



The Watershed Protection Standard Toolkit

Materials to Adopt and Implement a Stormwater Design Standard that Protects Watersheds While Supporting Growth

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- Technical Support



Watershed Protection Standard

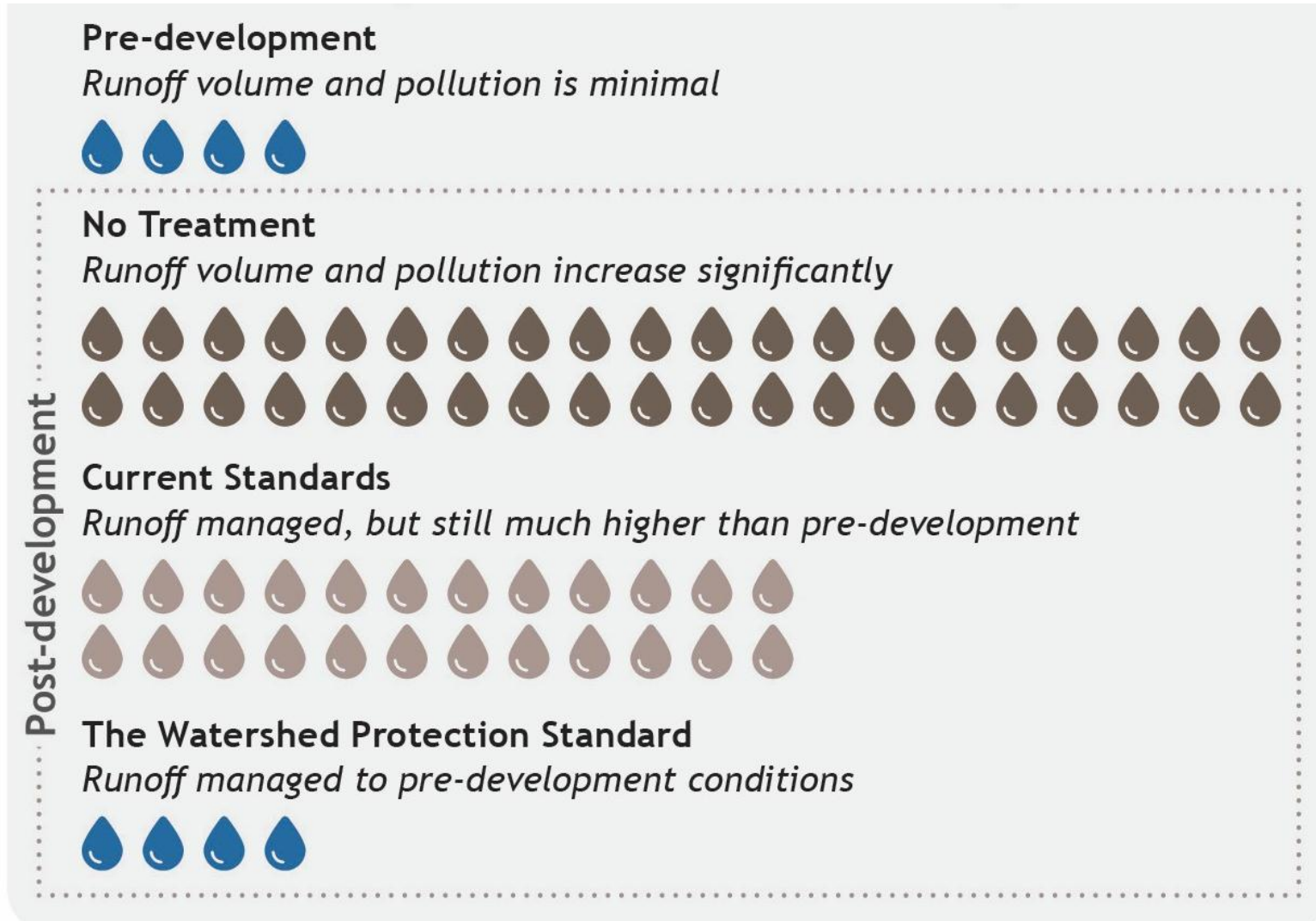


Watershed Protection Standard (WPS)

- Stormwater design standard applied to sites undergoing new development and redevelopment
- Formulated by EPA using the latest scientific research to restore waterbodies
- Requires management of a site's stormwater to match certain pre-development conditions, such that the developed site should:
 1. Export no more pollutants than under pre-development conditions
 2. Retain at least as much runoff as under pre-development conditions



Watershed Protection Standard



Watershed Protection Standard (WPS)

- Compliance with the WPS is achieved by meeting a **required runoff reduction volume** that is determined by the pre-development infiltrating capacity of the soils
- (Alternative requirements are outlined for sites that cannot infiltrate)
- Implementing the WPS is practical when designers use smart strategies for site layout and stormwater control measure design / use EPA Performance Curves



The WPS Toolkit

- Suite of materials developed to aid municipalities, designers and other stakeholders in adopting and implementing the WPS
- Toolkit purpose:
 - Motivate municipalities to adopt the WPS
 - Convince stakeholders that meeting the WPS is feasible and practical
 - Assist municipal staff in adopting and implement the WPS
 - Assist designers in efficiently complying with the WPS
- DRAFT - will be finalized in November
- When finalized, will be online: <https://snepnetwork.org/watershed-protection-standard-toolkit/>



The WPS Toolkit Includes...

- Fact Sheet
- Promotional Handout
- Template Regulatory Language
- Compliance Review Checklist
- Site Examples – 6 examples + cover sheet
- Executive Summary

How to Meet the Watershed Protection Standard: An Example of a Low Density Subdivision

Site Overview
This example demonstrates how to meet the Watershed Protection Standard (WPS) for a rural, low-density residential subdivision development. By maintaining impervious cover, decentralizing treatment, and taking advantage of well-draining soils, stormwater is treated and recharged to pre-development levels.

Total Site Area: 3.43 ac
Impervious Area: 0.22 ac (6.4%)

Runoff is directed to an infiltration basin from a conveyance swale where it is temporarily stored until soaking into the ground.

A designated parking area for visitors reduces the demand for street parking, allowing narrower street widths and thus less impervious cover.

Runoff from the front of each house is routed through gutters and downspouts to dry wells that promote infiltration.

Grading and the absence of curb allow runoff from the road and driveways to enter a grass conveyance swale, which pretreats runoff while directing it to the infiltration basin.

Downspouts facilitate impervious cover disconnection by directing roof runoff from the back of each house to pervious areas where it can filter through vegetation and soil.

Stormwater controls were placed to adhere to required setbacks from septic systems, like this one, and from steep slopes.

The absence of sidewalks minimizes impervious cover. Sidewalks are not needed due to the low volume of traffic on this road.

Portions of low traffic areas like this emergency vehicle turnaround are permeable pavement surfaces that allow stormwater to infiltrate. Also note the absence of a cur-de-sac to minimize impervious cover.

A Closer Look at How Impervious Cover is Treated to Meet the WPS
This catchment map (left) and table (right) use color coding to indicate which areas of the site are treated by which stormwater controls in order to remove phosphorus and reduce runoff to meet the WPS.

	Treatment by Stormwater Control Type				Design Point Total Overall Achieved	WPS Target
	Grass Channel and Infiltration Basin	Permeable Pavement	Dry Wells	Impervious Cover Disconnection		
Impervious Drainage Area (ac)	0.22	0.04	0.04	0.16	0.63	-
Infiltration Basin (mgd) (Hydrologic Soil Group)	2.41 (A)	2.41 (A)	2.41 (A)	2.41 (A)	2.41 (A)	-
WPS Target Runoff Depth from Impervious Area (in)	0.7	1.0	1.0	0.24*	-	-
Provided Runoff Depth from Impervious Area (in)	0.7	4.8†	1.6	0.25*	-	-
Provided Design Storage Volume (ft ³)	750	600	800	N/A	-	-
Runoff Reduction (MGY) (Removal Efficiency)	0.3 (39%)	0.04 (39%)	0.1 (39%)	0.1 (32%)	0.6 (32%)	✓
Phosphorus Reduction (lb/yr) (Removal Efficiency)	0.5 (39%)	0.06 (100%)	0.2 (100%)	0.2 (38%)	0.9 (38%)	✓

* For impervious cover disconnection, the values shown for "WPS Target Runoff Depth from Impervious Area" and "Provided Runoff Depth from Impervious Area" are mixed pervious area (i.e. permeable pavement) values.
† For permeable pavement with subsurface infiltration, actual runoff depth is shown, but credit provided is 0.25 inches since 0.25 Performance Cover do not provide credit for more than a runoff depth of 0.25 inches.

Legend: Grass Channel and Infiltration Basin, Permeable Pavement, Dry Wells, Impervious Cover Disconnection, Stormwater Control Measure

Discover the Complete WPS Toolkit: <https://sneepnetwork.org/watershed-protection-standard-toolkit/>

Checklist for Reviewing Compliance with the Watershed Protection Standard

This checklist is intended to guide technical reviewers in evaluating application materials for compliance with the Watershed Protection Standard (WPS). The checklist pairs with the Performance Standard (i.e. the WPS) outlined in the WPS Toolkit's "Regulatory Language for Adopting the Watershed Protection Standard." Designers can also use this checklist to understand how their design will be evaluated.

Checklist to Evaluate Low Impact Development Design Approach
Designers are expected to employ a Low Impact Development (LID) approach to site development. The checklist below assists reviewers in verifying the implementation of LID strategies and is adapted from Part 2 of the Rhode Island Stormwater Design and Installation Standards Manual Appendix A: Stormwater Management Plan Checklist. If certain practices cannot be incorporated into site design, a written explanation should be provided.

Preservation and Enhancement of Natural Areas

- As much of the existing natural vegetation as possible has been maintained as part of proposed site design
- Site clearing has been restricted to minimum area needed for building footprints, development activities, construction access, and safety
- Low-maintenance landscaping has been proposed using native species
- Plantings of native trees and shrubs in proposed vegetated areas previously cleared of native vegetation are shown on site plan
- Lawn areas have been limited/minimized, and yards have been kept undisturbed to the maximum extent practicable on residential lots

Preservation and Restoration of Natural Hydrology and Soils

- Development site features and buildings have been appropriately distanced from wetlands and waterbodies
- Stormwater controls have been located in areas with greatest infiltration capacity (i.e. Hydrologic Soil Groups A and B if available)
- Impervious surfaces have been located in areas with the poorest infiltration capacity (i.e. Hydrologic Soil Groups C and D if present)
- Stormwater controls have been designed to infiltrate if possible, including in poorly-draining soils (i.e. Hydrologic Soil Groups C and D)

1 Rhode Island Stormwater Design and Installation Standards Manual Appendix A Checklist. <https://sneepnetwork.org/protection-basin/water-resources/permitting/stormwater-permitting/stormwater-standards>

How to Promote Smart Development for Watershed Protection

What is the Watershed Protection Standard (WPS)?

- The WPS is a stormwater design standard applied to sites undergoing new development or redevelopment. It was formulated using the latest scientific research to restore waterbodies and protect the environment.
- The WPS requires management of a site's stormwater to match certain pre-development conditions, such that the developed site should:
 - Export no more pollutants than under pre-development conditions
 - Infiltrate at least as much runoff as under pre-development conditions
- Compliance with the WPS is achieved by retaining a target volume of stormwater that is determined by the pre-development infiltrating capacity of the site.

Why Should My Municipality Adopt the WPS?

- To Protect Community Resources**
If sites do not manage their stormwater to pre-development conditions, development will lead to flooding, depleted water supply, and degradation of downstream waterbodies. The WPS protects natural resources and infrastructure, leading to higher quality of life for current and future generations.
- To Save Money**
The WPS is the most cost-effective way a local government can protect and restore its water resource and infrastructure. By using smart practices to address the impacts of development as it occurs, the WPS spares taxpayers from paying for costly clean-ups, repairs, and retrofits that would be necessary to address the impacts later.
- It's Practical**
The WPS can be comfortably achieved when designers consider stormwater management early in the planning process, designing sites to minimize disturbance and impervious cover, disconnection areas that generate runoff, and utilize infiltration whenever possible. Further, the latest research is used to evaluate compliance with the WPS, allowing for sites to be designed without oversized infrastructure or lost real estate potential.
- Current Stormwater Design Standards Aren't Enough**
Today's standards do not manage stormwater to match pre-development conditions, leading to incremental degradation of water bodies, depletion of aquifers, more frequent flooding, and dried-up streambeds with each new development. Forecasted increases in development and rainfall will exacerbate these impacts across New England.

Did you know?
Developed sites complying with current MS4 standards in Massachusetts still export 2.5x more pollutants compared with pre-development conditions.

Stormwater Pollution and Volume

After development, runoff pollutant load and volume increase, even when sites meet current state standards. However, meeting the WPS maintains pre-development conditions.

