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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Bureau of Waterways Engineering and Wetlands

Implementation of Act 162 of 2014

Riparian Buffer or Riparian Forest Buffer Equivalency Demonstration and Offsetting

Water Resources Advisory Committee

August 12, 2015

Tom Wolf, Governor

John Quigley, Secretary

Agenda

1. Overview of Act 162
2. Impact and scope of Act 162
3. When is equivalency necessary?
4. Application Requirements
5. Demonstrating buffer equivalence
6. When is offsetting required?
7. Riparian Buffer or Riparian Forest Buffer Offsetting Policy
8. Application Process for Offsetting
9. Implementation

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What is Act 162 of 2014?

- Introduced as HB 1565
- Amended Pennsylvania Clean Streams Law (CSL)
  - New Section 402(c)
  - NPDES stormwater construction permit applicants may choose either to implement riparian buffers or riparian forest buffers OR to implement equivalent best management practices (BMPs) in certain cases
  - Requires offsetting buffers in certain cases
- Does not eliminate use of riparian buffers as a BMP

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Scope of Act 162

- Proposed individual NPDES projects located within 150 feet of certain High Quality or Exceptional Value waters
- Does not apply to, nor change process in 25 Pa. Code § 102.14, for non-NPDES permits
  - ESCGP permits for oil and gas activities or
  - ESC permits for road maintenance and timber harvesting
- Does not affect voluntary riparian buffer programs; example CREP

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Impacts on NPDES Permitting

- New § 402(c)(1) of CSL provides an alternative to mandatory riparian buffers or riparian forest buffers
- New § 402(c)(2) of CSL provides that when a buffer is not used and if earth disturbance is conducted within 100 feet of a surface water, offsetting is required

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Equivalency Demonstration

- New § 402(c)(1)(ii)
- Applicants choosing not to implement the riparian buffer or riparian forest buffer, must make a demonstration that the BMPs that they will implement will be equivalent to the type of buffer required in 102.14(a)(1) and (2)
- Demonstration is both quantitative and qualitative in nature

Offsetting Policy

- New § 402(c)(2) triggered when applicant proceeds under § 402(c)(1)(ii)
- New § 402(c)(2) requires offsetting if a riparian buffer is not used as BMP and earth disturbance will occur within 100 feet of surface waters
- See Riparian Buffer or Riparian Forest Buffer Offsetting(Technical Guidance Document #310-2135-003)

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Coordination of Policies

- Policy documents are independent but related
  - Riparian Buffer or Riparian Forest Buffer Equivalency Demonstration (310-2135-002)
  - Riparian Buffer or Riparian Forest Buffer Offsetting (310-2135-003)
- Equivalency may be required when offsetting is not
- Offsets apply to any earth disturbance activities managed per 402(c)(1)(ii) within 100’ of surface waters

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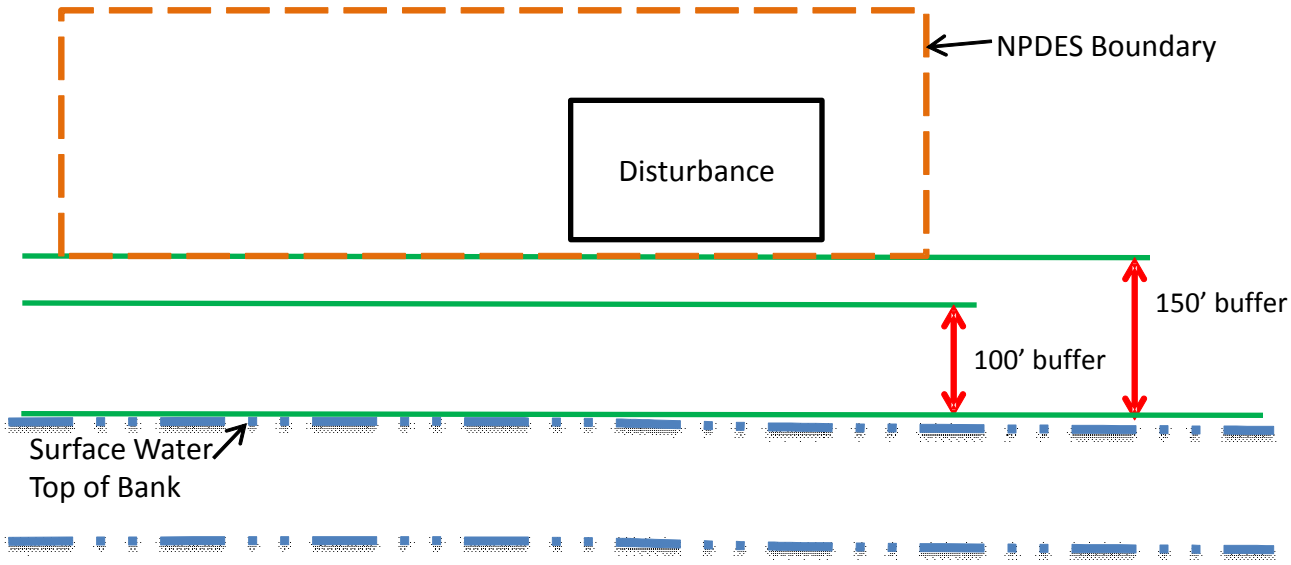
Applicability – Figure 1

Figure 1. Neither equivalency demonstration nor offsetting required

- The project involves one acre or more of earth disturbance and requires an NPDES stormwater construction permit.
- All earth disturbance activities are outside the buffer area.



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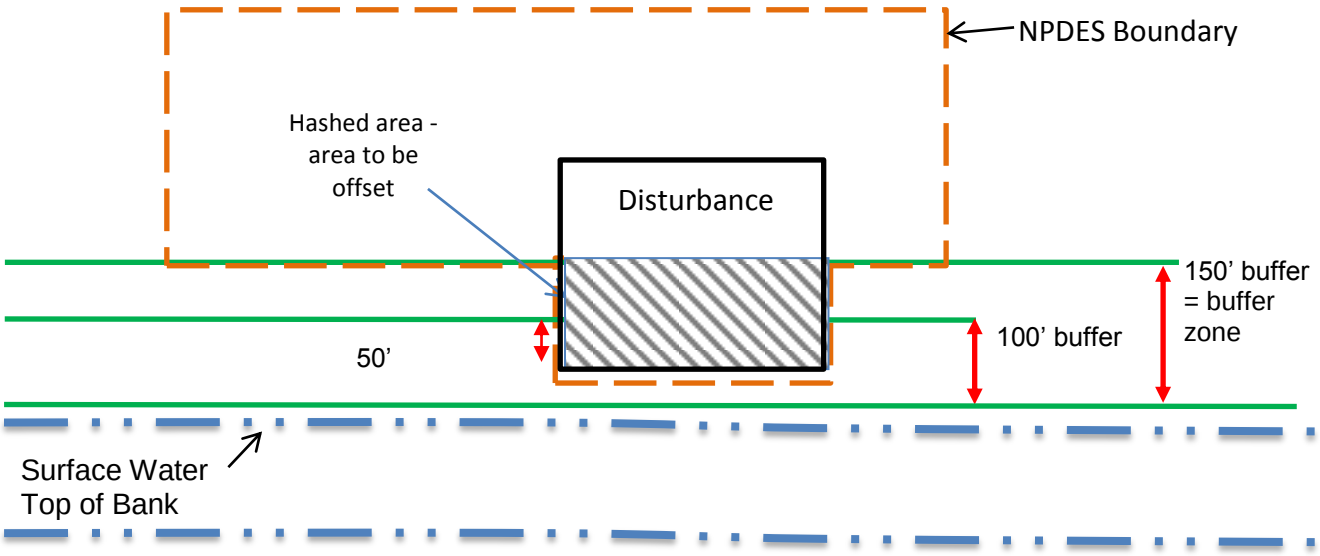
Applicability- Figure 2

Figure 2. Both equivalency demonstration and offsetting required

- The project involves a one acre or more of earth disturbance and requires an NPDES stormwater construction permit.
- Earth disturbance activities extend 50 feet into the 100 feet buffer area.
- Per Section 402(c)(2) of Act 162, offsetting is required and the replacement buffer is to be installed at a ratio of 1 to 1, with the minimum replacement buffer width being 100 feet.



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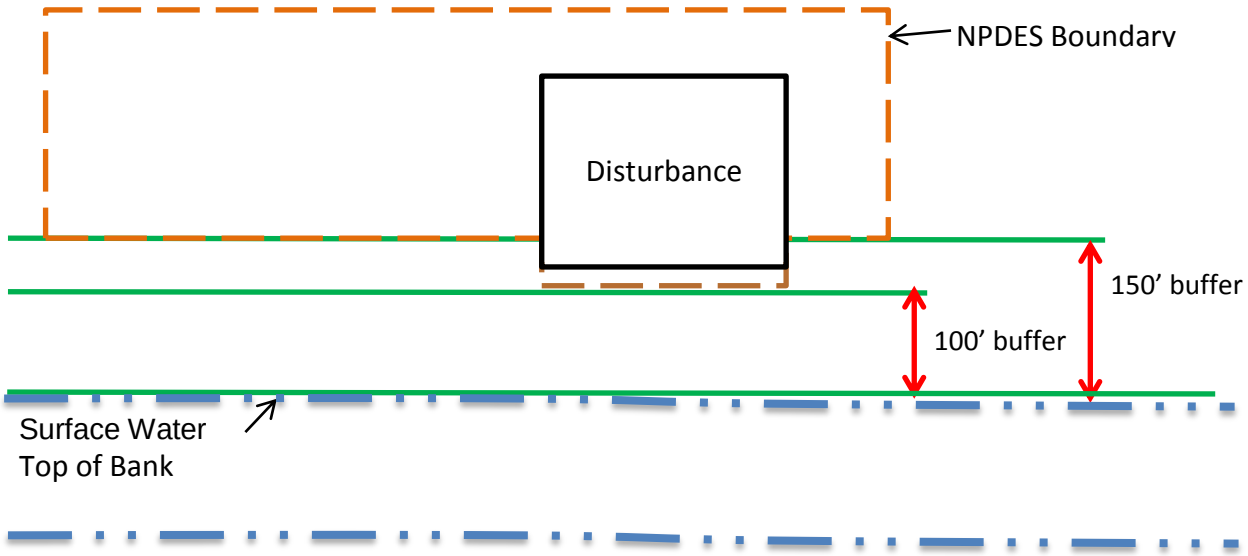
Applicability- Figure 3

Figure 3. Equivalency demonstration required but offsetting not required

- The project involves one acre or more of earth disturbance and requires an NPDES stormwater construction permit.
- All earth disturbance activities are between 100 feet and 150 feet from the surface waters.



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Application Requirements

- Pre-application meeting
- Complete & Technically Adequate Application
- Demonstration of Equivalency
  - Inclusion of worksheets 12,13,14,15
- Narrative on Buffer Function

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Demonstration of Equivalency

- Step 1- Estimate pollutant load from disturbed areas of the site using Worksheet 12.
- Step 2- Calculate the pollutant load reductions for the site area with the proposed structural BMPs using Worksheet 13.
- Step 3- Estimate the increased pollutant load for the disturbed area within the riparian buffer or riparian forest buffer using Worksheet 14.

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Demonstration (cont.)

- Step 4- Calculate the pollutant load reductions with the proposed structural BMPs using Worksheet 15.

- Step 5- Complete the narrative to show that BMPs used in the equivalency demonstration will be functionally equivalent to those of a riparian buffer or riparian forest buffer.

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Demonstration

	Riparian Buffer	Riparian Forest Buffer
Filtration of pollutants in runoff	□	□
Infiltration and maintenance of streamflow	□	□
Water quality maintenance	□	□
Habitat for wildlife and vegetation	□	□
Flood attenuation	□	□
Light control and water temperature moderation	□	□
Travel corridors for migration and dispersal	□	□
Ice damage control	□	□
Stream width	□	□
Food supply		□
Wood debris input		□
Support of aquatic food chains and webs as they relate to terrestrial food webs		□
Channel and shoreline stability/decrease in erosion		□
Reduced effects of storm events		□
Instream pollutant processing		□

Example

Worksheet 14 – Water Quality Analysis of Pollutant Loading from Disturbance in Buffer Area

Total Disturbed Area (AC)	2
Disturbed Area Controlled by BMPs (AC)	2

Existing Condition

		Pollutant					Pollutant Load		
	Land Cover Classification	TSS EMC (mg/l)	TP EMC (mg/l)	Nitrate-Nitrite EMC (mg/l as N)	Cover (Acres)	Runoff Volume (AF)	TSS** (LBS)	TP** (LBS)	NO_3 (LBS)
	Forest	39	0.15	0.17	2	0.1574	16.58	0.07	0.07
	Meadow	47	0.19	0.3					
						TOTAL LOAD	16.58	0.07	0.07

Post-Development

		Pollutant					Pollutant Load		
	Land Cover Classification	TSS EMC (mg/l)	TP EMC (mg/l)	Nitrate-Nitrite EMC (mg/l as N)	Cover (Acres)	Runoff Volume (AF)	TSS** (LBS)	TP** (LBS)	NO_3 (LBS)
Pervious Surfaces	Forest	39	0.15	0.17					
	Meadow	47	0.19	0.3					
	Fertilized Planting Area	55	1.34	0.73					
	Native Planting Area	55	0.40	0.33					
	Lawn, Low-Input	180	0.40	0.44					
	Lawn, High-Input	180	2.22	1.46					
	Golf Course Fairway/Green	305	1.07	1.84					
	Grassed Athletic Field	200	1.07	1.01					
Impervious Surfaces	Rooftop	21	0.13	0.32					
	High Traffic Street/Highway	261	0.40	0.83					
	Medium Traffic Street	113	0.33	0.58					
	Low Traffic/Residential Street	86	0.36	0.47					
	Res. Driveway, Play Courts, etc.	60	0.46	0.47					
	High Traffic Parking Lot	120	0.39	0.60					
	Low Traffic Parking Lot	58	0.15	0.39	2	0.48	75.89	0.20	0.51
						TOTAL LOAD	75.89	0.20	0.51
						Pollutant Load increase (LBS) =	59.31	0.13	0.44

Pollutant Load increase (LBS) = Post development load – Pre-development load

*Pollutant Load = [EMC, mg/l] X [Volume, AF] X [2.7, Unit Conversion

Example

Worksheet 15 – Pollutant Reduction Through BMP Applications*

*Fill this worksheet out for each BMP type with different pollutant removal efficiencies. Sum pollutant reduction achieved for all BMP types on final sheet.

BMP Type: Capture & Reuse

Disturbed Area Controlled by this BMPs (AC)	2

Disturbed Area Controlled by this BMPs:

		Pollutant					Pollutant Load**		
	Land Cover Classification	**TSS EMC (mg/l)**	**TP EMC (mg/l)**	Nitrate-Nitrite EMC (mg/l as N)	**Cover (Acres)**	**Runoff Volume (AF)**	**TSS** (LBS)**	**TP** (LBS)**	**NO_3 (LBS**
Pervious Surfaces	Forest	39	0.15	0.17					
	Meadow	47	0.19	0.3					
	Fertilized Planting Area	55	1.34	0.73					
	Native Planting Area	55	0.40	0.33					
	Lawn, Low-Input	180	0.40	0.44					
	Lawn, High-Input	180	2.22	1.46					
	Golf Course Fairway/Green	305	1.07	1.84					
	Grassed Athletic Field	200	1.07	1.01					
Impervious Surfaces	Rooftop	21	0.13	0.32					
	High Traffic Street/Highway	261	0.40	0.83					
	Medium Traffic Street	113	0.33	0.58					
	Low Traffic/Residential Street	86	0.36	0.47					
	Res. Driveway, Play Courts, etc.	60	0.46	0.47					
	High Traffic Parking Lot	120	0.39	0.60					
	Low Traffic Parking Lot	58	0.15	0.39	2	0.48	75.89	0.20	0.51
	TOTAL LOAD TO THIS BMP TYPE						75.89	0.20	0.51
	POLLUTANT REMOVAL EFFICIENCIES FROM APPENDIX A. STORMWATER MANUAL (%)						100	100	100
	POLLUTANT REDUCTION ACHIEVED BY THIS BMP TYPE (LBS)						75.89	0.20	0.51

POLLUTANT REDUCTION ACHIEVED BY ALL BMP TYPES (LBS)	75.89	0.20	0.51
REQUIRED REDUCTION from WS 14 (LBS)	59.31	0.13	0.44

*Pollutant Load = [EMC, mg/l] X [Volume, AF] X [2.7, Unit Conversion]

Monitoring, Inspection and Reporting

- All requirements of Chapter 102 remain
  - Erosion and sedimentation control, post construction stormwater management, deeding restrictions, inspections
- Special conditions, if necessary, will be inserted into the permit in Part C

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Monitoring, Inspection and Reporting

Project Contact Person: _____
Organization: _____
Email: _____ Phone #: _____
PROJECT IDENTIFICATIONS
Project Start Date: _____
Project Name: _____
Project Address: _____
County: _____
Stream Name: _____
Center of Site 104 Watershed Code: _____ Latitude: _____ Longitude: _____
Water Body: Stream Wetland River Lake Pond Dam
TMDL/Impairment Status of Waterbody: _____
Water Use Designation: http://www.pacode.com/secure/data/025/chapter93/chap93toc.html
BUFFER POTENTIAL TO BECOME A MATURE FOREST
Reason for Buffer: Buffer Permanently Protected: Yes No
Riparian Forest Buffer Protection Agreement: Yes No Protection Status:
Condition of Stream Bank: Laid Back Undercut Bare Forested Needs Work Other
Health of Buffer: Poor Average Good Excellent
State After Project Completion: New Enhancement 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: Herbaceous/Shrubs Farm Development Forest
Buffer Type: Forest Tree/Shrubs Grasses Fencing Only Fencing and Trees
Buffer Length 1st Side (Facing Downstream): _____ Buffer Width 1st Side: _____
Buffer Length 2nd Side (Facing Downstream): _____ Buffer Width 2nd Side: _____
Funding Source:

Application Requirements for Offsetting

- Pre-application meeting strongly suggested
- If necessary, offsetting must be part of application to be considered complete.
- Elements of an Application Package
  - Riparian Forest Buffer Planting Plan
  - Riparian Forest Buffer Maintenance and Monitoring Plan
  - Riparian Forest Buffer Monitoring Form
  - PA Stream Buffer Tracking Form

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Offsetting Application Process

Step 1: Choose site for riparian forest buffer establishment

- Along special protection waters
  - Designated Use www.pacode.com/secure/data/025/chapter93/s93.9.htm
  - Existing Use www.portal.state.pa.us/portal/server.pt/community/existing_use/10557.
- On same stream segment as area of disturbance
- Along special protection waters
  - Riparian area where no riparian forest buffer exists
- For further guidance on site selection, see *Riparian Forest Buffer Guidance Document* # 394-5600-001

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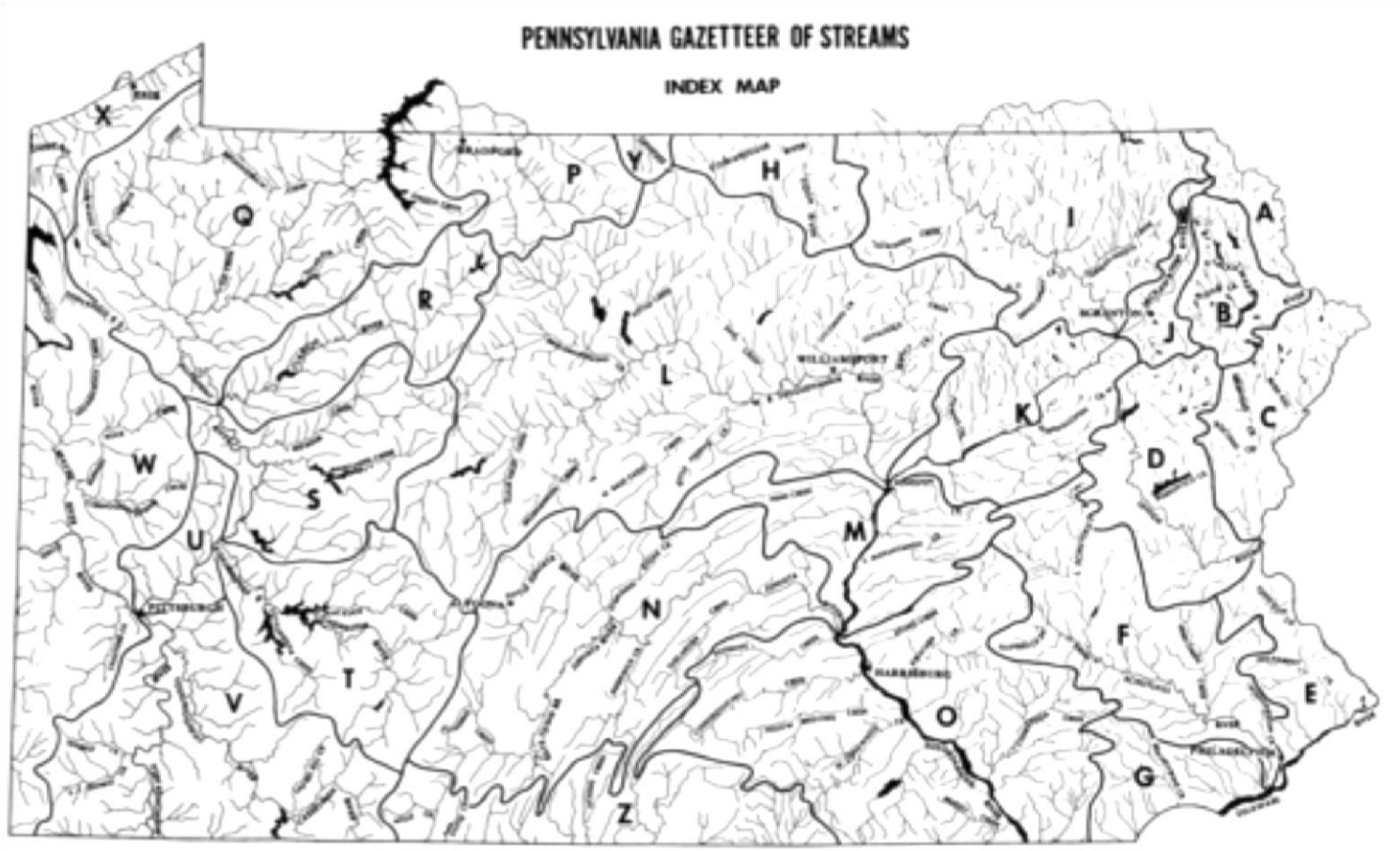
Offsetting Application Process



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Offsetting Application Process

Additional location criteria – in decreasing order of preference:

- Site runoff characteristics similar to project area
- Pennsylvania Natural Heritage Program, Western Pennsylvania Conservancy www.naturalheritage.state.pa.us/docs/aquatics/ACCUser'sManual-TitlePage,TOC,Ch.1-3.pdf.
- On waters in need of a riparian forest buffer, regardless of runoff characteristics

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Offsetting Application Process

Step 2: Determine size of replacement riparian forest buffer

- Ratio of one to one per unit area (square foot) of buffer impact back to 150 feet from surface waters
- Replacement riparian forest buffer is at least 100 feet in width

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Offsetting Application Process

Additional sizing criteria include:

- For offsetting sites utilizing a level spreader
  - Length should be greater than or equal to the length of spreader
- For sites not utilizing a level spreader
  - Length should be greater than or equal to length of contributing flow area

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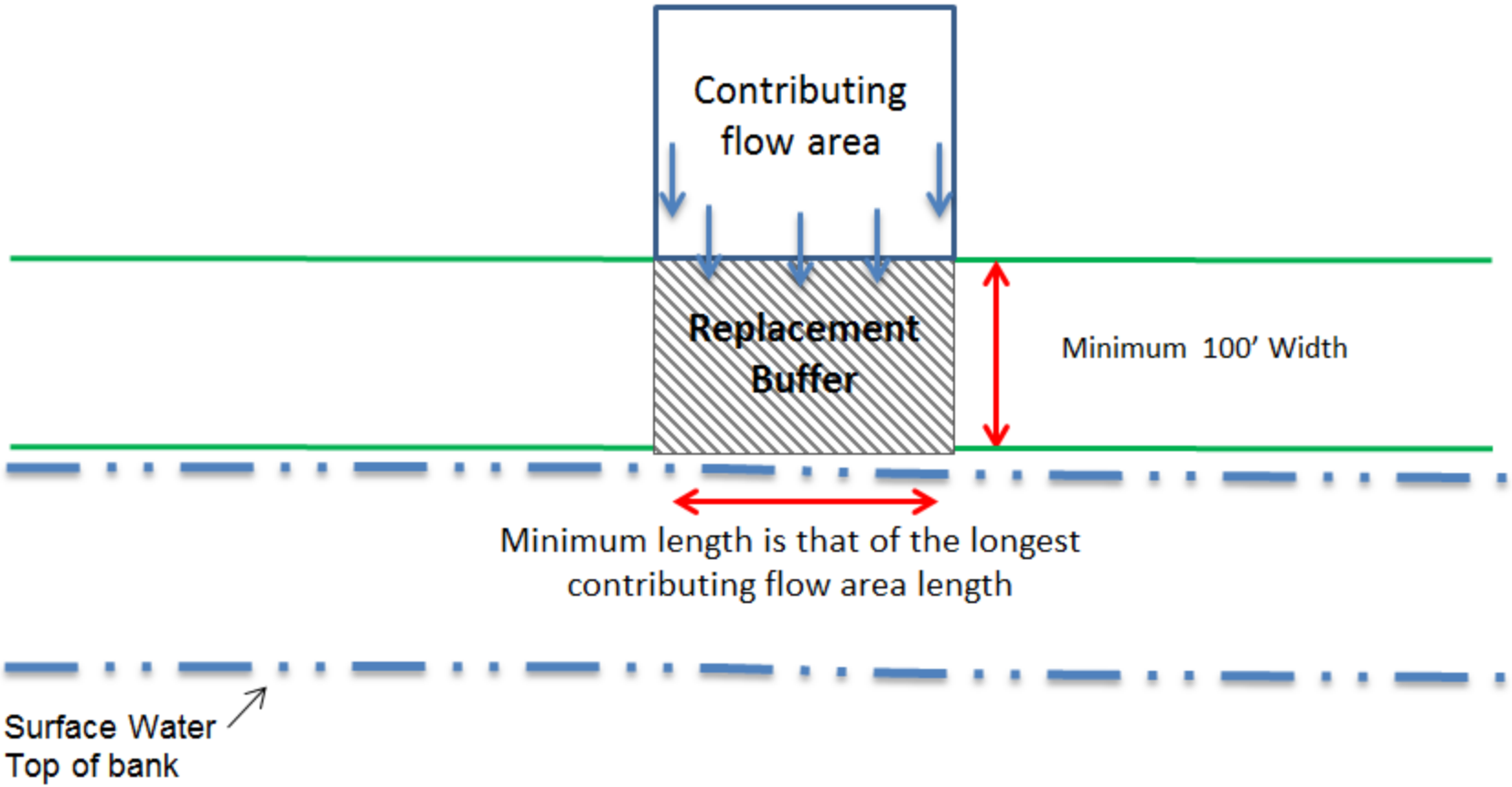
Offsetting Application Process



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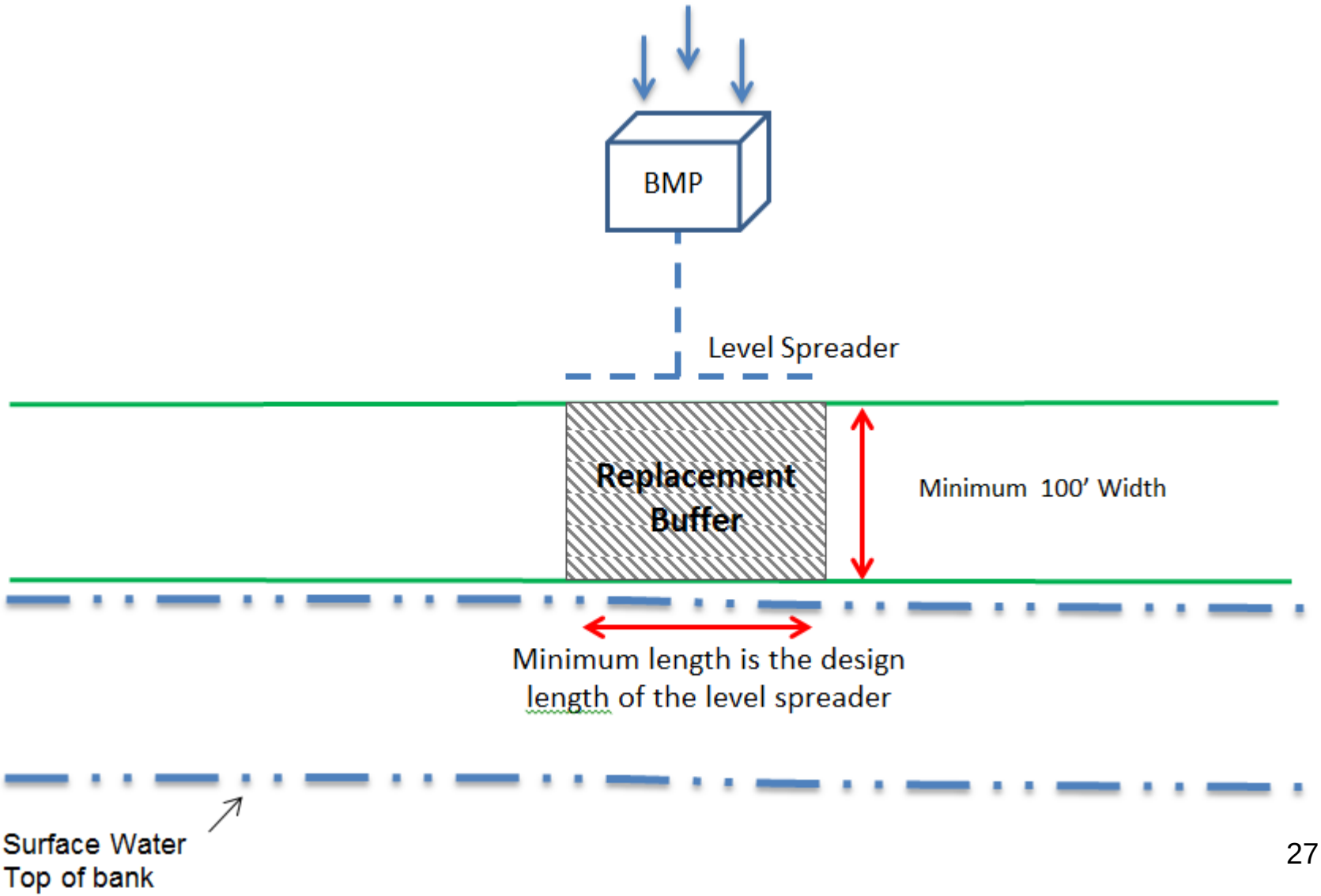
Offsetting Application Process



Offsetting Application Process

Step 3: Create a riparian forest buffer planting plan

- Use diverse species of trees and shrubs
- Use native species of trees and shrubs
- Use larger (minimum caliper 2 inches for trees) more robust plantings to ensure success
- For further guidance on species composition, see *Riparian Forest Buffer Guidance Document* # 394-5600-001

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Offsetting Application Process

Step 4: Prepare a replacement riparian forest buffer management plan as part of the post construction stormwater management plan:

- Planting plan
- Maintenance plan
- Monitoring plan
- PA Stream Buffer Tracking Form
- Long-term protection from future disturbance via an instrument (deed restriction, easement, etc.)

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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) at URL: www.elibrary.dep.state.pa.us/dsweb/Get/Document-82308/394-5600-001.pdf

Contact: _____ **Phone Number:** _____

Site Plan

Location: _____

Species	Latin Name	Size	Quantity	Pattern/Spacing

Equipment/Tools:	**Site Preparation:**
Maintenance Responsibilities:	**Directions to site:**

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) at URL: http://www.elibrary.dep.state.pa.us/dsweb/Get/Document-82308/394-5600-001.pdf

Maintenance Tasks for Riparian Forest Buffers **Year**	**1**	**2**	**3**	**4**	**5**
Check tree shelters (March-April) Suggested activities: 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
Remove shelters (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
Herbicide application (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	
Mowing (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			
Herbicide application (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	

Appendix C - Replacement Riparian Forest Buffer Site Monitoring Form

Site Name _____ **Date Collected** _____ **Collected by** _____

Total Area (acres) _____ **Area Sampled** _____ **Number of Plots** _____

Original Planting Density (Trees or Shrubs per Acre)

Original Planting Density _____

B&B/Containerized Saplings _____ **Sheltered Seedlings** _____

Seedlings w/o Shelters _____ **Other** _____

Trees and Shrubs Counted During Monitoring

		Number of Each Plant Type					Condition*	
Tree or Shrub Species	Number Counted	Planted Seedling	Sheltered Seedling	B&B/ Container	Natural Regen.	Other	1	2
TOTALS:								

*1=Healthy and free to grow, not significantly impaired or damaged. Likely to survive and grow.
*2=Damaged or impaired by some problem.

Number of Species Counted: _____

Plant Condition Summary: Percent Healthy _____% **Percent Damaged** _____%

Appendix D - PA Stream Buffer Tracking Form

3720-FM-BCR0100 2/2012

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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: _____
Center of Site 104 Watershed Code: _____ Latitude: _____ Longitude: _____
Water Body: ☐ Stream ☐ Wetland ☐ River ☐ Lake ☐ Pond ☐ Dam
TMDL/Impairment Status of Waterbody: _____
Water Use Designation: http://www.pacode.com/secure/data/025/chapter93/chap93toc.html
BUFFER POTENTIAL TO BECOME A MATURE FOREST
Reason for Buffer: Buffer Permanently Protected: ☐ Yes ☐ No
Riparian Forest Buffer Protection Agreement: ☐ Yes ☐ No Protection Status:
Condition of Stream Bank: ☐ Laid Back ☐ Undercut ☐ Bare ☐ Forested ☐ Needs Work ☐ Other
Health of Buffer: ☐ Poor ☐ Average ☐ Good ☐ Excellent
State After Project Completion: ☐ New ☐ Enhancement ☐ 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: ☐ Herbaceous/Shrubs ☐ Farm ☐ Development ☐ Forest

Monitoring, Inspection, and Reporting

- Monitoring, inspection and reporting requirements remain as found in Chapter 102
- Monitoring, inspection and reporting requirements will also be found in the conditions of the approved NPDES Permit, Part A - Effluent Limitations, Monitoring, and Reporting Requirements and Part C - Other Conditions
- Reporting – Use PA Stream Buffer Tracking Form (#3720-FM-BCR0100)

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Implementation

- Published as Interim Final in *PA Bulletin*
  - *Publication March 21st 2015*
- Department's website: *www.dep.state.pa.us*
  - "Public Participation Center" → Public Comments → Technical Guidance"
- *60-day public comment period*
  - *Began March 21st 2015*
  - *Closed May 20th 2015*
- Potential Future Rulemaking

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Summary of Comments

- 15 individual commenters, 8 legislative commenters
- Form letters
  - 150 form letters supporting Pennsylvania Builders Association comments
  - 1,200 form letters supporting strong buffer implementation
- Major issues – waivers; other smaller issues

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Questions?

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