



Stormwater Management with Opti-Tool

U.S. EPA | STORMWATER OUTREACH IN MASSACHUSETTS



STORMWATER is a leading cause of poor water quality. Rain or melted snow runs down driveways, sidewalks and streets carrying oil, dirt and other pollutants into nearby waterways. Polluted runoff, which can cause erosion and flooding, runs into waterways and degrades plants, fish, shellfish and other wildlife. In water used for recreation, the runoff can lead to illness, and people who eat contaminated fish can also become sick. Untreated stormwater can also contaminate drinking water sources.

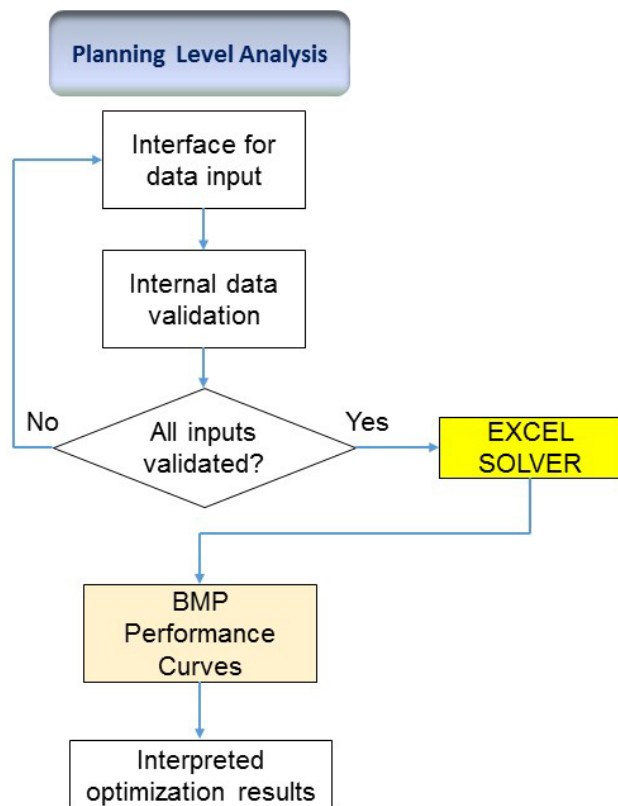
This summer, EPA Region 1 will complete work on **Opti-Tool**. Opti-Tool is a spreadsheet-based stormwater best management practices optimization tool. **Opti-Tool** is designed for use by municipal SW managers and their consultants to assist in developing technically sound and optimized cost-effective SW management plans.

Controlling and treating discharges of SW runoff, especially from highly developed urban areas, can be technically difficult and costly. **Opti-Tool** is designed to help SW managers navigate and overcome the planning and assessment challenges associated with retrofitting SW controls into existing developed landscapes. These SW controls are for the dual purposes of reducing pollutant loads of nutrients (TP, TN), sediments (TSS), and zinc (a surrogate for metals most commonly found in SW runoff), as well as addressing hydrologic imbalances.

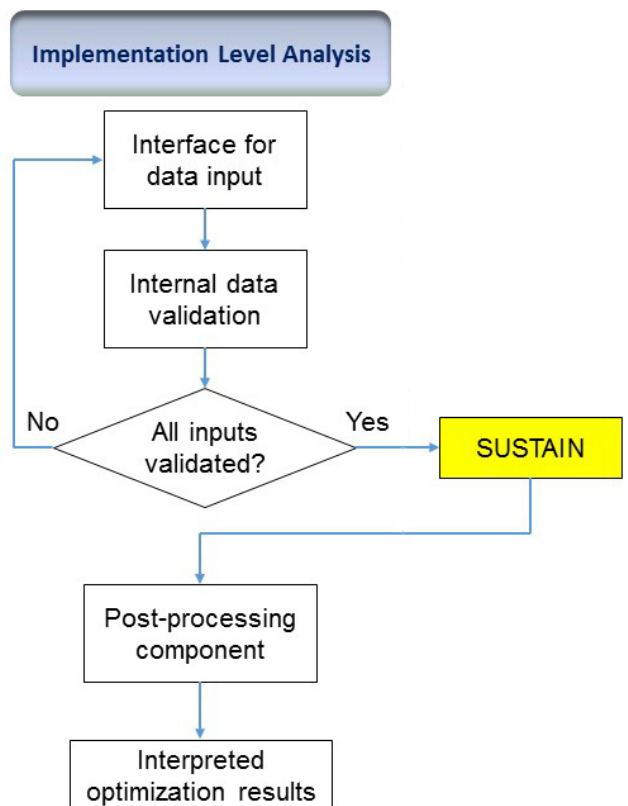
Benefits of the tool

- Accessible to all users with Microsoft Excel 2013 software.
- Represents actual regional precipitation conditions (long-term hourly data, 1992-2014).
- Incorporates best available information on SW runoff nutrient quality, including build-up/wash off processes, especially important in New England where storms are predominantly small events (e.g., 50% $\leq$ 0.3 in.; 70% $\leq$ 0.6 in.; 80% $\leq$ 0.8 in.; and 90% $<$ 1.2 in.).
- Incorporates best available information for estimating long-term cumulative nutrient load and runoff volume reduction performances for 11 categories of structural SW controls - UNHSC is one of the best sources of data.
- Uses information which is being shared with other regional tool developers to promote the use of consistent and high quality data.
- Incorporates representative SW control units cost information with scaling function to account for site specific conditions and development density.
- Includes flexibility to conduct either watershed planning level or detailed site specific design-level analyses.
- Performs optimization analyses to determine most cost-effective selection of structural SW controls for achieving pollutant loading and runoff flow related reduction targets.

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- Provides results consistent with phosphorus source load rates and SW control reduction values in EPA Region 1's new small MS4 general permits.

What a User needs to do

The user defines the targeted geographic area, land use distribution by impervious and pervious cover, pollutants of concern (or runoff volume), and follows user-friendly screen prompts for choices on characterizing watershed study area, soil, BMP types and hydraulic network/conduit information.

Results

After a given scenario simulation has run successfully, results are provided depending on the user's selection of a cost-effectiveness curve or a flow duration curve. Planning level scenarios yield "optimal solution" tables of different BMP types/sizes/O&M

costs/and corresponding load reduction. Implementation level analysis yields a graph of all solutions and identification of the "best" solutions in a cost vs. % reduction graph.

Coming Soon: A separate but compatible BMP Tracking and Accounting Tool (BATT) is being designed for use by small MS4 permittees for accounting, tracking and reporting on nutrient load reductions associated with BMP SW controls implemented and to demonstrate compliance with nutrient reduction requirements in EPA Region 1's new stormwater permits for Massachusetts and New Hampshire.