**From:** Kathy Gwilym
**To:** ECY RE WW SW Manual Comments
**Cc:** Nathan Polanski; Peg Staeheli
**Subject:** Volume V and III - Comments to Ecology on Draft SWMM for Western Washington
**Date:** Friday, February 03, 2012 2:57:01 PM

Dear Ecology,

The following are some additional comments on Ecology's November 2011 Draft Stormwater Manual for Western Washington.

**Volume 5, Chapter 7**

- General comment: It is not clear when rules/criteria apply to infiltration into native soils vs. infiltration through a filter media (i.e. bioretention soil mix). Infiltration into the subsurface/native soils should always include "into native soils" after the word infiltration. Many designers will think infiltration discusses water infiltrating into native soils and might expect filtration to discuss water passing through a media soil or bioretention soil mix. Recommend review of naming convention/word choice infiltration of runoff.
- Page 7-10, Transportation safety paragraph: recommend including a sentence for pedestrian safety and desire to limit depths of bioretention facilities adjacent to pedestrian walkways and providing a buffer or shoulder at the edge similar to the roadside edge.
- Page 7-11, last paragraph: recommend replacing "round (river) rock" with "rounded cobbles". The manual should not give the idea that materials used can be taken from a river or other natural corridor.
- Page 7-12 curb cut width (top bullet): The width of the curb cut varies given project design, amount of tributary area and siting of the bioretention (pedestrian vs vehicular areas for example). In some projects, we've seen widths at 6" but more frequent spacing of the curb cuts. In others we've used 8" to 15" width opening with less frequent spacing. In areas with less foot traffic you might use wider opening….whereas in dense urban conditions might use narrow opening. We recommend that flexibility be provided in the recommendation.
- Page 7-15 repeated information: items are repeated from Paragraph "c" at the top of the page in the bioretention soil mix paragraph
- Page 7-15 fifth bullet: should bioretention soil mix "infiltration rates" be "filtration rates"; also "not too high" is subjective, is there a table to reference. The 6th bullet of the next section lists less than 12 inches per hour.
- Page 7-15 bioretention soil mix (5th bullet): minimum 18-inch soil depth is for water quality. Should this be clarified even though it is the runoff treatment chapter? In the bottom bullet "for water quality is clarified". This is another example of repeating information within the section.
- Page 7-16 underdrain (2nd paragraph): "under-drain systems should only be installed …". Use of the word "only" is very absolute. Are there only four conditions when under-drains should be used?
- Page 7-17 underdrain (paragraph 2 and 3): do these paragraphs conflict with whether an under-drain should be wrapped with filter fabric? One paragraph recommends not using filter fabric and the second paragraph references using filter fabric.

**Volume 3, Appendix C**

- Page C-6 porous concrete (third bullet): industry standard refers to this material as "pervious concrete". We recommend using "pervious concrete" not porous concrete. Also the use of voids is no longer a design criteria due to challenges/differences in measuring voids in a pavement section and a core sample. Depending upon how the voids are calculated and measured (from cylinder samples, from in-place cored samples) etc. we have seen ranges from 15% to 32%+/-. Recommend deleting reference to void space % for pervious concrete.
- Page C-18, Design Criteria 7-.9.1: a minimum depth of 18-inches is only required for water quality treatment. This sentence should be clarified as less than 18-inches can be used for flow control.

- Page C-18, Design Criteria 7-.9.1: gradation table for aggregate is also included in chapter 7, recommend this information is not duplicated.
- Page C-19, mulch thickness: The depth of mulch varies with planting type. It can range from 2" to 4". We recommend providing a range and not setting a maximum to provide flexibility for various planting types (groundcovers, steppable groundcovers, shrubs etc).
- Page C-20, max ponding depth (1st paragraph): recommend 24-72 hours draw down time.
- Page C-20, 7.9.3: is this the first sentence of paragraph four true? "Each of these is represented by an "Element in the approved runoff models". Will new programs available for download from Ecology website have an "Element" for sizing bioretention cells, bioretention swales, and planter box?
- Page C-22, 7.9.4.1: Recommend further clarification on correction factor and what infiltration rate one is to use for design. If one uses soil and compost specifications in Chapter 7, Volume V, and the drainage area exceeds the threshold noted then does this mean the design infiltration rate for the bioretention soil is 6/4 or 1.5 in/hr? Since designers are sizing for long term infiltration, what should be utilized? What is the reason for differing correction factors?

If you have any questions regarding the above comments, please feel free to give us a call.

Thank you,

-Kathy

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~ Kathy is in the office Monday, Tuesday, Thursday and Friday. If you need immediate assistance please call the office. ~