permittee should make every effort to develop a set of guidelines and procedures, including lines of communication, for permittee and emergency response personnel to follow in emergency spill situations.

D. Construction Site Runoff Control

Stormwater discharges from construction activities primarily contain sediment, but may also contain other contaminants such as nutrients, petroleum derivatives, construction chemicals, and other wastes from construction activities. The 40 CFR 122.34 construction site runoff control minimum measure requires the MS4 to develop a program to accomplish the following requirements:

- Implement an ordinance or other legal regulatory mechanism that controls construction site runoff (land disturbance of equal to or greater than one acre or less than one acre if part of a larger plan of common development or sale);
- Require construction site operators to implement appropriate erosion protection and sediment control (EPSC) best management practices;
- Require site operators to control construction wastes to maintain water quality;
- Implement a construction plans review and approval process;
- Implement a site inspection program to verify compliance and take appropriate enforcement if necessary; and
- Implement a mechanism to receive and consider public input concerning construction sites.

The definition of *appropriate* EPSCs is not specifically included in the permit because the term ‘appropriate’ varies based on many circumstances, the two most important being site conditions and the status of the receiving waters. Therefore, appropriate EPSCs are best defined by the individual permittee. To provide consistency in runoff control practices statewide, the division has developed the [TDEC Erosion Protection and Sediment Control Handbook \(TDEC EPSC Handbook\)](#), and the EPSCs selected by MS4s must be consistent with this handbook. Additionally, permittees must follow the special requirements for receiving streams with unavailable parameters (for sediment & habitat alteration) found in the current [Tennessee Construction General Permit](#).

A program that ensures that all construction sites use and maintain adequate EPSCs to protect water quality requires a thorough and effective inspection program. The permit includes requirements for two tools to be used to assist in the management of this program element. The requirement to maintain an inventory of active construction sites will provide the permittee with a framework for tracking construction related activities. Additionally, the establishment of a priority construction activity inspection program will give the permittee a means of setting manpower priorities and planning efforts. The permit allows the permittee to define priority construction activity, but the definition must include any sites that discharge to Exceptional Tennessee Waters or waters with unavailable parameters of concern.

E. Permanent Stormwater Management in New Development and Redevelopment

The new draft permit’s permanent stormwater provisions focus on pollutant removal and provide flexibility for the local jurisdiction to address site-specific limitations. The 2010 permit required sites to manage the “first inch” of rainfall by reducing runoff to no discharge, where possible, and to treat remaining runoff to a minimum 80% pollutant removal where limitations existed. In this new draft permit the emphasis is on the equivalent level of pollutant removal from the water quality treatment volume (“WQTV”) with no explicit requirements related to runoff volume reduction. The new draft permit allows each MS4 jurisdiction flexibility to select the ordinances, policies, practices and procedures to implement the local permanent stormwater management program and meet the requirements.

Removal of 100% of pollutants from the WQTV is feasible when the runoff is infiltrated, evapotranspired, or captured for reuse. This level of pollutant removal is considered treatment of the stormwater runoff to the maximum extent practicable at most new development sites, but it is not necessarily practicable at every site. Limitations to infiltration capacity such as soil type, infiltration and/or percolation rates, and shallow bedrock are to be expected at some sites and will vary widely across the state and between municipalities. Therefore, the

new draft permit was developed specifically to address this variability so that the permittees have the flexibility to develop their own permanent stormwater management program including site limitations and acceptable permanent stormwater control measures (SCMs). These procedures will ultimately define the method that the permittee will follow to determine that the design standard of pollutant removal to the MEP is not achievable at a given New Development Site. When the permittee's procedures indicate that site limitations will not permit 100% pollutant removal, the minimum standard of 80% TSS removal must be met. The 'burden of proof' is expected to be upon the site designer to justify to the MS4 why 100% pollutant removal from the WQTV is not practicable, in accordance with the limitations acceptable to the local jurisdiction.

In order to provide alternative tools for permittees that did not have the capability of developing their own program, TDEC developed the Tennessee Permanent Stormwater Management and Design Guidance Manual and the Runoff Reduction Assessment Tool (RRAT) for the 2010 permit. These compliance tools are being updated for use under the new permit. Many local programs in Tennessee use the runoff coefficient (Rv) method, which can be an acceptable approach. The RRAT and Rv methods account for soil type, and the RRAT further accounts for depth to bedrock. Some of the additional concepts to keep in mind in developing permanent stormwater management procedures are offered below.

- While the use of detention basins for reduction of peak flow rates for design storms is not a requirement of this permit, detention basins are a common stormwater management practice required by many local jurisdictions for flood control and channel protection. The RRAT and other review methods assign values for pollutant removal by all SCMs, including detention basins. The effectiveness of detention basins for pollutant removal is time-dependent. In general, the longer the stormwater is detained within the basin, the more pollutants are removed. For example, in a dry detention basin the TSS removal rate after 2 hours is approximately 55%, but after 12 hours it is approximately 65%, and at 24 hours it is approximately 75% in a typical BMP manual. If a permittee chooses to ascribe pollutant removal credit for SCMs whose primary function is stormwater detention (with TDEC's approval), then the plans review process must account the effect of time. If the basin is designed to provide 24-hour detention of larger storms (*e.g.*, a 5-yr/24-hour event, or approximately 4 to 5 inches of rainfall), then the basin is expected to provide significantly more detention time for smaller storms (*e.g.*, one inch or less). The estimated detention time for the WQTV should be calculated and used to determine the appropriate pollutant removal rate, or a conservative value based upon detention of smaller storms can be used in all cases. Treatment of the WQTV in a detention basin can also be improved by adding low-flow orifices specifically designed to increase detention time of the WQTV, or enhancing the function of the basin by modifications such as creating a wet pond, designing a forebay for bioretention, or installing an infiltration trench.
- TSS is used as indicator of all pollutants to simplify site design and plans review, although it might not always accurately reflect the removal rate for other pollutants. Nutrient removal, for example, often requires residence time within a biologically active root zone.
- In order for SCMs to be effective, they must be installed and maintained according to the approved design (including approved revisions to the initial design). This includes the need to protect SCMs from siltation during construction activities at the site, or to install SCMs after the site is stabilized with respect to erosion and sediment transport.

Rainfall characterization is an essential consideration in determining the WQTV for site design. This permit includes a requirement to treat the pollutants in the runoff generated by the "first inch" of rainfall (the WQTV). For design purposes, the rainfall can be expressed as either a regional representative storm, by using a volumetric runoff coefficient for average annual rainfall, or other equivalent method. Using a regional event for design provides rainfall intensity rates and distribution for the designer. While the requirement to manage one inch is similar to an 80th percentile storm depth for the range of precipitation depths across Tennessee, the 95th percentile regional representative rain event is recommended to define the intensity and rainfall distribution for site design and provide greater flexibility for the design of stormwater management measures. It is easier to design a site to treat runoff from one inch of a total 1.5-inch event, than to have to manage the first inch of

every storm. For example, one inch of rain in one hour is a high-intensity storm, but it is not uncommon. It is expected to occur approximately once a year in all parts of Tennessee.

The proposed ‘one inch’ requirement in TN is similar to adjacent states:

- GA requires treatment of 85th percentile storm (defined as 1.2 inches), plus unified sizing criteria for detention or control of 1-yr/24-hr, 25-yr/24-hr, and 100-yr/24-hr storms, depending on location.
- SC requires first inch of runoff to be addressed.
- KY requires 80th percentile depth to be addressed.

(a) Water Quality Riparian Buffers

The goal of the water quality riparian buffer requirement is to preserve or reestablish trees and other vegetation to provide additional pollutant removal in riparian areas of the project, particularly nutrient removal. Water quality riparian buffers are required if streams (as defined at T.C.A. § 69-3-103(40) and in the draft permit, and include wetlands) are present within or adjacent to the New Development Project and:

1. SCMs that rely on infiltration, evapotranspiration, or capture/reuse are not used to treat the entire WQTV; or
2. Discharges from a New Development Project to streams impaired for siltation, nutrients, pathogens, or other parameters related to stormwater runoff from urbanized areas (or discharges upstream of such waters that are likely to cause measurable degradation of these parameters in the impaired segment).

The use of buffers at New Development Projects where site-specific limitations make it impracticable to use SCMs that rely on infiltration, evapotranspiration, or capture/reuse for the entire WQTV will provide an additional measure of pollutant removal not provided by other SCMs. In this case, the goal is for the site to maximize pollutant removal through a combination of SCMs and buffers to approach 100% pollutant removal.

Water quality riparian buffers are also required on sites that impact receiving streams with unavailable parameters for stormwater pollutants of concern such as siltation, pathogens, and nutrients. Again, this requirement provides an additional measure of protection from degradation of streams that are already polluted, in part by providing treatment for runoff that exceeds the WQTV.

Additionally, the permit incentivizes buffers by allowing a 20% reduction in the Water Quality Treatment Volume for sites that use water quality treatment buffers when buffers are not otherwise required. This incentive gives credit to New Development Projects that use SCMs that rely on infiltration, evapotranspiration, or capture/reuse for 100% of the WQTV in combination with buffers. This combination should result in an equivalent or greater level of pollutant removal, and provides for flexibility in site design.

The draft permit specifies buffer widths based on drainage area. This draft permit introduces the option of a 45’ buffer for drainage areas of 1-2 miles, but this is not mandatory. Permittees may choose to use 60’ buffer widths for these sites. These buffer widths also define the minimum forested portion of the buffer. To maximize the beneficial impacts of buffers, it is important to provide properly sized and vegetated buffers. To provide maximum pollutant removal as well as provide other water quality benefits to the stream, the predominant vegetation in the inner 30 feet of the buffer (adjacent to the stream) should be trees. The outer 1/3 (adjacent to the development) of 45- or 60-foot riparian buffers may be composed of grass or infiltration-based SCMs such as filter strips or bioretention. The permit also specifies that stormwater discharges should enter the buffer as sheet flow, not as concentrated flow.

Technical guidance for the proposed buffers is derived from a National Research Council publication, “Riparian Areas, Functions and Strategies for Management” (NRC 2002). This document identifies the need for multiple buffer zones, which the permit has condensed to an outer “grass zone” and an inner “forested zone.”

The NRC document calls for a “*runoff control zone*” to be located at the upland edge of the riparian zone, which is equivalent to the outer grass zone referred to in this permit. This zone has many functions. Because it

is composed of densely growing herbaceous vegetation, usually grass, it offers high resistance to shallow overland flow and reduces runoff velocity and sediment transport capacity. This outer zone also reduces runoff volume and transport of dissolved pollutants because its vegetative cover promotes infiltration. This zone should be designed and maintained so that it converts entering concentrated flow into sheet flow in order to improve the effectiveness of the adjacent managed forest zone in trapping pollutants (Dillaha et al., 1989). Under shallow, sheet flow conditions, the runoff control zone will account for most of the sediment trapping in the multi-zone buffer. The runoff control zone is typically a minimum of 20 ft and should be composed of perennial grasses. Buffer grasses should have dense vegetation with stiff, upright stems at ground level. Species that form sods are preferred over bunchgrasses because they provide more uniform coverage and are usually more dense at ground level. Because infiltration is an important pollutant-removal process, species with deeper roots may also be more effective.

The NRC document also calls for a forested zone, located downslope of the runoff control zone, to consist of tree and shrub species. The main purpose of the forested zone is to remove and sequester dissolved pollutants (especially nutrients) from overland and shallow subsurface flow. Pollutant removal is due mainly to infiltration, plant uptake, and denitrification in the case of nitrate. To encourage high nutrient removal rates, vigorous tree growth should be encouraged by periodic (pruning or thinning) harvesting of plant biomass. The managed forest zone is typically 45- to 75-ft.

If buffers were not required, site development would occur in riparian areas and stormwater from impervious surfaces would discharge directly to waterways without treatment. This is called “directly connected imperviousness” and is correlated with diminished water quality.

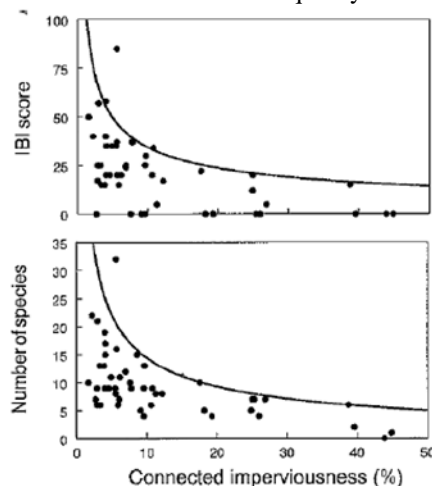


FIGURE 1-4 Plots of Effective Impervious Area (EIA, or “connected imperviousness”) against metrics of biologic response in fish populations. SOURCE: Reprinted, with permission, from Wang et al. (2001). Copyright 2001 by Springer.

The Tennessee Department of Agriculture has published a useful guidance manual explaining the function and design of the riparian buffers that are required in the new permit. The manual is titled Tennessee Urban Riparian Buffer Handbook and is available online at <http://www.tn.gov/agriculture/topic/ag-forests-turb>.

Temporary buffer zones along waterbodies are required during construction activities at the site according to the CGP. Where the water quality buffer width identified in this permit is smaller than the temporary construction buffer width, and the full construction buffer width cannot be provided, the permittee may allow the site to apply the smaller water quality buffer width during construction. If this option is applied, additional EPSCs must be required during construction to provide protection equivalent to the width of temporary buffer zone that is not implemented. The Division plans to address this matter in the next iteration of the CGP.

2. Codes and Ordinances Review and Update

The Water Quality Scorecard (the scorecard) is a tool that focuses on common municipal codes and ordinances provisions that can impact the effect of stormwater runoff on receiving waters. These impacts may be inadvertent; in attempts to address unrelated municipal issues, codes and ordinances frequently drive the creation of additional impervious surfaces such as large parking lots, wide roads, curbed streets, etc. The scorecard addresses a variety of issues, and provides a quantitative scale that the permittee will use to score its policies with respect to protection of receiving waters. The purpose of the evaluation is two-fold:

- to help the permittee identify policies that may be creating obstacles to comprehensive and effective stormwater management; and
- to identify preferred alternatives.

The MS4 jurisdictions are expected to make improvements to municipal policies currently creating barriers to protection of waters of the state. However, the division's intent is not for the permittees to ultimately achieve a 'perfect score'. The score will not be used to measure compliance with the permit; rather, for the permittee to identify high priority areas for the community, and focus effort on those particular issues. A completed copy of the scorecard shall be submitted with the subsequent annual report. The scorecard must be completed and submitted one time only. Permittees may choose to complete the scorecard multiple times, but it is not the division's intent to use the scorecard to measure progress in any way.

3. Development Project Project Plan Review, Approval and Enforcement

Permittees are required to have an ordinance or other regulatory mechanism to ensure permanent stormwater management. Since permanent stormwater management is primarily being implemented through development and redevelopment construction projects, the division believes that this can be best accomplished by establishing a permanent stormwater plans review process similar to the construction stormwater plans review process.

4. Maintenance of Stormwater Assets

All stormwater SCMs, including SCMs used at mitigation projects, installed and implemented to meet the performance standards of sub-section **Error! Reference source not found.**, must be maintained for the life of the asset. The permittee must develop a program to ensure the long-term maintenance of these stormwater SCMs. TDEC has committed to convening an operation and maintenance committee of affected stakeholders to develop guidance for operation and maintenance best practices. The permittee may wish to consider elements such as the following when establishing the program:

- Establish a SCM tracking system – Develop a system to track SCM's location, design information, maintenance requirements, responsible party, and maintenance records. This could be done through a Geographic Information System or some other form of database. These types of records are very helpful in managing this type of program that involves multiple locations and responsible parties.
- Establish an operation/maintenance agreement – Develop an operation/maintenance agreement that identifies the operation and/or maintenance required by given SCMs and transfers the responsibility for the activity to the appropriate owner/operator. This may be accomplished in any way that the permittee finds appropriate and could be included as a condition of sale, included in the covenants and restrictions in a deed, or otherwise legally assigned to an individual or homeowners association.
- Verification of operation/maintenance – Develop a system to verify that operation/maintenance activities are being performed according to design. The permittee may wish to obtain a written initial verification that the owner/operator has been informed of and agrees to the responsibilities of a development or site. Additionally, some sort of MS4 inspection program or an owner/operator operation/maintenance reporting/certification

program may prove helpful. Inspection and certification programs could include the following types of information:

- Facility type,
 - Inspection date,
 - Latitude and longitude and nearest street address,
 - SCM owner information (e.g., name, address, phone number, fax, and email),
 - A description of SCM condition including: vegetation and soils; inlet and outlet channels and structures; embankments, slopes, and safety benches; spillways, weirs, and other control structures; and any sediment and debris accumulation,
 - Photographic documentation of SCMs, and
 - Specific maintenance items or violations that need to be corrected by the SCM owner along with deadlines and re-inspection dates.
- Documentation of Program – Documentation and record keeping is important in any Program that must keep up with many sites and many activities. Good documentation not only helps the permittee manage the Program, but serves to provide the information necessary to demonstrate that maintenance practices are being performed.

F. Pollution Prevention/Good Housekeeping for Municipal Operations

The Pollution Prevention/Good Housekeeping for municipal operations minimum control measure is a key element of the small MS4 stormwater management program. This measure requires the small MS4 operator to examine and subsequently alter their own actions to help ensure a reduction in the amount and type of pollution that: (1) collects on streets, parking lots, open spaces, and storage and vehicle maintenance areas and is discharged into local waterways; and (2) results from actions such as environmentally damaging land development and flood management practices or poor maintenance of storm sewer systems.

While this measure is meant primarily to improve or protect receiving water quality by altering municipal or facility operations, it also can result in a cost savings for the small MS4 operator, since proper and timely maintenance of storm sewer systems can help avoid repair costs from damage caused by age and neglect.

VI. Qualifying Tribe, State or Local Program (QLP)

Under CFR [Sec. 122.44\(s\)](#), the division can formally recognize an MS4 jurisdiction as a Qualified Local Program (QLP) that has been shown to meet or exceed the provisions of the construction general permit. The division is providing a QLP program that provides clear criteria, incentives and formal recognition. More information can be found at the state's [QLP website](#).

QLPs provide for a more efficient process for managing construction stormwater by eliminating duplication of the effort between MS4 jurisdictions and the division; ease the burden on construction site operators by providing them with one set of requirements to follow, not two; and provide a stronger, locally-managed, erosion prevention and sediment control programs.

VII. Antidegradation Review

The antidegradation policy in Tennessee Rules, Chapter [0400-40-03-.06](#) requires that degradation of existing water quality be prevented unless necessary for economic and social benefit. The division believes that existing water quality will not be degraded by the issuance of this permit. The stormwater discharges authorized by this permit have been on-going since the federal regulations requiring an NPDES permit were adopted. This permit will reduce the current level of pollutants discharged from small MS4s. The division also expects the pollution reduction measures implemented by permitted small MS4s to offset any expansion of stormwater conveyances systems and outfalls because of the permit requirement to implement a broad range of pollution reduction measures, including measures to address impacts from new development and significant redevelopment. The permit does not set numeric discharge limits. Stormwater discharges are highly variable in nature and difficult to control due to topography, land use and weather differences (e.g., intensity and duration of storms). Through

an adaptive management process, the co-permittees are required to regularly review and refine their best management practices to reduce pollutants to the maximum extent practicable. The goal of the permit is a net reduction in pollutant loadings over the five-year permit term. Over the five-year permit term, a range of programs will be implemented and enhanced to minimize stormwater pollution discharges from existing and new residential, commercial, and industrial developments. Therefore, the issuance of this permit will protect and improve existing water quality and is consistent with the division's antidegradation policy.

VIII. Reviewing and Updating Stormwater Management Programs

The Program is a set of structural and nonstructural actions and activities used by the permittee to reduce the discharge of pollutants to the maximum extent practicable. Minor changes and adjustments to the various Program elements are expected and may be necessary to more successfully adhere to the goals and requirements of the permit. One of the purposes of this section of the permit is to specify the procedures for making changes to the Program. A distinction is made between adding new components and replacing (or removing) components of the Program. Permittees may add new components or replace ineffective components at any time. However, permittees may not remove a component without the approval of the division.

Most changes to the Program are considered a part of adaptive management and do not require modification of this permit unless the division determines that the magnitude of proposed Program revisions substantially change the nature or scope of the Program.

The division does not intend to require a permit modification should the permittee(s) annex additional lands or accept the transfer of operational authority over portions of the MS4. Implementation of appropriate Program elements for these additions is required.

IX. Enforcement Response Plan

Permittees are required by Phase II regulations to include in their ordinance, or other regulatory mechanism, enforcement response provisions to ensure compliance with construction requirements, to require the removal of illicit discharges, and to address noncompliance with permanent stormwater requirements. In complying with these requirements, the division requires the use of enforcement responses that vary with the type of permit violation, and escalate if violations are repeated or not corrected (recidivism reduction). The MS4 must develop and implement an enforcement response plan (ERP), which clearly describes the action to be taken for common violations associated with various elements of the Program. A well-written ERP provides guidance to inspectors on the different enforcement responses available, when and how to refer violators to the State, and how to track enforcement actions.

X. Monitoring, Recordkeeping, and Reporting

An MS4 monitoring program should meet the following objectives:

1. Assess compliance with the permit;
2. Measure the effectiveness of the permittee's Program;
3. Assess the chemical, physical, and biological impacts to receiving waters resulting from stormwater discharges;
4. Characterize stormwater discharges;
5. Identify sources of stormwater pollutants;
6. Detect and eliminate illicit discharges and illegal connections to the MS4; and
7. Assess the overall health and evaluate long-term trends in receiving water quality.

There were two main components of the monitoring program required in the previous Phase II MS4 permit, non-analytical monitoring (visual stream surveys) and analytical monitoring. The analytical monitoring portion of the Program involved obtaining single samples from receiving stream segments that were assessed as having

unavailable parameters of concern. As this data provided information toward objective number 7 above, and some long term information toward numbers 3 and 4; some permittees found that the data did not provide all the information needed for evaluating the remaining objectives. The visual stream assessment and impairment inventory component, as effective as it has proven to be, may have provided some information toward objectives 1, 2, 5, 6 and 7; but may not have provided all of the information that the permittee needed to make sound management decisions and plans. The monitoring section of the permit has been changed to allow permittees an option to gather data pertinent to the operation and management of the individual jurisdiction.

The monitoring program in the new draft permit contains the same non-analytical monitoring component consisting of visual stream surveys and unavailable parameters inventories as was in the previous permit. Permittees must also conduct required approved TMDL monitoring as before. However, there are now two options for the permittee to choose from to fulfil permit monitoring requirements. The first option is largely the same monitoring program as that found in the previous permit, instream monitoring of receiving waters with unavailable parameters of concern status. Of particular note is that nutrients (phosphorus, nitrogen and related parameters) have been included as a pollutant parameter of concern. The second option allows permittees to develop a monitoring plan specific to the needs of the permittee. The plan may include monitoring of outfalls, receiving streams or other appropriate sources of water quality data. The monitoring could include sampling and analysis, modeling, visual observation, or other methods; as long as the monitoring plan meets the permit objectives and contains the information required under Option 2 and the permittee can provide a justification for the proposed program. Regardless of the choice of monitoring program option, permittees must still comply with the non-analytical and TMDL monitoring permit requirements. Jurisdiction specific (Option 2) plans must be submitted to the appropriate Environmental Field Office within 12 months of coverage under the new permit and must be complete by the end of the permit cycle. The division does not anticipate giving a formal approval for the optional monitoring programs.

XI. Permit Issuance Procedures

A. Administration

This general permit is drafted in accordance with applicable NPDES regulations ([40 CFR 122, 123, 124 and 125](#)), the Tennessee Water Quality Control Act ([§ 69-3-101 et seq.](#)), and the Department's permit issuance regulations (Rules of the Department [1200-4-10-.01, -.02, -.03](#)).

Permittees under this general permit will be assigned permit tracking numbers in the form, TNS0XXXXX, where the permit is assigned a five digit number such as TNS075663 (Shelby County).

B. NPDES Procedures

The applicable regulations for issuance of this general permit are 40 CFR 122.28, 123.44 and fact sheet requirements at 124.8 and 124.56.

C. Schedule for Permit Issuance

Following are tentative dates associated with this general permit issuance process:

Public Notice:	February 25, 2016
Draft permit transmittal to EPA:	February 25, 2016
Public Hearings:	To be determined
Close of comment period:	Ten days after final public hearing
Issuance Date:	To be determined

D. Consideration of Comments and Permit Issuance Decisions

The Division of Water Resources proposes to issue this permit with the described effluent limitations, monitoring and reporting requirements and standard conditions. These conditions are tentative and open to comment. Interested persons are invited to submit comments for consideration, by letter or at the scheduled public hearing.

Hearings will be held as noted above.

Comments should be submitted to the following address:

Division of Water Resources
Attn: Paul Higgins
William R. Snodgrass Tennessee Tower
312 Rosa Parks Avenue
11th Floor
Nashville, TN 37243

and/or by e-mail to water.permits@tn.gov