

Vermont Stormwater Management Manual Update – Meeting #2
Goals, Direction, New Standards, and Priority Practices
November 1, 2013 (9am–1 pm)
Shelburne, Vermont Town Offices (5420 Shelburne Road)
Meeting Summary (November 7, 2013)

Introductions and Welcome

Runoff Reduction (RR) Standard from NY State Manual as starting point for VT

Padraic Monks (ANR) provided an overview of why the runoff reduction standard from the NY manual chosen as starting point for the VSMM update.

- Goal of robust but achievable standard
- Preserve the existing VSMM manual’s framework, including “absolute” clearly defined standards where compliance is easily understood and demonstrated, to the extent workable
- The Runoff Reduction Standard currently proposed by ANR includes typical RR practices (those that utilize infiltration, evapotranspiration, and harvesting/reuse) and extended filtration.

Comments and discussion points following Padraic’s presentation included:

- Minimization of impervious surface should be the first step in meeting RR
- Small scale water / wastewater rules contain ranking of “risks” if all standards (e.g., horizontal setbacks) cannot be met –useful resource
- How would the proposed RR standard apply to redeveloped sites? (And how is “redevelopment” defined?)
 - Ensure that the standard does not create disincentives for redevelopment and infill
- Develop guidance for situations where the standard cannot be met? Maybe some % of what’s applied to new development?
- LID and RR approaches can conflict with local zoning and land development regulations (minimum road widths, for example)
- Standards development may converge with efforts by Noelle McKay (Agency of Commerce and Community Development) to look at incentives for downtown/village development—and disincentives for rural development
- Consider referencing rainfall data separate from the manual, so that the “best” data available at any point in time can be pointed to (see for example www.precip.net; NOAA Atlas 15(update of TP-40) not available until 2015)
- If the new RR standard is much tighter than the existing standards, consider phased implementation or incentives for early adoption

Highlights of the NY State Stormwater Management Design Manual and Standards

Amy Macrellis of Stone Environmental presented information focused on the RR standard in New York’s manual. The presentation slides are available at:

http://www.vtwaterquality.org/stormwater/docs/manualrevision/sw_New_York_Stds_Overview_2013_10_31_ppt.pdf.

Comments and discussion points during and following Amy’s presentation included:

- A backstop to meeting the RR criterion could be similar to NY's RR volume minimums, with the "balance" eligible for extended filtration
- Would rooftop disconnection be allowed and/or encouraged as a RR practice?
- Can there be an explicit credit for removal of impervious surfaces (with restoration to a specified standard)?
- The NY manual appears to allow expanded use of buffers for disconnection on steeper slopes—consider including more flexibility to use disconnections

The proposed Strawman Runoff Reduction Standard for VSMM

Padraic briefly summarized the proposed RR standard strawman – details are available in the handout at

http://www.vtwaterquality.org/stormwater/docs/manualrevision/sw_VSMM_Meeting_2_Handouts.pdf.

Comments and discussion during and following Padraic's presentation included:

- Information being developed for the forthcoming Lake Champlain phosphorus TMDL suggests that 30% of existing developed lands may need retrofit to meet in-lake P target. Not a final number, but gives an idea of the scale of P reduction needed. Retrofits usually more expensive than new development, so in our best interest to minimize P export in new development.
- Are nutrient removal requirements or allowable BMPs potentially variable depending on the needs of the watershed (e.g., Lake Champlain vs. Connecticut River)? (Yes.)
- Will infiltration practices be preferred, given challenges of soluble P removal in most standard practices?
- A whole-site perspective of P export is needed – we focus on impervious surface, but lawns represent a substantial P source that is ignored presently.
- Can stormwater facilities be required to be held in an easement by homeowners' associations, so that distributed practices can be maintained as shared infrastructure? Need a safety factor or assurance that more, smaller practices can be reliably located and sustainably maintained after construction.

Initial decision points

Michelle West of Horsley Witten Group and Julie Moore of Stone Environmental made short presentations on each of the four topics below, followed by discussions of each topic. The presentation slides are available at

http://www.vtwaterquality.org/stormwater/docs/manualrevision/sw_Initial_Ddecision_Points_2013_10_31_ppt.pdf. Throughout the following section, areas where follow-up was promised are underlined.

What, if any, "test" should be included in the runoff reduction standard (e.g., site limitations such as physical constraints, hydraulic conditions, soil testing, existing and proposed slopes) in order to compliance as infeasible?

Discussion points included:

- Hydrologic soil group (HSG) should be considered.
- Feasibility should be based on site specific soil characterization and permeability testing, not HSG

- Existing vegetative cover should be considered—evapotranspiration can be considerable, such that forest cover on HSG D soils could do a good job. Villanova research indicates this is the case.
- Allowance for disconnection on more sloping sites would increase feasibility and flexibility
- As development moves to ever more marginal sites, at what point are we willing to say that some sites are not suitable for the proposed development?
 - Be cautious about trying to affect land development practices through stormwater regulation (10-acre loophole example).
- What about offsets or fees-in-lieu where RR cannot be met? (New Jersey has an offset mitigation funding/fee-in-lieu program; Rhode Island is also using offset project funding to pay for projects in TMDL watersheds. ANR is not currently inclined to pursue this option.)
- If you can't meet RR, do you have to overtreat?
- (In)feasibility flexibility may be less applicable for new development but is essential for redevelopment
- Feasibility criteria should be as bright-line as possible. Uncertainty takes longer and is a disincentive.
- Tweaking the existing groundwater recharge standard instead of moving to a runoff reduction standard has some challenges:
 - Increasing recharge volumes is tough on C/D soils and in areas with shallow groundwater, shallow bedrock.
 - Most sites have limited infiltration capacity.
 - Important to look at natural conditions in context.
 - Recharge standard includes infiltration but ignores ET, harvest/reuse components of the RR approach

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?

Discussion points included:

- Given the example annual rainfall distribution from the Missisquoi River watershed, what's the seasonality of the total precip (rain vs. snow)? (Julie will follow up with this answer.)
- Is the "first flush" independent of storm volume? Is it really just the "first flush", or is it an attempt to balance cost with capture and treatment of most storms? (Julie will check with Rich Claytor on this question.)
- Should we keep 0.9 inches or "round up" to 1"?
- We should not use a single number statewide if we have better local rainfall distribution data.
- Cornell precip data actually shows lower 24-hour storm totals for some areas and return periods.
- Tie manual to a precipitation data set so that the standard can change as new data become available.
- WQv does not get at connected vs. disconnected impervious surfaces. Look at Maryland's modified curve number approach?
- Will we keep 0.2 watershed inches as a minimum WQv? If yes, how will we square with RR?

Is the existing formula for calculating WQv sufficient for addressing conversion of undeveloped land to pervious land uses (e.g. lawn)?

Discussion points included:

- How is the implementation of soil restoration requirements going in New York? (Julie or Amy will follow up.)
- Could soil restoration be verified using bulk density soil testing?
- Be careful about compost amendments! Manure-based composts are not the answer. Compost amendments can be specified that do not export large amounts of phosphorus.
- How do we accurately account for soil changes post-development where many trees are cut down? Should we add the increased runoff from the non-forested cover back on top of the WQv?
- The state of Maryland uses “forest in good condition” as the baseline that stormwater management for all regulated sites is measured against – look at their methodology and incentives
- Is the Construction General Permit a better place to require soil restoration? That’s when the equipment is on site.
- Caution about soil restoration as a practice requiring certification – contractors don’t always take seriously. Needs to be some protection for certifying engineers.
- Contractors are using more crushed stone to maintain clean construction sites – may conflict with a requirement for tillage and soil restoration?

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?

Discussion points included:

- Smaller release volumes can lead to specification of orifice sizes that are too small and cause major maintenance headaches. Adequate cleanouts – and maintenance – are essential!
- If applicants have reduced much (but not all) of the CPv, does the 12-hour or 24-hour release still make sense?
- The mass basis (center of mass) method is really challenging, often one can’t make the volumes work for replicating pre-development hydrology on tough (HSG D) soils.
- Emily Shelley at DEC looked at infiltration on differing soils – found that if you could infiltrate the WQv on HSG A or B, you basically met CPv as well. Less true on C-D soils but still substantial. Padraic will locate this information and follow up.
- Provide a clear way for people to propose practices that will meet standards, rather than unnecessarily limiting applicable practices. (Padraic acknowledged that existing procedure for approving new practices need improvement.)
- Apply more science to waivers at for larger storms. What is the meaning of the 10 mi² watershed area waiver? Is there information that could be drawn in from the state’s stream geomorphic assessments that would inform CPv? Perhaps there is an intermediate step that recognizes stream stability/instability? We have many unstable streams but few gages.
- Maryland has a process that includes reducing CPv following RR.

Should continuous simulation modeling be included as an optional approach?

Discussion points included:

- NY state did include continuous simulation modeling as an optional approach, but chose 95% rather than 90% storm as compliance point. (Could have been driven by Federal guidance or by NYC Watershed. Julie will follow up regarding the basis for the 95th percentile storm in continuous simulation approach.)
- Can we show the value of the continuous simulation approach? (Discrete storm sizing tends to oversize controls compared to continuous simulation...)
- Washington State requires continuous simulation modeling by default. Can we talk to them about the strengths and weaknesses—and implementation—of this requirement?
- Channel protection on small sites, and overbank (10-year) flood protection, drive the ponds. We must find a way to drive clients to what makes more sense for their sites.
- Rhode Island is limiting applicability of practices – all practices must meet 90% TSS, 30-40% N-P. Most ponds do not meet those performance targets. Their approach is “use a prescribed practice or justify yours” (more geared to proprietary practices).
- Continuous simulation can enable much more tailoring to particular watersheds.

Group input on prioritizing practices to discuss at December all-day meeting

Amy Macrellis of Stone Environmental led a short discussion regarding the range of structural and non-structural practices already included in VSMM (either as credit-eligible or standard practices), and those that the group might consider including in the updated VSMM. The presentation slides are available at

http://www.vtwaterquality.org/stormwater/docs/manualrevision/sw_Practice_Prioritization_for_Dec_mtg_2013_10_29_ppt.pdf.

Discussion points included:

- Clearly define credit-eligible vs. standard practices – or make the credit-eligible practices standard ones.
- Structural GI practices that are seeing wide application elsewhere should be brought into the manual – water harvesting/reuse, green roofs, pervious pavement.
- Bioretention should be divided into small scale “rain gardens” and larger-scale bioretention practices.
- Pre-treatment should be more carefully considered – possibly both within individual practice standards and as a stand-alone section.
- For proprietary devices, consider improving reciprocity (e.g. accepting the results of testing completed in other states)
- For infiltration-based practices, carefully consider groundwater separation requirements.
- Linear practices – try to engage at December workshop, or in a separate one?

Given the short time frame for discussion on this topic, the blank worksheets are available at http://www.vtwaterquality.org/stormwater/docs/manualrevision/sw_VSMM_Mtg_2_Fillable_Practice_Prioritization_Forms.pdf. Participants were encouraged to fill out the forms (one page for non-structural practices, and one for structural practices) and return to Amy Macrellis (amacrellis@stone-env.com) for compilation **by Friday, November 15.**

Future Meeting Dates and Proposed Topics

Dec. 12, 2013 - All Day – Shelburne Town Office
Low Impact Development Approaches – Further Development of Priority Practices

Jan. 17, 2014
Maintenance and Inspection

Feb. 21, 2014
Revisions, Clarifications, and Corrections to the Current Manual