



Calculating Stormwater and Nitrogen Loading Reduction/Prevention

Pollution Load Estimation Tool (PLET) See [PLET](#)

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- **the load reductions that would result from the implementation of various best management practices.**

Pollutant Load Reduction Calculator

From New York State Department of Environmental Conservation (DEC) to ensure consistency when estimating potential load reductions for selected Best Management Practices. DEC has developed the Pollutant Load Reduction Calculator with accepted efficiencies for nitrogen and phosphorus for commonly implemented practices. The method used to estimate load reductions does not account for soil information, slope, or other site specific factors that may influence potential pollution reductions for a practice. This additional information would impact the practice efficiencies. All best management practices have been assigned the same efficiencies, based on the efficiencies in [DEC's Stormwater Management Design Manual](#).

Model My Watershed See [Model My Watershed](#)

Model My Watershed can be used in several ways to address nitrogen and stormwater reduction. Numbers 1 & 3 are really easy and intuitive to use – they make it feasible to look any many options fairly quickly. Number 2 takes more work and knowledge but can give you more precise estimates.

1. Use the multi-year model for average annual loads of N, P and sediment. You can use the Infiltration/Bioretenion practice, based on total acres of implementation in the selected watershed area.
2. If you want to get a little more sophisticated, you can utilize the “multi-year model worksheet”, which is significantly more complicated, but allows more control and manipulation of the details of land use and bmp functions.
3. You can also use the “Site Storm Model” option. This tool is a hybrid of the SLAMM, TR 55, and STEPL models and is primarily used for smaller, more developed areas. The model allows you to outline specific BMP areas, using your mouse, these include rain gardens, porous paving, green roof, vegetated basin, etc. The model also allows you to model changes to land cover, including assorted densities of development, forest, grassland, etc. The site storm model allows you to look at the impacts of different storm events (i.e. ½ inch rainfall vs 2 inch rainfall vs 5 inch rainfall) in different development or BMP scenarios. This tool provides outputs for the different storm events rather than the annual load estimates predicted by the multi-year model.

Calculating Pollution Prevent and Reduction from **Tree Planting**

US Forest Service i-Tree. See: [MyTree calculator](#)

The University of New Hampshire Stormwater Center – New England Stormwater Retrofit Manual See [Stormwater Retrofit Manual](#)

The manual presents the US EPA (Environmental Protection Agency) **Stormwater Control Measures (SCMs) Performance Curves as a tool to quantify water quality benefit (i.e. pollutant removal credit) for a range of sizes and types of SCMs** to aid in the selection process and justify the retrofit. The manual takes practitioners through the fundamental approach for retrofit, sizing, design and performance characterization, an introduction of performance curves and stormwater control measure design criteria including detailed sizing requirements and guidance.

The University of New Hampshire Stormwater Center - [Pollutant Removal Credits for Buffer Restoration in MS4 Permits](#).

Sound management of buffer areas is an effective approach to protecting water quality in New Hampshire as well as other New England states. However, regulators and communities lack synthesized, scientifically justified guidance on how to quantify the water quality benefits of buffers and compare them to those derived from other structural Best Management Practices (BMPs). The *Credit for Going Green* project helped address this need by using an expert panel process to develop consensus-based recommendations for pollutant load reduction performance curves for restored or constructed buffers. These curves are intended to meet in-stream pollution reduction targets in development, redevelopment, restoration, or other land use change projects. This report describes the work and findings of the project's expert panel from January 2018 to March 2019.

Natural Resources Conservation Service (NRCS) [Soil Web Survey](#)

The New England Stormwater Retrofit Manual by the University of New Hampshire Stormwater Center and the NRCS Web Soil Survey were used to estimate nutrient and sediment loading reduction.

Page | 2

Green Values Stormwater Calculator

This tool was developed by the Center for Neighborhood Technology in collaboration with the US Environmental Protection Agency's Office of Wetlands, Oceans, and Watersheds. **It aligns with methodology used for many regulatory requirements and provides a quick way to compare pre-development and post-development conditions using both conventional and various green infrastructure improvements.** Additionally, the tool displays construction costs, maintenance costs, and additional environmental benefits. The calculator allows you to define one or more properties and then evaluate what combination of Green Infrastructure Best Management Practices (BMPs) meet the necessary volume capacity capture goal in a cost-effective way. See [Green Values Calculator](#)

National Stormwater Management Calculator:

EPA's National Stormwater Calculator (SWC) is a software application tool that **estimates the annual amount of rainwater and frequency of runoff from a specific site using green infrastructure as low impact development controls.** The SWC is designed for use by anyone interested in reducing runoff from a property, including site developers, landscape architects,

urban planners, and homeowners. **The tool is free to use and offers a range of low-impact development practices that the user can model by modifying basic design properties.** The tool also offers construction and maintenance cost estimates, which can be useful in informing development design. See [National Stormwater Management Calculator](#)

Green Infrastructure Flexible Model (GIFMod)

A computer program that can be used to evaluate the performance of urban stormwater and agricultural green infrastructure practices. It allows users to build conceptual models of green infrastructure practices to predict hydraulic and water quality performance under given weather scenarios. Some examples of GI techniques include: Cisterns/Rain Barrels, Bioretention, Vegetated (Green) Roofs, Infiltration Practices (Basins, Trenches, Dry Wells), Pervious Pavement with Infiltration, and Vegetated Swales. See [GIFMod](#)

Visualizing Ecosystems for Land Management Assessment (VELMA) Model

A computer software model that regional planners and land managers can use to quantify the effectiveness of natural and engineered green infrastructure management practices for reducing nonpoint sources of nutrients and contaminants in streams, estuaries, and groundwater. These practices include riparian buffers, cover crops, and constructed wetlands. See [VELMA](#)

Estimating Stormwater Runoff

This chapter discusses the easiest methods to determine the stormwater treatment volume. Estimating stormwater runoff is a basic initial step in the design of the stormwater management system as well as the erosion control plan. This chapter presents several commonly used methods and procedures used in this process.

Stormwater Management and Calculations

From North Carolina this chapter provides runoff coefficient determined by estimating the area of different land uses within each drainage area. It provides formulas and calculations for various land types.

Computing Stormwater Runoff and Volumes

From NJ - **discusses the fundamentals of computing stormwater runoff rates and volumes from rainfall through the use of various mathematical methods.** To do so effectively, the chapter also describes the fundamentals of the rainfall-runoff process that these methods attempt to simulate. Guidance is also provided in the use of the **Natural Resources Conservation Service, Rational, and Modified Rational Methods/**

NY State DEC Stormwater Management Design Manual Runoff Reduction Worksheets – Farm Design Example

New York State Stormwater Management Design Manual Chapter 4: Unified Stormwater Sizing Criteria

This chapter presents a unified approach for sizing green infrastructure for runoff reduction and stormwater management practices to meet pollutant removal goals, **reduce channel erosion, prevent overbank flooding, and help control extreme floods.**

General Information about Green Infrastructure Resources

- EPA's [Green Infrastructure Wizard](#), or [GIWiz](#), provides access to tools and resources that can support and promote water management and community planning decisions including:
 - **Quick Links** – Customized access to thousands of green infrastructure tools & resources.
 - **Explore** – Access to an interactive database of green infrastructure tools & resources, based on your individualized specifications

Preventing N Loading at Treatment Plants

EPA Nutrient Control Design Manual

Design for **WWTF** and **WWTP**.