Regulatory Language for Adopting the Watershed Protection Standard

This document provides template regulatory language for local governments interested in adopting the Watershed Protection Standard as a stormwater design standard. It is intended to be used alongside the model stormwater bylaw and regulations developed by the Neponset Stormwater Partnership (NSP) and by the Town of Westwood, MA. These resources can be found here:

NSP Model Bylaw: https://yourcleanwater.org/wp-content/uploads/2019/06/NSP-Model-Stormwater-Bylaw-May-2019.docx

NSP Model Regulations: https://yourcleanwater.org/wp-content/uploads/2019/06/NSP-Model-Stormwater-Regulations-May-2019.docx

If a municipality is establishing stormwater regulations for the first time, the NSP materials should be used as a starting point, after which municipalities can reference this document to incorporate the WPS. If a municipality already has stormwater regulations in place, the regulatory language below can be used as a starting point and NSP materials can be referenced if more context is needed. Regulatory language is displayed below in blue italics, whereas introductory material and explanatory notes are displayed in black, regular typeface.

Users should be aware that the language provided is only a model and is intended to be adaptable and reviewed by legal counsel. Also note that the NSP template was designed for communities within the Neponset River Watershed in Massachusetts. Thus, if a municipality intends to borrow any of the NSP language, adjustments may be needed so language is appropriate for the municipality adopting it.

Finally, the efficacy of these stormwater regulations may be compromised if other municipal code, such as Zoning, Planning, and Subdivision rules, is inconsistent with these regulations. It is advisable to review all municipal code to ensure standards align with Low Impact Development principles. Tools such as the Mass Audubon Bylaw Review Tool[1] can assist in this process.

1 Mass Audubon Bylaw Review Tool. https://www.massaudubon.org/our-work/climate-change/local-climate-resilient-communities/land-use-rules

A. Definitions

Incorporate the following definitions (Section 2 in NSP Model Regulations).

LOW IMPACT DEVELOPMENT (LID): A land planning and engineering design approach to managing stormwater runoff intended to counteract the adverse impacts of development. LID practices include minimizing and disconnecting impervious cover, preserving natural areas, and managing runoff as close to its source as possible to mimic pre-development hydrologic regimes, with an emphasis on infiltration practices and distribution of runoff.

> Note: To meet the WPS, it is critical to follow a strategic site layout process that includes the elements described above. The term LID is used to get across this concept, even though there are several practically synonymous terms that convey similar site layout strategies, such as Better Site Design, Environmentally Sensitive Site Design, Conservation Development, and Sustainable Stormwater Management.

RUNOFF DEPTH FROM IMPERVIOUS AREA: A structural stormwater BMP's design storage volume (or total volume of stormwater that the BMP is designed to effectively hold and treat), divided by the impervious drainage area to the BMP. This metric is used as input into the Environmental Protection Agency's BMP Water Quality Treatment Performance Curves to look up a given BMP's removal efficiencies for runoff and various pollutants.

RUNOFF VOLUME REMOVAL EFFICIENCY: Percentage that measures how much runoff draining to a given BMP is removed by that BMP. This metric is the output of the Environmental Protection Agency's BMP Water Quality Treatment Performance Curves.

DESIGN POINT: A location where runoff flows off a site.

In addition, consider replacing the term "Best Management Practice (BMP)" with Stormwater Control Measure (SCM) or with another synonymous term that is more commonly used in the municipality.

> Note: The term "Best Management Practice" is used in this document's model regulatory language simply because it is the term used in the NSP Model Regulations.

B. Applicability

Replace applicability thresholds (Section 5.A in NSP Model Regulations) with the following.

These regulations shall apply to all activities that individually or as part of a common plan of Development result in disturbance of land in excess of the thresholds below and which drain to the municipal separate storm sewer system (MS4) or, directly or indirectly, into a Watercourse or Waters of the Commonwealth.

(1) Administrative Land Disturbance Review is required for projects disturbing between 5,000 square feet and 20,000 square feet of land.

(2) A Land Disturbance Permit is required for disturbance of 20,000 square feet or more of land, or for the disturbance of any amount of land where the proposed use is a land use of higher potential pollutant loads pursuant to the Massachusetts Stormwater Management Standards.

(3) The Stormwater Authority may require a permit for a project of any size which has caused or can reasonably be expected to cause or contribute to a violation of State Water Quality Standards or as deemed necessary by the Stormwater Authority for a project which would otherwise require an Administrative Land Disturbance Review.

If a municipality is highly urbanized and/or has frequent redevelopment projects that do not substantially change the building footprint, consider incorporating the following additional language into the same section.

(4) A Land Disturbance Permit is required for disturbance of any amount of land for which capital cost of proposed improvements is more than 30% of the appraised property value.

(5) In instances where a proposed project meets the criteria for both an Administrative Land Disturbance Review and a Land Disturbance Permit, a Land Disturbance Permit shall take precedence.

Notes:

a. The recommended threshold of land disturbance for a Land Disturbance Permit is lowered slightly from the NSP model regulations to maximize project capture and enhance watershed protection (changed from 0.5 acre or 21,780 square feet to 20,000 sf). This threshold is based on an analysis[2] that reviewed potential project sizes in order to maximize project capture.
b. While the Massachusetts and Rhode Island General Small Municipal Separate Storm Sewer Systems (MS4) permits require regulation of land-disturbing activities of one acre or more, using lower thresholds of 5,000 square feet for administrative review and 20,000 square feet for a permit allows these regulations to capture many more projects and enhance watershed protection.
c. Providing two tiers of permit types (Administrative Land Disturbance Review and a Land Disturbance Permit) allows less onerous requirements for smaller projects, since these projects may not involve engineers.

C. Review Procedure

Incorporate the following requirement for a pre-application meeting into the permit review procedure. (In the NSP Model Regulations, this requirement could be laid out in new sections that come after Sections 6.A and 7.A.)

Pre-Application Meeting. Prior to the submission of a formal site plan application, applicants are required to schedule and attend a pre-application meeting with the ***[relevant municipal staff, such as the Town Planning and/or Engineering Departments]****.*

(1) Purpose. This meeting is intended to:

2 A research project conducted by the University of New Hampshire Stormwater Center and the U.S. Environmental Protection Agency looked at existing commercial developments in Durham, NH and found that 50% were 20,000 square feet or greater and 80% were 5,000 square feet or greater. The study, "Minimizing Environmental Impacts Through Stormwater Ordinance and Site Plan Regulation," can be found at: https://scholars.unh.edu/cgi/viewcontent.cgi?article=1093&context=stormwater

a. *Facilitate an understanding of Low Impact Development (LID) and ensure that this approach to stormwater management is integrated into the initial site layout process.*

b. *Provide guidance on complying with performance standards and utilizing publicly available tools to demonstrate compliance with these standards.*

(2) *Procedure. Applicants shall contact the **[relevant municipal staff, such as the Town Planning Department]** to arrange the pre-application meeting. The meeting should be attended by the project's engineers and other relevant parties involved in the planning process.*

(3) *Pre-Application Meeting Notes. A summary of the meeting's discussions and conclusions shall be documented by the **[relevant department, such as the Town Planning Department]**. This documentation shall be submitted as part of the Administrative Land Disturbance Review application and will be considered as part of the review process.*

Note: The purpose of adding this requirement is to make sure designers strategically lay out sites to meet the Watershed Protection Standard from the outset of the site planning process (e.g., minimize and disconnect impervious cover, preserve natural areas, distribute stormwater controls to maintain pre-development catchments, capitalize on infiltration wherever possible, and aim to strategically place stormwater controls in well-draining soils while placing impervious cover in poorly draining soils). If Town staff are not technically equipped to have this conversation with designers, the peer reviewer should be present at this meeting.

D. Application Contents

Add the following to the list of application contents required (Sections 6.B and 8.B in NSP Model Regulations).

(1) *Pre-Application Meeting Notes*

(2) *Calculations demonstrating compliance with Performance Standards. This may include populated versions of the University of New Hampshire's Watershed Protection Standard Calculator[3] and Performance Curve Calculator.[4]*

E. Performance Standards (Watershed Protection Standard)

Incorporate the following performance standards and remove any conflicting performance standards, such as the requirement to retain one inch of runoff. (In the NSP Model Regulations, Sections 6C.2 and 8.C contain performance standards.)

Watershed Protection Standard. Sites shall be designed using Low Impact Development to retain the runoff volume that maintains predevelopment recharge and nutrient loading levels. This volume varies based on pre-development soil conditions.

(1) *Low Impact Development. Employ a Low Impact Development approach to site development. Key strategies of this approach include minimizing impervious cover; disconnecting impervious cover; preserving natural areas; infiltrating wherever possible, even in poorly draining soils; and managing runoff as close to its source as possible such that stormwater controls are distributed and natural drainage patterns and catchment*

3 UNHSC Watershed Protection Standard Calculator. https://scholars.unh.edu/stormwater/130/

4 UNHSC Performance Curve Calculator. https://scholars.unh.edu/stormwater/120/

boundaries remain intact. This approach, in addition to strategically siting stormwater controls and impervious cover in parts of the site with well-draining and poorly draining soils, respectively, will facilitate compliance with the Watershed Protection Standard.

(2) Attaining the Watershed Protection Standard shall be accomplished by designing proposed infiltration BMPs that meet the required Runoff Depth from Impervious Area, or in the case of designing impervious cover disconnection, that meet the Required Pervious to Impervious Area Ratio. These requirements can be found in ***Table 1*** *and are based on a proposed BMP's infiltration rate and type. Requirements can also be determined through use of the University of New Hampshire Stormwater Center's Watershed Protection Standard Calculator.*[5]

If individual infiltration BMPs cannot meet the required Runoff Depth from Impervious Area or Pervious to Impervious Area Ratio, the Applicant must demonstrate that each design point meets the required Runoff Volume Removal Efficiency specified in Table 1. (The University of New Hampshire Stormwater Center's Performance Curve Calculator[6] *can be used to calculate Runoff Volume Removal Efficiency for proposed BMPs or for proposed design points.)*

For new development or redevelopment catchments where it is not technically feasible due to physical site constraints to retain the required runoff volume, and this argument is accepted by the Stormwater Authority, the applicant must demonstrate that the drainage area to the design point of which this catchment is a part achieves the following pollutant load reduction from post-construction impervious area:

- *For new development, the design point's drainage area must achieve a removal of 90% or more of the annual average load of total suspended solids and 60% or more of the average annual load of total phosphorus.*
- *For redevelopment, the design point's drainage area must achieve a removal of 80% or more of the annual average load of total suspended solids and 50% or more of the average annual load of total phosphorus.*
- *If the drainage area to a design point includes a mix of new development and redevelopment, it shall be held to the new development standards.*
- *If non-constrained catchments are included in a design point's drainage area that is held to these standards, these catchments must meet the required Runoff Depth from Impervious Area (or Pervious to Impervious Area Ratio if employing impervious cover disconnection) to the maximum extent practicable.*

Pollutant reduction shall be quantified using the most recent Environmental Protection Agency's BMP Water Quality Treatment Performance Curves. (Performance Curves are set forth in the New England Stormwater Retrofit Manual's Appendix B. The University of New Hampshire Stormwater Center's Performance Calculator is based on these Curves and can be used to quantify pollutant reduction.)

5 UNHSC Watershed Protection Standard Calculator. https://scholars.unh.edu/stormwater/130/
6 UNHSC Performance Curve Calculator. https://scholars.unh.edu/stormwater/120/

Table 1 BMP Design Requirements based on BMP Infiltration Rate and Type

Hydrologic Soil Group (HSG)	Soil Infiltration Rate (in/hr)	Requirement for Each Infiltration BMP			Requirement for Each Design Point
		Surface Infiltration – Required Runoff Depth from Impervious Area (in)	Subsurface Infiltration – Required Runoff Depth from Impervious Area (in)	Impervious Cover Disconnection – Required Pervious to Impervious Area Ratio	Required Runoff Volume Removal Efficiency
A	8.27	0.4	0.6	0.62	94%
	2.41	0.7	1.0		92%
B	1.02	0.6	0.9	0.26	80%
	0.52	0.8	1.0		79%
C	0.27	0.6	0.9	0.21	66%
	0.17	0.7	1.0		64%
D	0.10	0.6	0.8	0.18	47%
	0.05	0.9	1.3		40%

(3) The following resources should be referenced during the design process:

- *New England Stormwater Retrofit Manual – for BMP design and right-sizing guidance*
- *University of New Hampshire's Watershed Protection Standard Calculator – to calculate the WPS targets for proposed BMPs*
- *University of New Hampshire's Performance Curve Calculator – to evaluate compliance with WPS targets*
- *State design manuals – for additional design considerations and to ensure compliance with state permit requirements when applicable*

Notes:

a. The Watershed Protection Standard was developed based on research by the Environmental Protection Agency's Region 1.[7]

b. The Watershed Protection Standard aims to protect watershed hydrology and water quality from the impacts of development and does not address peak rate control and extreme events. Communities susceptible to extreme events may need to consider additional levels of control.

c. The Watershed Protection Standard regulatory language does not specify what constitutes a physical site constraint that would make retention of the required runoff volume infeasible, allowing for professional judgment. However, the Watershed Protection Standard Toolkit's compliance checklist includes resources to assist the reviewer in performing this evaluation.

7 Holistic Watershed Management for Existing and Future Land Use Development Activities. https://www.epa.gov/snep/holistic-watershed-management-existing-and-future-land-use-development-activities



Discover the Complete WPS Toolkit: https://snepnetwork.org/watershed-protection-standard-toolkit/

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