

**DEPARTMENT OF ENVIRONMENTAL PROTECTION**  
**Bureau of Waterways Engineering and Wetlands**

**DOCUMENT NUMBER:** 310-2135-003

**TITLE:** Riparian Buffer or Riparian Forest Buffer Offsetting

**EFFECTIVE DATE:** March 21, 2015

**AUTHORITY:** The Pennsylvania Clean Streams Law, as amended by Act 162 of 2014 (Act 162), 35 P.S. §§ 691.1—691.1001 and regulations at 25 *Pa. Code* Chapters 92(a), 93, 96 and 102.

**POLICY:** This policy provides guidance and procedures for meeting the requirements of Act 162 of 2014 as it relates to the riparian buffer or riparian forest buffer offsetting requirements.

**PURPOSE:** This guidance outlines the replacement criteria and process related to the riparian forest buffer offsetting required by Act 162 of 2014.

**APPLICABILITY:** This guidance applies to applicants for individual National Pollutant Discharge Elimination Systems (NPDES) permit applications for stormwater discharges associated with construction activities who are required to proceed under 35 P.S. § 691.402(c)(2).

**DISCLAIMER:** The policies and procedures outlined in this guidance document are intended to supplement existing requirements. Nothing in the policies or procedures shall affect regulatory requirements.

The policies and procedures herein are not an adjudication or a regulation. There is no intent on the part of DEP to give these rules that weight or deference. This document establishes the framework within which DEP will exercise its administrative discretion in the future. DEP reserves the discretion to deviate from this policy statement if circumstances warrant.

**PAGE LENGTH:** 17 pages

## 1. INTRODUCTION

Land development activities that change the surface features of land may alter stormwater runoff characteristics. Unmanaged changes in stormwater runoff volume, rate and water quality resulting from land development activities can constitute pollution or potential pollution that is regulated under the federal Clean Water Act and the Pennsylvania Clean Streams Law because such changes can alter the chemical, physical or biological properties of receiving waters.

Pennsylvania regulations found in *25 Pa. Code* Chapter 102 (relating to erosion and sediment control) specify that such land development should be designed and best management practices (BMPs) should be implemented that mimic the natural systems in place prior to the development activity. Additionally, Chapter 102 specifies when permits may be required.

Erosion and sediment control and post construction stormwater management are addressed under several permitting programs administered by the Department (DEP) under the *25 Pa. Code* Chapters 92a and 102 regulations including: the National Pollutant Discharge Elimination System (NPDES) Permit for stormwater discharges associated with construction activities (construction), the Erosion and Sediment Control General Permit for oil and gas activities (ESCGP), and the Erosion and Sediment Control Permit (E&S permit) for timber harvesting and road maintenance. These permits utilize narrative based effluent limitations in the form of BMPs to achieve the regulatory standard of preventing pollution. BMPs used to manage runoff changes - from land disturbance, land use changes and increases in impervious area - in stormwater runoff volume, rate and quality must protect, maintain, and restore water uses for all surface waters.

For an earth disturbance activity that requires a permit under *25 Pa. Code* Chapter 102, where a receiving surface water of this Commonwealth is classified as High Quality (HQ) or Exceptional Value (EV) under *25 Pa. Code* Chapter 93, the person proposing the earth disturbance activity is required to use “nondischarge alternative” BMPs for both the Erosion and Sedimentation (E&S) (*25 Pa. Code* § 102.4(b)(6)) and Post Construction Stormwater Management (PCSM) BMPs (*25 Pa. Code* § 102.8(h)). If nondischarge alternatives do not exist for the project, the person must use Antidegradation Best Available Combination of Technologies (ABACT) BMPs and assure that any discharge maintains and protects the existing quality of receiving surface waters and protects existing baseflow.

DEP has determined that in certain circumstances, riparian buffer or riparian forest buffer BMPs must also be utilized to satisfy antidegradation requirements. A riparian buffer is a BMP that is an area of permanent vegetation along waterbodies that is left undisturbed to allow for natural succession of native vegetation. A riparian buffer may consist of grasses and forbs, or a combination of vegetation types to include grasses, forbs, shrubs and trees. A riparian forest buffer is a specialized type of riparian buffer consisting of permanent vegetation that is predominantly native trees and shrubs that provide at least 60% uniform canopy cover. Riparian forest buffers must be maintained in a natural state or sustainably managed to protect and enhance water quality, stabilize stream channels and banks, and separate land use activities from surface waters. Riparian forest buffers can be in place as newly established or existing, where protection is critical (Pennsylvania Department of Environmental Protection, 2010).

Specifically, Pennsylvania regulations at *25 Pa. Code* Chapter 102.14(a)(1) (relating to erosion and sediment control) specify that “persons proposing or conducting earth disturbance activities

when the activity requires a permit under this chapter may not conduct earth disturbance activities within 150 feet of a perennial or intermittent river, stream, or creek, or lake, pond or reservoir when the project site is located in an exceptional value or high quality watershed attaining its designated use as listed by the Department at the time of application and shall protect any existing riparian buffer in accordance with this section”.

Further, Chapter 102.14(a)(2) states that “persons proposing or conducting earth disturbance activities when the activity requires a permit under this chapter where the project site is located in an exceptional value (EV) or high quality (HQ) watershed where there are waters failing to attain one or more designated uses as listed in Category 4 or 5 on Pennsylvania’s Integrated Water Quality Monitoring and Assessment Report (as amended and updated) at the time of the application, and the project site contains, is along or within 150 feet of a perennial or intermittent river, stream, or creek, lake, pond or reservoir shall, in accordance with the requirements of the section, do one of the following:

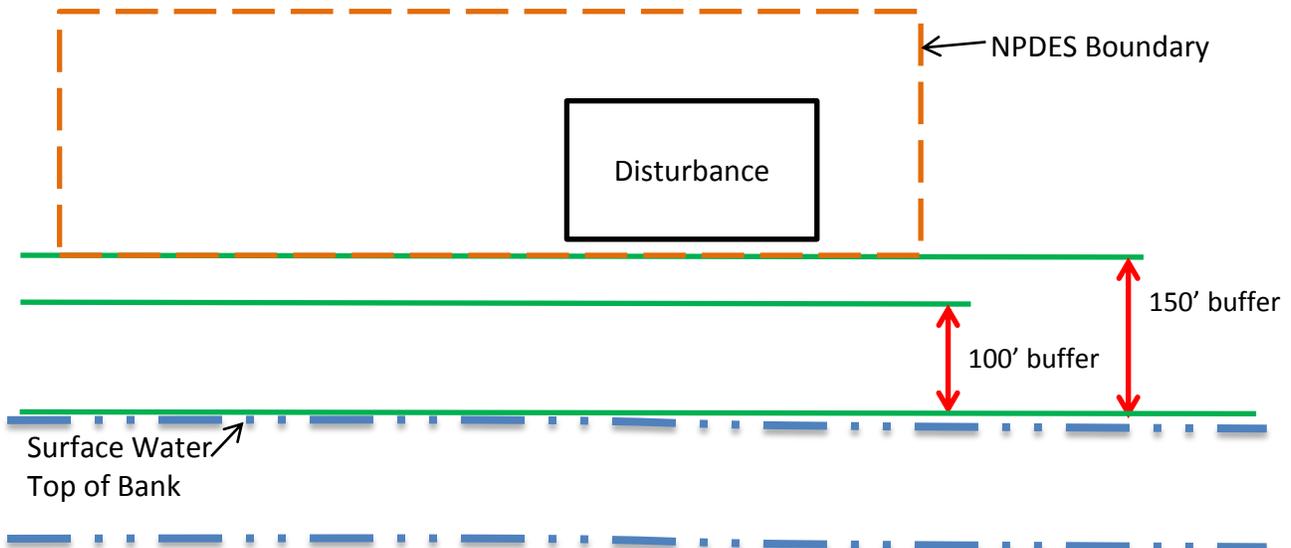
- (i) Protect an existing riparian forest buffer.
- (ii) Convert an existing riparian buffer to a riparian forest buffer.
- (iii) Establish a new riparian forest buffer.

The 2010 amendments to Chapter 102 established riparian forest buffer BMPs as the only BMP that is afforded the antidegradation presumption under 25 *Pa. Code* § 102.14(e)(1). The antidegradation presumption specifies that a properly installed and maintained riparian forest buffer functions as a non-discharge alternative and also functions to prevent thermal impacts. This presumption, along with a technically sound designed, implemented and maintained post construction stormwater management plan, affords a high level of water quality protection to the special protection waters to which this guidance applies, and therefore a bright line for applicants implementing antidegradation requirements in these waters. Riparian forest buffers are complex ecosystems that help provide nutrients and habitat for stream communities as well as mitigate or control point and nonpoint source pollution by both keeping pollutants out of waterways and increasing the level of instream pollution processing. Scientific literature supports the riparian forest buffer (with stormwater entering the buffer as sheet flow or shallow concentrated flow) as the only best management practice that can do all of the following: capture and hold stormwater runoff from the majority of Pennsylvania storms in a given year; infiltrate most of that water and/or transport it as shallow flow through the forest buffer soils where contaminant uptake and processing occurs; release excess storm flow evenly, further processing dissolved and particulate substances associated with it; sequester carbon at significant levels; improve the health of the stream; and increase the stream’s capacity to process organic matter and nutrients generated on the site or upstream of the site. Because riparian forest buffers protect surface waters from the effects of runoff by providing filtration of pollutants, bank stability, groundwater recharge, rate/attenuation and volume reduction, credit may be granted when stormwater is effectively treated by an existing riparian forest buffer (including in the post development condition), that is predominantly native trees and shrubs that provide at least 60% uniform canopy cover. Because riparian forest buffers are the only BMP that can provide such an exceptionally high level of water use protection and ecosystem function, projects that implement them according to regulation and guidance are afforded the antidegradation presumption as detailed in Chapter 102.

Act 162, signed into law on October 22, 2014, and effective for implementation on December 21, 2014, amends the Pennsylvania Clean Stream Law (35 P.S. §§ 691.1—691.1001). Section 402(c)(1) of the Act provides that for persons proposing or conducting earth disturbance activities when the activity requires a National Pollutant Discharge Elimination System Permit for storm water discharge under 25 Pa. Code Chapter 102 (relating to erosion and sediment control), the person may use or install either: 1) a riparian buffer or riparian forest buffer; or 2) another option or options among best management practices, design standards and alternatives that collectively are substantially equivalent to a riparian buffer or riparian forest buffer in effectiveness to minimize the potential for accelerated erosion and sedimentation and to protect, maintain, reclaim and restore water quality; and for existing and designated uses of a perennial or intermittent river, stream, creek, lake pond or reservoir to ensure compliance with 25 Pa. Code Chapter 93 (relating to water quality standards). Practically speaking, Act 162 allows applicants with projects within 150 feet of special protection waters flexibility in dealing with the mandatory riparian buffer requirements given in Chapter 102.14.

This guidance outlines the replacement criteria and process related to riparian forest buffer offsetting required by Section 402(c)(2) of Act 162. Act 162 provides that individual NPDES Permits for Stormwater Discharges Associated with Construction Activities proposing any earth disturbance within 100 feet of a surface water shall offset any reduction in the total square footage of the buffer zone that would have been utilized as a BMP with a replacement riparian forest buffer. This replacement buffer is specified in the Act to be a riparian forest buffer regardless of whether the special protection water is impaired or has a TMDL. That replacement riparian forest buffer must be located along special protection waters, in the same drainage list and as close as feasible to the area of disturbance at a ratio of one to one. Act 162 does not provide for waivers of the offsetting requirement. Figures 1, 2 and 3 show examples of when the equivalency demonstration is required or not and when offsetting is required. Figures 2a and 2b show how sample offsetting calculations are completed. The following policy document addresses the offsetting provision as required by Act 162.

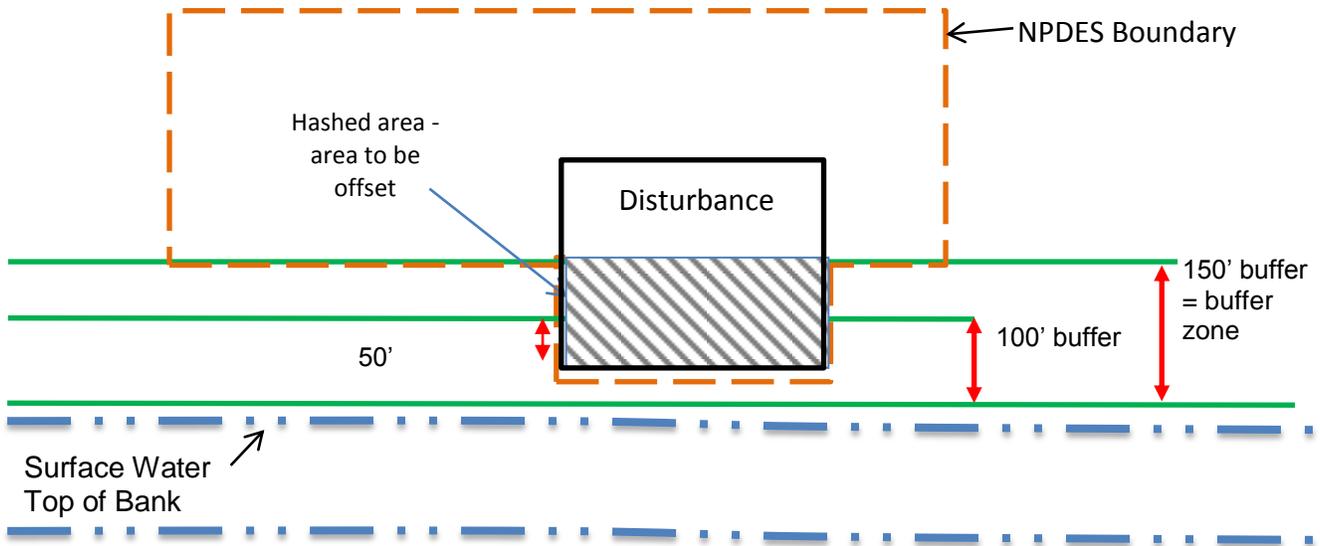
**Figure 1. Equivalency demonstration and offsetting not required**



In this example, the project involves one acre or greater of earth disturbance and requires an NPDES stormwater construction permit. The applicant has chosen to keep the NPDES project

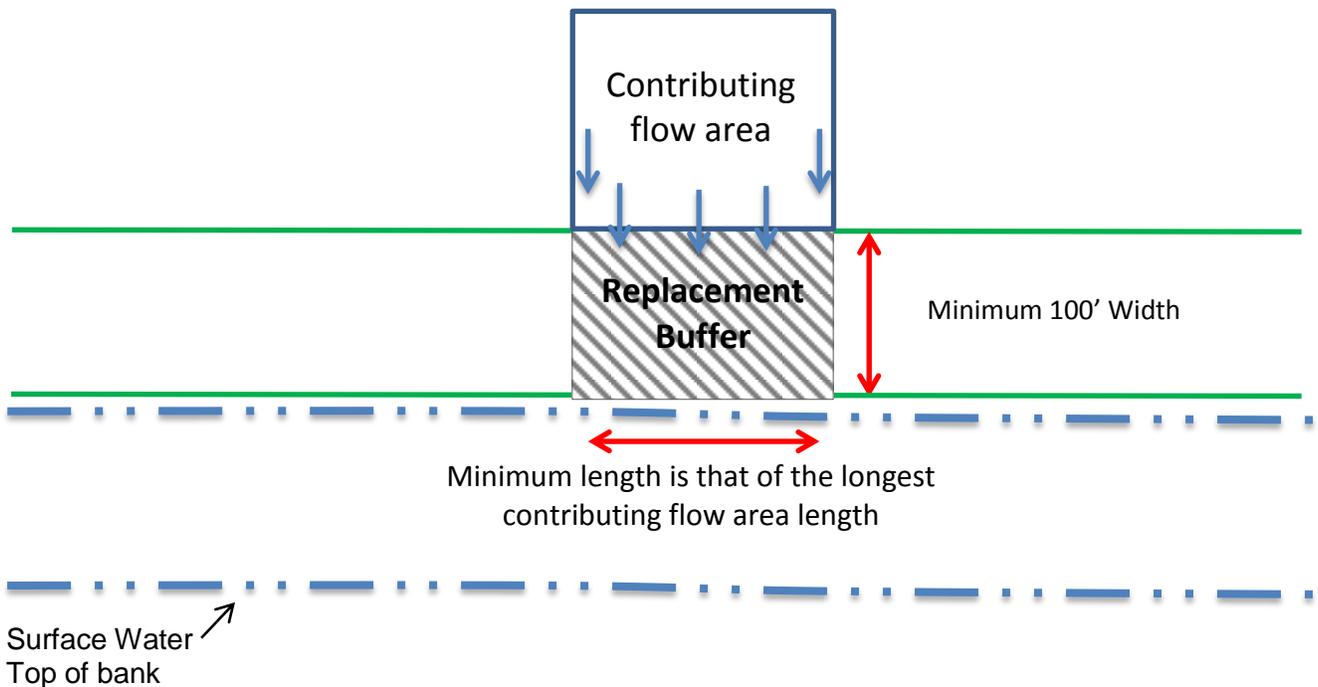
boundary and the limit of disturbance both outside of the 150 feet closest to the stream. Because of this choice, neither offsetting nor an equivalency demonstration is required.

**Figure 2. Both equivalency demonstration and offsetting required**

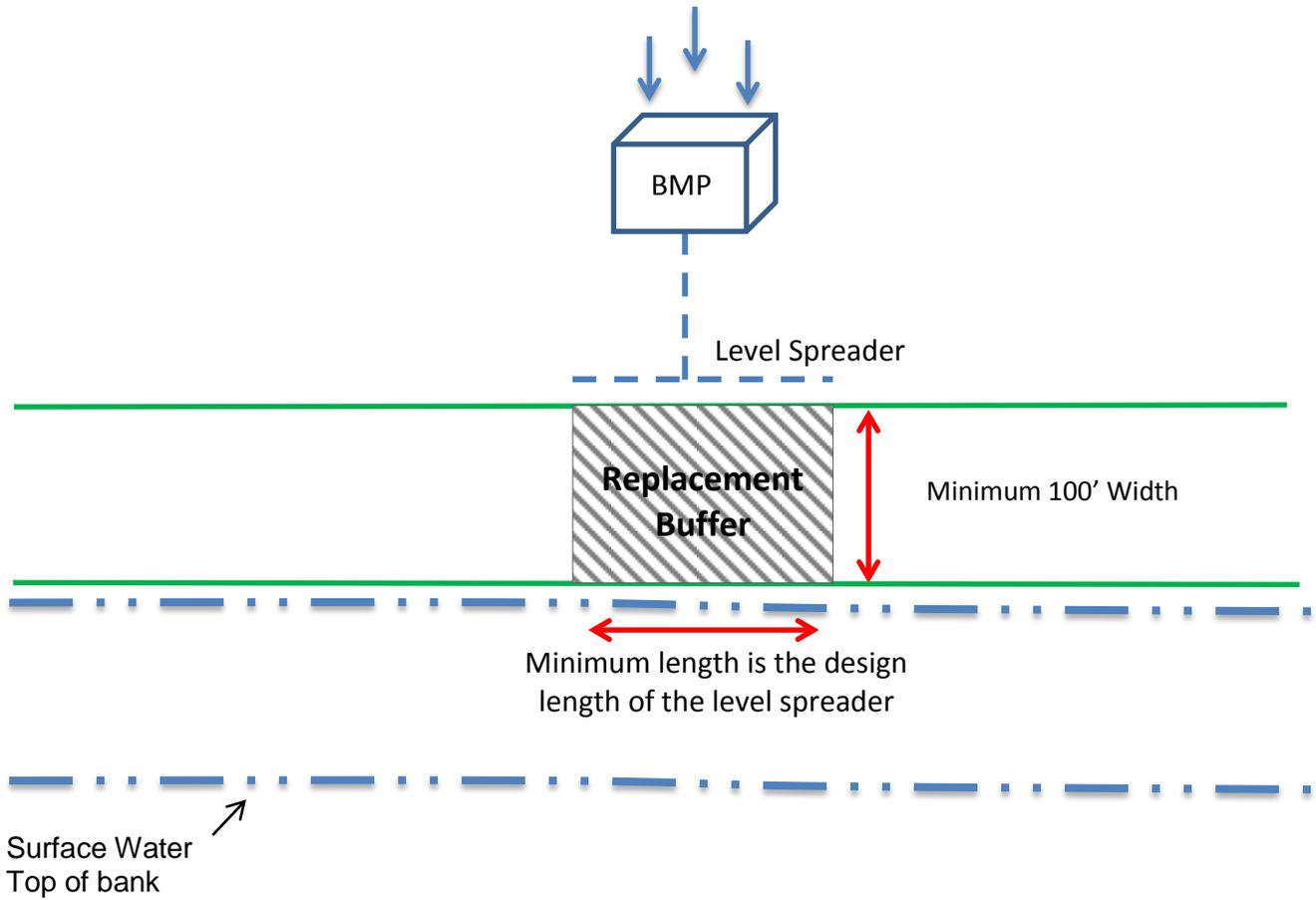


In this example, the project involves one acre or greater of earth disturbance and requires an individual NPDES stormwater construction permit. The applicant has chosen to conduct earth disturbance within 50 feet of the surface water. In this case, both the demonstration of equivalency and the offsetting must be completed as part of the NPDES application. The area that is hashed in the diagram is that area that must be offset, either onsite or offsite, at a ratio of 1 to 1.

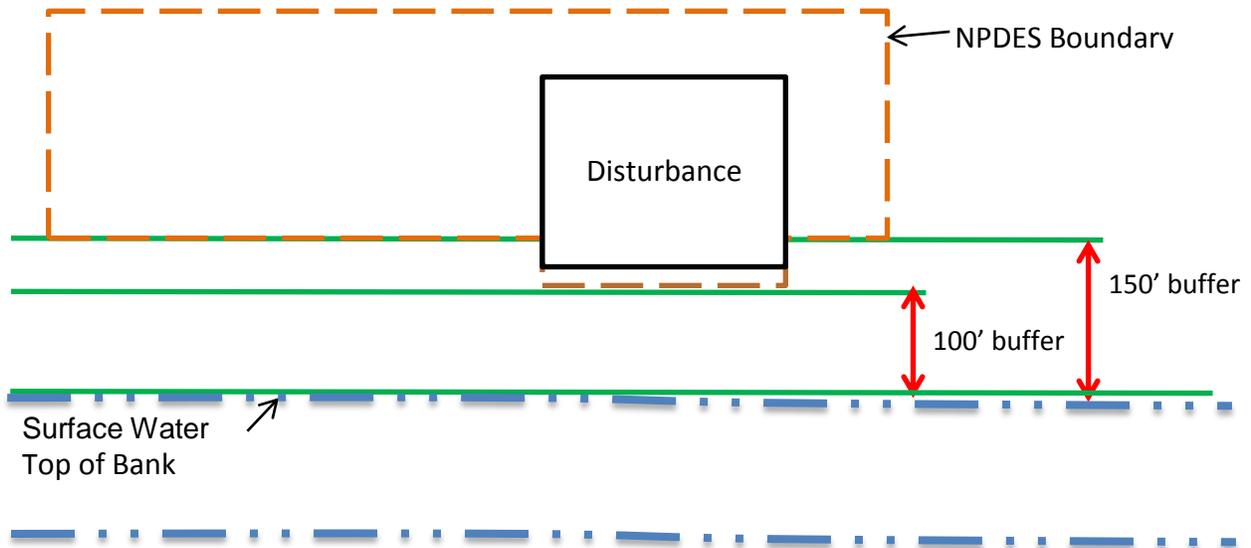
**Figure 2a. Replacement buffer sample diagram**



**Figure 2b. Replacement buffer sample diagram**



**Figure 3. Equivalency demonstration required but offsetting not required**



In this example, the project involves greater than or equal to one acre of earth disturbance and requires an individual NPDES stormwater construction permits. The applicant has chosen to

conduct earth disturbance between 150 and 100 feet of the surface water. In this case, only the demonstration of equivalency must be completed as part of the NPDES permit application. Offsetting is not required.

## 2. DEFINITIONS

The words and terms in this policy, unless defined herein, have the meanings as identified in the Pennsylvania Clean Streams Law, as amended by Act 162 of 2014, 35 P.S. §§ 691.1—691.1001, and regulations at 25 Pa. Code Chapters 92(a), 93, 96 and 102, as applicable.

Act 162 of 2014 - An amendment to Section 402 of the Pennsylvania Clean Streams Law (35 P.S. § 691.402) related to Riparian Buffers and Riparian Forest Buffers.

Area of Disturbance - The permitted earth disturbance activity at the project site.

BMPs - Best management practices - Activities, facilities, measures, planning or procedures used to minimize accelerated erosion and sedimentation and manage stormwater to protect, maintain, reclaim, and restore the quality of waters and the existing and designated uses of waters within this Commonwealth before, during, and after earth disturbance activities. (25 Pa. Code § 102.1)

DEP - The Pennsylvania Department of Environmental Protection or Department.

Designated uses - Those uses specified in 25 Pa. Code §§ 93.4(a) and 93.9a–93.9z for each water body or segment whether or not they are being attained. (25 Pa. Code § 93.1)

Earth disturbance activity - A construction or other human activity which disturbs the surface of the land, including land clearing and grubbing, grading, excavations, embankments, land development, agricultural plowing or tilling, operation of animal heavy use areas, timber harvesting activities, road maintenance activities, oil and gas activities, well drilling, mineral extraction, and the moving, depositing, stockpiling, or storing of soil, rock or earth materials. (25 Pa. Code § 102.1)

Exceptional Value (EV) Waters - Surface waters of high quality which satisfy § 93.4b(b) (relating to antidegradation). (25 Pa. Code § 93.1)

High Quality (HQ) Waters - Surface waters having quality which exceeds levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water by satisfying § 93.4b(a). (25 Pa. Code § 93.1)

National Pollutant Discharge Elimination System Permit for Stormwater Discharges Associated With Construction Activities (NPDES Permit) - A permit required for the discharge or potential discharge of stormwater into waters of this Commonwealth from construction activities, including clearing and grubbing, grading and excavation activities involving 1 acre (0.4 hectare) or more of earth disturbance activity or an earth disturbance activity on any portion, part, or during any stage of, a larger common plan of development or sale that involves 1 acre (0.4 hectare) or more of earth disturbance activity over the life of the project. (25 Pa. Code § 102.1)

NPDES Permit application - A request, on a form provided by DEP, for coverage under an Individual NPDES Permit.

Offset - To install a replacement riparian forest buffer along special protection waters, in the same drainage list and as close as feasible to the area of disturbance.

PCSM - Post construction stormwater management. (25 Pa. Code § 102.1)

PCSM Plan - A site-specific plan consisting of both drawings and a narrative that identifies BMPs to manage changes in stormwater runoff volume, rate and water quality after earth disturbance activities have ended and the project site is permanently stabilized. (25 Pa. Code § 102.1)

Pollutant - Any contaminant or other alteration of the physical, chemical, biological or radiological integrity of surface water which causes or has the potential to cause pollution as defined in section 1 of The Clean Streams Law (35 P.S. § 691.1). (25 Pa. Code §§ 102.1, 92a.1 and 96.1)

Post construction stormwater - Stormwater associated with a project site after the earth disturbance activity has been completed and the project site is permanently stabilized. (25 Pa. Code § 102.1)

Project site - The entire area of activity, development, lease or sale including:

- (1) The area of an earth disturbance activity.
- (2) The area planned for an earth disturbance activity.
- (3) Other areas which are not subject to an earth disturbance activity. (25 Pa. Code § 102.1)

Replacement buffer - A newly established or installed riparian forest buffer located along special protection waters, in the same drainage list and as close as feasible to the area of disturbance that compensates for disturbance within 100 feet of the special protection surface water at a ratio of one to one.

Riparian buffer - A BMP that is an area of permanent vegetation along surface waters. (25 Pa. Code § 102.1)

Riparian forest buffer - A type of riparian buffer that consists of permanent vegetation that is predominantly native trees, shrubs and forbs along surface waters that is maintained in a natural state or sustainably managed to protect and enhance water quality, stabilize stream channels and banks, and separate land use activities from surface waters. (25 Pa. Code § 102.1)

Special Protection Waters - Water uses which shall be protected, and upon which the development of water quality criteria shall be based, are set forth, as High Quality Waters (HQ) and Exceptional Value (EV) Waters in § 93.3, Protected water uses.

Stormwater - Runoff from precipitation, snowmelt, surface runoff and drainage. (25 Pa. Code § 102.1)

Surface waters - Perennial and intermittent streams, rivers, lakes, reservoirs, ponds, wetlands, springs, natural seeps, and estuaries, excluding water at facilities approved for wastewater

treatment such as wastewater treatment impoundments, cooling water ponds, and constructed wetlands used as part of a wastewater treatment process. (25 Pa. Code §§ 102.1, 92a.1 and 96.1)

TMDL - Total Maximum Daily Load

Top of streambank - First substantial break in slope between the edge of the bed of the stream and the surrounding terrain. The top of streambank can either be a natural or constructed (that is, road or railroad grade) feature, lying generally parallel to the watercourse. (25 Pa. Code § 102.1)

Wetlands - Areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions, including swamps, marshes, bogs, and similar areas. (25 Pa. Code §§ 92a.1, 93.1 and 96.1)

### **3. GUIDANCE AND APPLICATION**

#### **a. Projects for Which the Riparian Forest Buffer Offsetting Applies**

The scope of the projects to which Act 162 applies is narrow. In Section 402(c)(1), the scope of the amendment is limited to projects that require an NPDES permit under 25 Pa. Code Chapter 102. The NPDES permit required under Chapter 102 is the NPDES Permit for Stormwater Discharges Associated with Construction Activities (NPDES Stormwater Construction). Section 402(c)(1) provides that applicants may utilize either riparian buffers, riparian forest buffers or alternative BMPs. Section 402(c)(1)(ii) in turn sets out requirements for the alternative BMPs, providing they must be equivalent to a riparian buffer or riparian forest buffer in function. Because the underlying Chapter 102 requirements relate to riparian buffers and riparian forest buffers provide that such buffers are mandatory only for certain projects in special protection waters, the equivalency demonstration provided in Section 402(c)(1), applies to projects requiring an individual NPDES permit in a designated special protection watershed that propose any earth disturbance within 150 feet of a river, stream, creek, lake, pond or reservoir. Under Pennsylvania's NPDES regulations, all NPDES permitted projects that drain to special protection waters must obtain an individual NPDES construction stormwater permit. Therefore, according to the construction of Act 162 and regulatory requirements in 25 Pa. Code § 102.14, Act 162 is in effect, limited in scope to only those individual NPDES construction stormwater permits which involve earth disturbance activities within 150 feet of a designated special protection river, stream, creek, lake, pond or reservoir.

Because of the construction of Act 162 and the regulatory requirements in 25 Pa. Code § 102.14, general NPDES construction stormwater permits and other Chapter 102 permits are excluded from the application of Act 162. Other Chapter 102 permits include the E&S control permit for timber harvesting and road maintenance activities (E&S Permit) and the E&S Control General Permit for Earth Disturbance Associated with Oil and Gas Exploration, Production, Processing, or Treatment Operations or Transmission Facilities (ESCGP-2).

As a threshold matter, it is important to note that Act 162 did not modify the regulatory language in 25 Pa. Code § 102.14 but rather allowed for alternatives to demonstrate regulatory compliance. Therefore, the trigger for the riparian buffer requirements in the regulation is not changed by the Act, remaining at earth disturbance within 150 feet of a special protection river, stream, creek, lake, pond or reservoir. Under Act 162, Section 402(c)(1), an applicant for an individual NPDES construction stormwater permit that proposes earth disturbance within 150 feet of a HQ or EV river, stream, creek, lake, pond or reservoir, the applicant may choose to use or install either: 1) a riparian buffer or riparian forest buffer in accordance with Chapters 102.14(a) or 102.14(b), whichever is applicable; or 2) another option or options among available best management practices, design standards and alternatives that collectively are substantially equivalent to a riparian buffer or riparian forest buffer in effectiveness to protect and restore water quality in the receiving waterbody. Section 402(c)(2) of the Act further requires that those projects defined in Section 402(c)(1)(ii) that propose earth disturbance within 100 feet of a surface water will offset any reduction in total buffer zone square footage. This guidance provides the recommended criteria for demonstrating compliance of the Act 162 offsetting requirement.

**b. Application Requirements**

Applicants proceeding under Section 402(c)(1)(ii) who propose any earth disturbance within 100 feet of a surface water, as defined in 25 Pa. Code Chapter 102, must offset any earth disturbance activity in the buffer. In order to demonstrate compliance with the requirement, applicants should include a post construction stormwater management narrative with the individual NPDES permit application which provides sufficient justification as to why the proposed replacement riparian forest buffer site was determined to be as close as feasible to the area of disturbance. The narrative should also discuss why other buffer locations were not selected and the suitability of the chosen site using DEP's *Riparian Forest Buffer Guidance* (394-5600-001). In addition, a replacement riparian forest buffer management plan, maintenance plan, and monitoring plan should be completed and submitted as part of the post construction stormwater management plan. While a pre-application meeting is not required for permit issuance, it is highly recommended with projects containing riparian buffers to allow for clear communication between applicants and DEP. In addition, it is not mandatory that applicants follow the process outlined in this guidance; however, DEP recommends following this guidance in order to demonstrate compliance with the statutory requirements. An executed agreement between parties for the offsetting location should also be in-hand and all other application completeness items must be satisfied or the permit may be denied.

Note that if the earth disturbance activities are within 150 feet of the stream, creek, river, pond, lake or reservoir, and the applicant is choosing to provide alternative BMPs, then an equivalency demonstration will be required. Guidance on the equivalency demonstration can be obtained in DEP's *Riparian Buffer and Riparian Forest Buffer Equivalency Demonstration* guidance document (310-2135-002).

**Step 1:** If the applicant proceeding under Section 402(c)(1)(ii) proposes earth disturbance within 100 feet of surface water in a special protection watershed, they must

choose an appropriate site for the riparian forest buffer offset to be located. Criteria for location are recommended below:

- Per Section 402(c)(2) of Act 162, the replacement buffer shall be located elsewhere along special protection waters in the same drainage list and as close as feasible to the area of disturbance. Drainage lists are specified in *25 Pa. Code* § 93.9 (Relating to Designated Water Uses and Water Quality Criteria) as supplemented by the Existing Use Classification List.
- It is highly recommended that the replacement buffer be located on the same stream segment as the area of disturbance.
- The replacement riparian forest buffer should be sited using the following criteria, in order of decreasing preference:
  1. On waters that receive runoff that has similar, or more degraded, characteristics (volume, rate, pollutant loading, etc.) as the area of disturbance. For example, if the buffer at the area of disturbance would have received post-construction urban stormwater runoff, then the replacement buffer should be located in an area which also receives post-construction urban stormwater runoff.
  2. On waters that are included in the “Pennsylvania Natural Heritage Program, Western Pennsylvania Conservancy, User’s Manual and Data Guide to the Pennsylvania Aquatic Community Classification” with Tier 1 or Tier 2 priority for habitat restoration on waters that are in need of a riparian forest buffer, regardless of runoff characteristics.
  3. On waters that are in need of a riparian forest buffer, regardless of runoff characteristics.
- The replacement buffer must result in the installation of a new riparian forest buffer as opposed to preservation of an already existing riparian forest buffer.

**Step 2:** If an applicant proceeding under Section 402(c)(1)(ii) proposes earth disturbance within 100 feet of surface water in a special protection watershed, offsetting must occur at a ratio of one to one per unit area (square foot) of buffer impact. Additional sizing criteria are recommended below:

- Per Section 402(c)(2) of Act 162, any earth disturbance occurring within 100 feet of the surface water at the area of disturbance, shall offset any reduction in the total square footage of the buffer zone that would have been utilized as a best management practice, with a replacement buffer, at a ratio of one to one.
- At a minimum, the area of the replacement riparian forest buffer must equal that area of earth disturbance with 150 feet of the stream, creek, river, pond, lake or reservoir.
- The replacement riparian forest buffer must be at least 100 feet in width when implemented as the offset.
- For replacement sites utilizing a level spreader, the replacement riparian forest buffer length should correspond, at a minimum, with the design length of the level spreader. Level spreader length should be designed in accordance with Table G.4 of DEP’s *Erosion and Sediment Pollution Control Program Manual* (363-2134-008). For sites not utilizing a level spreader and where stormwater enters the replacement riparian forest buffer solely as sheet flow or shallow

concentrated flow, the minimum riparian forest buffer length should be the length of the contributing flow area.

The buffer zone at the area of disturbance should remain undisturbed to the extent practicable.

**Step 3:** Replacement riparian forest buffer areas should have certain composition requirements as given below:

- Per Section 402(c)(2) of Act 162, replacement planting costs shall be calculated using Department guidance as specified in BMP 6.7.1: Riparian Buffer Restoration of the *Pennsylvania Stormwater Best Management Practice Manual* which indicates that native, diverse tree and shrub vegetation shall be planted with the goal being the creation of a mature forest buffer.
- To best ensure the survivability of plantings and the successful establishment of a riparian forest buffer, the use of larger, more robust plantings is recommended. Trees having a minimum caliper size of 2 inches should be used.
- The replacement riparian forest buffer composition should meet § 102.14(b)(1)(i-iii). For further guidance on species composition, see DEP's *Riparian Forest Buffer Guidance* (394-5600-001).

**Step 4:** Applicants should prepare a replacement riparian forest buffer management plan (25 *Pa. Code* §§ 102.14(b)(3) and (4)) containing a planting plan (Appendix A), a maintenance plan (Appendix B), and a monitoring plan (Appendix C) which should all be included as part of the post construction stormwater management plan.

All requirements for riparian forest buffers contained in 25 *Pa. Code* § 102.14 are applicable to replacement riparian forest buffers, including long-term protection from future disturbance via an instrument (deed restriction, easement, etc.) as required in 25 *Pa. Code* § 102.14(b)-(h).

#### 4. MONITORING, INSPECTION AND REPORTING

Monitoring, inspection and reporting requirements remain as found in Chapter 102 at 25 *Pa. Code* § 102.4(b)(5)(x), 102.8(f)(10), 102.8(k), and 102.8(m) and in the *Riparian Forest Buffer Guidance* (394-5600-001), if applicable. Additionally, monitoring, inspection and reporting requirements will also be found, if approved, in the conditions of the NPDES Permit, Part A - Effluent Limitations, Monitoring, and Reporting Requirements and Part C - Other Conditions. Riparian buffers that are established as an offset must also be reported to DEP as required in 25 *Pa. Code* § 102.14(3) and 102.14(4), using the Form 3720-FM-BCR0100 found in Appendix D of this document.

## Appendix A - Sample Replacement Riparian Forest Buffer Planting Plan

See DEP's *Riparian Forest Buffer Guidance* for additional information on site assessment, native tree/shrub selection, planting, planting density, maintenance and protection (pages 28-101).

Contact: \_\_\_\_\_

Phone Number: \_\_\_\_\_

<b>Site Plan</b>
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Location: \_\_\_\_\_

Species	Latin Name	Size	Quantity	Pattern/Spacing

<b>Equipment/Tools:</b>
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<b>Site Preparation:</b>
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<b>Maintenance Responsibilities:</b>
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<b>Directions to site:</b>
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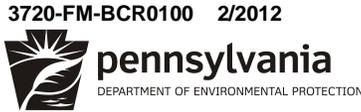
## Appendix B - Sample Replacement Riparian Forest Buffer Maintenance and Monitoring Plan

The following is a sample maintenance schedule to optimize survival of a newly planted riparian forest buffer. Keep in mind tasks are the same for each riparian forest buffer but there may be site variations, therefore, add to the schedule additional tasks that are site specific. See DEP's *Riparian Forest Buffer Guidance* for additional information (pages 28-101).

Maintenance Tasks for Riparian Forest Buffers Year	1	2	3	4	5
<b>Check tree shelters</b> (March-April) <u>Suggested activities:</u> straighten and re-drive any loose stakes, replace damaged/rotten stakes; check ties and tighten or replace if needed; remove large wasp nest (before they come active); remove bird nets if tree has reached the top of the shelter.	x	x	x	x	x
<b>Remove shelters</b> (Spring) It is recommended to remove when trees that are at least 2 inches in diameter at top of tube; leave stake in place to deter buck rub; if tree is droopy, secure to stake with biodegradable material.			x	x	x
<b>Herbicide application</b> (April-May) Apply broad-spectrum herbicide to protect trees from rodents and reduce competition by other plants (add a pre-emergent herbicide advisable); ideally spray 3' strips along shelters or 4' circle spots (if not mowing the site).	x	x	x	x	
<b>Mowing</b> (Summer and Fall) Mow between rows at least twice between June and late September to prevent weeds going to seed, and reduce existing vegetation competition. If rodent population is high, reduce habitat by mowing additional three years in the fall only (see herbicide application above). If not mowing, spot spraying for invasive plants if needed.	x	x			
<b>Herbicide application</b> (mid-August-early October) Apply broad-spectrum herbicide only to control perennial noxious or invasive weeds, reduce existing vegetation competition, and protect trees from rodents (ideally spray 3' strips along shelters, but could be 4' circles)	x	x	x	x	
<b>Survival</b> (Late Fall) Check and note any survival problems – disease, insects and invasive weed issues. Check for natural regeneration and where abundant limit further mowing unless site is prone to rodents and invasive plants.	x	x	x	x	
<b>Replacement plantings</b> (Fall to Spring) First identify and address the cause of losses (most commonly voles and other rodents), replant any areas with significant losses to reinforce tree stocking to desired levels; check natural regeneration for potential free recruitment of trees.		x	x		
<b>Flooding</b> If riparian forest buffer site floods check within one week of any flood, straighten and reposition or replace shelters and stakes if need be - downed tubes will pin and kill trees and invite rodent damage.	x	x	x	x	
<b>Other Task(s):</b>					



## Appendix D - PA Stream Buffer Tracking Form



COMMONWEALTH OF PENNSYLVANIA  
 DEPARTMENT OF ENVIRONMENTAL PROTECTION  
 BUREAU OF CONSERVATION AND RESTORATION

### PA STREAM BUFFER TRACKING FORM

Project Contact Person: _____	
Organization: _____	
Email: _____	Phone #: _____
PROJECT IDENTIFICATIONS	
Project Start Date: _____	
Project Name: _____	
Project Address: _____	
County: _____	
Stream Name: _____	
104 Watershed Code: _____	Center of Site Latitude: _____ Longitude: _____
Water Body: <input type="checkbox"/> Stream <input type="checkbox"/> Wetland <input type="checkbox"/> River <input type="checkbox"/> Lake <input type="checkbox"/> Pond <input type="checkbox"/> Dam	
TMDL/Impairment Status of Waterbody: _____	
Water Use Designation: <a href="http://www.pacode.com/secure/data/025/chapter93/chap93toc.html">http://www.pacode.com/secure/data/025/chapter93/chap93toc.html</a>	
BUFFER POTENTIAL TO BECOME A MATURE FOREST	
Reason for Buffer: _____	Buffer Permanently Protected: <input type="checkbox"/> Yes <input type="checkbox"/> No
Riparian Forest Buffer Protection Agreement: <input type="checkbox"/> Yes <input type="checkbox"/> No	Protection Status: _____
Condition of Stream Bank: <input type="checkbox"/> Laid Back <input type="checkbox"/> Undercut <input type="checkbox"/> Bare <input type="checkbox"/> Forested <input type="checkbox"/> Needs Work <input type="checkbox"/> Other	
Health of Buffer: <input type="checkbox"/> Poor <input type="checkbox"/> Average <input type="checkbox"/> Good <input type="checkbox"/> Excellent	
State After Project Completion: <input type="checkbox"/> New <input type="checkbox"/> Enhancement <input type="checkbox"/> Existing	
% Canopy Cover (Total Ground Area Shaded by Woody Vegetation): _____	
% of Ground Cover in Buffer – Total Area Covered by Non-Woody Vegetation: _____	
BUFFER CHARACTERISTICS	
Adjacent Land Use: <input type="checkbox"/> Herbaceous/Shrubs <input type="checkbox"/> Farm <input type="checkbox"/> Development <input type="checkbox"/> Forest	
Buffer Type: <input type="checkbox"/> Forest <input type="checkbox"/> Tree/Shrubs <input type="checkbox"/> Grasses <input type="checkbox"/> Fencing Only <input type="checkbox"/> Fencing and Trees	
Buffer Length 1 <sup>st</sup> Side (Facing Downstream): _____	Buffer Width 1 <sup>st</sup> Side: _____
Buffer Length 2 <sup>nd</sup> Side (Facing Downstream): _____	Buffer Width 2 <sup>nd</sup> Side: _____
Funding Source: _____	

**Please return to:**

Pa. DEP, Bureau of Conservation and Restoration  
 PO Box 8555  
 Harrisburg, PA 17105-8555  
 Attn: Stream ReLeaf Program  
 Phone: 717.772.5637  
 Fax: 717.787.9549

# Map of State Water Plan Watersheds

