

Tools for Calculating Pollution Prevention from Projects & Practices

General Information about Green Infrastructure Resources

GIWiz

GIWiz <https://www.epa.gov/sustainability/giwiz>

- an interactive web application that connects communities to EPA Green Infrastructure tools & resources.

Calculating Pollution Prevention from Green Infrastructure and other Stormwater Management Best Management Practices

Calculating Pollution Prevent and Reduction from Tree Planting

<https://mytree.itreetools.org/?#/>

US Forest Service i-Tree MyTree calculator.

The University of New Hampshire Stormwater Center

<https://www.unh.edu/unhsc/news/unh-stormwater-center-develops-hybrid-bioretenion-template>

A “Hybrid Bioretention Template for use by municipalities and others to address stormwater runoff and achieve pollutant load reductions. The template combines up-to-date design information for the inclusion of an internal storage reservoir in conventional bioretention systems to address nitrogen control while still taking advantage of biofiltration and infiltration unit operations to address other pollutants and volume reductions.

Raingardens

<https://nemo.uconn.edu/tools/app/raingarden.htm>

App guides you through how to properly locate, size, install, plant, and maintain a rain garden to help protect local waterways.

Green Values Stormwater Calculator

<https://greenvalues.cnt.org/index.php#calculate>

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.

National Stormwater Management Calculator:

<https://www.epa.gov/water-research/national-stormwater-calculator>

Inform the user about how a development project meets a stormwater retention target based on location-specific inputs. 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.

Green Infrastructure Flexible Model (GIFMod)

<https://gifmod.com/>

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. GIFMod also allows for interpreting the field and lab data collected by the researchers via its deterministic and probabilistic inverse modeling capabilities. Modeling of green infrastructure performance in GIFMod can be done in three levels, including hydraulics, particle transport, and constituent fate and transport.

Visualizing Ecosystems for Land Management Assessment (VELMA) Model

<https://www.epa.gov/water-research/visualizing-ecosystem-land-management-assessments-velma-model-20>

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.

Preventing Nitrogen Loading

Spreadsheet Tool for Estimating Pollutant Loads (STEPL)

<https://www.epa.gov/nps/spreadsheet-tool-estimating-pollutant-loads-step1>

STEPL employs simple algorithms to calculate nutrient and sediment loads from different land uses, and the load reductions that would result from the implementation of various best management practices.

Model My Watershed

<https://modelmywatershed.org/>

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/Bioretention 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.

Preventing N Loading at Treatment Plants

Case Studies at Plants

<https://www.epa.gov/nutrient-policy-data/case-studies-implementing-low-cost-modifications-improve-nutrient-reduction>

Case Studies about Implementing Low-Cost Modifications to Improve Nutrient Reduction at Wastewater Treatment Plants

EPA Nutrient Control Design Manual

<https://www.epa.gov/sites/production/files/2019-02/documents/nutrient-control-design-manual-state-tech.pdf>

Design for plants.