

# Draft Standards for Stakeholder Discussion (October 17, 2013)

The following draft revision to the 2002 Vermont Stormwater Management Manual (VSMM) is proposed for purposes of focusing stakeholder efforts in the process of revising the VSMM. It serves as an informed starting point from which to establish revised standards.

We propose to add a “runoff reduction” requirement to the existing five required stormwater treatment practice criteria to increase the use of low-impact development (LID) techniques and green stormwater infrastructure (GSI) practices, increase the pollutant removal effectiveness of stormwater practices, and reduce the impacts of stormwater on stream channels.

## Draft Runoff Reduction Requirement

The total water quality volume (WQv) shall be reduced via a combination of infiltration, evapotranspiration, re-use, and extended filtration (i.e. minimum 6-hr lag to receiving waters) to ensure that there is no increase in the peak flow or total volume of runoff volume associated with the 90th percentile event (currently defined as 0.9” of rain in the VSMM). At a minimum, pre-development infiltration rates shall be maintained. Additionally, reduction of the channel protection volume (CPv) is encouraged. Any CPv not met through reduction shall be met through a detention practice or the alternative CPv standard. Overbank flood control (Qp10) and extreme flood protection (Qp100) requirements remain in place.

The goal of this standard is to manage stormwater via a combination of site development strategies, stormwater management practices, and good operation and maintenance. The framework will include a clear preference for on-site LID or GSI practices that promote infiltration, followed by more traditional stormwater management practices with runoff reduction capacity (e.g., extended filtration, with minimum 6-hr lag to receiving waters).

## Initial Decisions

Based on the draft framework outlined above, fundamental questions that will need to be addressed in preparing an expanded draft are:

- Is the WQv standard (e.g., 90% rule, applied uniformly state-wide) the appropriate reduction volume in terms of achieving sediment and nutrient removal, and in terms of feasibility?
- Is the existing formula for calculating WQv sufficient for addressing conversion of undeveloped land to pervious land uses (e.g. lawn)?
- What, if any, feasibility component should be included in the standard (e.g., site limitations such as physical constraints, hydraulic conditions, soil testing, existing and proposed slopes) in order to demonstrate compliance with runoff reduction as infeasible?
- How will water quality and channel protection requirements be addressed on sites where less than 100% of the WQv and/or CPv is addressed via runoff reduction?

Once an approach to these fundamentals is established we can progress to address other important issues including: establishment of approved practices and revisions to existing practices, the need for enhanced nutrient removal standards, development of pre-treatment standards, operation and maintenance requirements, and the use of continuous simulation modeling as an alternative to the design storm approach.

## Desired Outcomes

The Stormwater Program strongly supports better integrating LID and GSI approaches into the VSMM. The draft framework will ensure that runoff reduction practices (e.g. disconnection, bioretention, infiltration) are applied on sites to the maximum extent practicable by adopting robust, inter-related WQv, runoff reduction and CPv standards that seek to: minimize the creation of impervious surfaces through practices such as clustering



development/open space design; minimize the length and width of new roads, driveways and parking areas; and utilize pervious types of pavements as an alternative to conventional asphalt and concrete surfaces. We are reluctant to build in a requirement for the Program to review the project-level decision making process. Rather, we can achieve this goal by establishing a runoff reduction requirement, creating an incentive to maximize infiltration and/or extended filtration of the entire CPv, and by establishing a complete range of approved runoff reduction practices for designers. Information sharing and training can serve to further this goal.

### Other State Manuals

In proposing this draft standard we reviewed stormwater manuals from many states, including New York, Maryland, Pennsylvania, Rhode Island, and Minnesota. We found that despite the range in approaches, they all have a similar underlying requirement, or guidance, to reduce a certain volume through the application of LID

or infiltration-based GSI practices. The manuals and guidance vary in the extent to which they require the designer to demonstrate that LID approaches have been applied, and to the extent they allow for a feasibility test for implementing runoff reduction.

Based on this review, we believe we can incorporate a runoff reduction standard into the structure of our existing Manual. We can maintain the current sizing criteria and add the additional requirement for runoff reduction. Further, to meet the additional standard, we can incorporate LID approaches under both the acceptable treatment practices section and a suggested planning and credits section. This approach is similar to the adopted 2010 New York State Stormwater Management Design Manual.

### For More Information

All information regarding the Vermont Stormwater Management Manual Update process is available at: [http://www.vtwaterquality.org/stormwater/htm/sw\\_manu\\_alrevision.htm](http://www.vtwaterquality.org/stormwater/htm/sw_manu_alrevision.htm).